Process Monitoring

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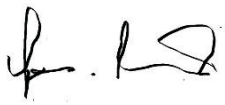
Prepared by	James Meridith	**Signature**	
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1 Introduction

1.1 Introduction

1.1.1. This plan outlines the Process Monitoring Plan for the Arrow Bio Waste Recycling Facility, and the range of corrective actions that may be taken in response results observed resulting from these activities.

1.2 Scope

1.1.2. This plan applies to all sampling process monitoring activities to be carried out at the facility.

1.3 Definitions

Abbreviation	Description
BMP	Biomethane Potential
DS	Dry Solids
LOI	Loss on Ignition
ODS	Organic Dry Solids
OLR	Organic Loading Rate
PTE's	Potentially Toxic Elements
RBP	Residual Biogas Potential
VFA	Volatile Fatty Acid
FOS:TAC	Volatile organic acids / Total inorganic acids

2 PROCEDURE

2.1 Arrow Bio Waste Recycling Facility Monitoring Procedure

The table below outlines the regular monitoring schedule for the Arrow Bio Waste Recycling Facility:

Monitoring Location	Parameters	Comments	Frequency
Digester feed (digestion process)	pH	This will be carried out in the on-site lab. The data will be logged, and trends observed overtime.	Daily
	FOS TAC	This will be carried out in the on-site lab. The data will be logged and trends observed over time. FOS TAC is a single value depending on the relation of two parameters, which are Volatile Organic Acids content (FOS) and buffer capacity (TAC or alkalinity).	Daily
	Alkalinity	Samples will be taken from each digester and sent off for analysis at a UKAS accreditedlaboratory. The analysis will include alkalinity.	Twice per month
	Temperature	Temperature is continuously monitored within each tank using a digital sensor. The sensors are all located 50 cm above the base of the tank. Effective mixing ensures that temperature distribution is maintained. Other process monitoring parameters including methane production levels and the volatile fatty acids profile would indicate if mixing was not effective.	Continuously

	Hydraulic loadingrate	The hydraulic loading rate is not a directly monitored parameter but calculated and controlledthrough the pre-adjusted feeding / pumping tables in the AD plant SCADA system. The hydraulic loading rate can be calculated on this basis from other onsite monitoring data at any given time.	Continuous
	Organic loading rate	The organic loading rate is not a directly monitored parameter but calculated and controlledthrough the pre-adjusted feeding / pumping tables in the AD plant SCADA system. The organic loading rate can be calculated on this basis from onsite monitoring data at any given time.	Continuous
	Volatile fatty acids concentration	Samples will be taken from each digester and sent off for analysis at a UKAS accreditedlaboratory. The analysis will include volatile fatty acids.	Twice permonth
	Ammonium - N	Ammoniacal nitrogen (NH_4-N) will be analysed in the samples from each digester which will be sent to a UKAS accredited laboratory. This parameter is an indication of the protein content ofthe substrates and provides an indicator of viscosity in the digester. Ammoniacal (NH_4) nitrogen is one side of the dissociation equilibrium with NH_3 (which is toxic) offering a further means of assessment.	Twice monthly
	Liquid /foam level	The liquid level in the tanks is continuously monitored and recorded on SCADA. All of thetanks benefit from high level sensors and alarms. Foam will be detected through the foam sensor and an alarm will be triggered. Every day the two digesters are visually inspected through the inspection windows. These observations will allow for the early indication of foaming.	Continuous

Digestate batch	Volatile fatty acids concentration	Volatile Fatty Acids will be one of the standard parameters tested for in resulting digestate.	Quarterly as aminimum
	Ammonium - N	Ammonium –N will be one of the standard parameters tested for in resulting digestate.	Quarterly as aminimum
Biogas in digester	Flow	Biogas flow is continuously monitored through SCADA. Gas production is measured through monitoring the quantity of gas consumed by the combined heat and power (CHP) engine and the gas upgrading plant in relation to the volume of biogas in storage.	Continuous
	Methane	Methane is continuously monitored via the gas analysers in each of the digester headspaces.	Continuous
	Carbon dioxide	Carbon dioxide is continuously monitored via the gas analysers in each of the digesterheadspaces.	Continuous
	Oxygen	Oxygen is continuously monitored via the gas analysers in each of the digester headspaces.	Continuous
	Hydrogen sulphide	Hydrogen sulphide is continuously monitored via the gas analysers in each of the digesterheadspaces. Notes: I. Biogas quality is also continuously monitored prior to and after the active carbon filters.	Continuous

		2. Biogas quality is checked through the use of a handheld gas monitor at all monitoring points on a daily basis in accordance with Site Compliance Document (BCNE-OD-E&C 003). The handheldgas monitor is calibrated annually or sooner if there is a significant difference between the in-line and handheld device readings.	
	Pressure	Gas pressure is monitored continuously. There are gas pressure monitors located in all of the gas holding tanks. The regulation of gas pressure is fully automated and SCADA links gaspressure readings with mixing, feeding of the AD plant and required CHP load.	Continuous
Digester(s) and storage tank(s)	Integrity checks	In accordance with the Maintenance Checklist (BCNE-OD-SER- 001) there is a weekly check ofthe exterior of the digesters and the digestate storage tank.	Weekly
Digester(s)	Agitation /mixing	The SCADA system continuously controls and monitors the mixers in accordance with a mixingprogramme which is determined by the operator in line with process monitoring results.	Continuous
	Tank capacity and sediment assessment	The SCADA system will allow the Operator to assess the levels of sedimentation in the tankthrough any differentiation between known tank volume (i.e. tank at lower off-take point) and volume measured on SCADA. In addition to this during any routine maintenance task thatrequire the tanks to be accessed sediment levels will be verified.	Once a year asminimum.

CHP Engine, Boiler and Emergency Generator Monitoring

A detailed monitoring schedule for the CHP engines, natural gas boiler and emergency generator will be provided to NRW on commencement of operations, once plant-specific operational data and confirmed service arrangements are in place. This schedule will include: recording of CHP operating hours via the SCADA system (maximum permitted 8,760 hours per year per unit); annual stack emissions monitoring for NOx, CO and HCHO carried out by an MCERTS-accredited contractor in accordance with the site Environmental Permit and M1 guidance; recording of boiler and emergency generator operating hours in accordance with the requirements of the Medium Combustion Plant Directive and associated permit conditions; and any additional monitoring required by the permit conditions as agreed with NRW prior to operation. In the interim, and where required by NRW to support assessment of this application, indicative monitoring data from a comparable operational BioConstruct facility utilising equivalent CHP technology can be provided for reference purposes.

Liquid Feedstock Filling Station Monitoring

The liquid feedstock filling station will be operated in accordance with the site Accident Management Plan and standard operational procedures established on commencement of operations. Should NRW require a formal monitoring schedule for the filling station, this will be provided on commencement of operations and will be developed in consultation with NRW at that time.

3 INDICATIVE LIMITS

3.1 Indicative Limits

The following parameters are based on industry practice and will be used as a guide to indicate a stable process. Green indicates a stable 'healthy' range, yellow indicates risk of instability and the need to monitor more closely, and red indicates that corrective actions should be taken to bring measures under control.

Parameter		Limit
Total VFA (mg/l)		< 1000
		1000 - 4000
		>4000
VFA Species (mg/l)	Acetic Acid	< 1000
		1000 - 4000
		>4000
	Propionic Acid	<250
		250-1000
		>1000
	Longer chain VFA (butyric,valeric)	<50
		>50
	Ratio acetic acid: propionic acid	>2
		1-2
		>2
FOS: TAC Ratio		<0.3
		0.3 – 0.5
		>0.5
Ammonia (mg/l)		<5000
		>5000
pH		7 - 8
		<7
		>8
Input Carbon:Nitrogen Ratio		20 – 30:1
		<20 – 30:1
		>20 – 30:1

Parameter	Limit
Biogas Methane Content	>50%
	<50%
Biogas Hydrogen Sulphide Content	<1000ppm
	>1000ppm

Anaerobic digesters benefit from stable process conditions. The following parameters have been identified as being key to maintaining process stability. Where possible they will be maintained at constant values.

- Temperature - Design temperature is mesophilic range.

- Mixing – It is essential that the digester tanks are mixed thoroughly to ensure bacteria have access to fresh material and no hot spots occur, maintaining process stability.

4 DOCUMENTATON AND METHODOLOGY

4.1 Documentation

All internal lab analysis results will be recorded and retained within the management system record archive for a minimum of 6 years.

All analyses undertaken by third parties will be sent to a lab with the necessary registration/accreditation relevant to the sample in question.

All samples will be taken in accordance with relevant guidance documents and standards.

Sampling and monitoring will be carried out by competent staff, and if required staff will have access to external biological specialist services for additional support.

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GLOBAL ENVIRONMENTAL TECHNOLOGY

UF10 1750 Emissions Page EA Compliant Stand Alone Flare Stack

Customer	**BIOCONSTRUCT GmbH**			
Our Reference No.	**Arrow Bio Waste Recycling Facility**			
Machine type	**UF10-1750** High Temperature Enclosed Flare Stack			
Turndown Ratio	**5:1**			
Design Flow – Biogas	**400 - 1750**	**Nm3hr (Variable)**		
Design Flow – Biomethane	**185 - 950**	**Nm3hr**		
Combined Flow	**925Nm3hr Biogas & 475Nm3hr Biomethane**			
Pilot System	Uniflare Fire Blaster Propane ZAI ionisation pilot			
Use environment	Site in open air with restricted access.			
Hazardous area classification in compliance with ATEX requirements.	Zone 2 in sphere 200 mm radius around all positive gas pipe connections and 100 mm radius around all negative pressure gas pipe connections			
Maximum design emissions Normalised at 0°C, 101.3 k Pa and 3% O2:	Carbon monoxide (CO)	50 mg Nm-3		
	Oxides of nitrogen (NOx)	150 mg Nm-3		
	Total volatile organic carbon as carbon	10 mg Nm-3		
	Non-methane volatile organic carbon	5 mg Nm-3		
Operation	Unattended Intermittent use			
Design Media	52 - 97%	Methane CH^4		
Design Burner Pressure	Minimum Burner inlet Pressure	80	mbarg	
Thermal Rating	10.47	MW		
Design Destruction Efficiency	>99.7%			
Design Combustion temperature	Combustion >1000°C Fully refractory line with automated combustion control			
Minimum retention time	> 0.3 seconds			
Control system	PLC controlled with Hardwired interface. Remote Start Stop. Status and Information available for Remote and site SCADA system.			
Safety systems	CE marked equipment Piltz PNOZ monitoring e-stop circuit Gas pressure protection IS barriers Local Isolators Flash back protected Flame arrestor Pressure and Temperature monitoring DSEAR and ATEX compliant			

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UF10 1750 Emissions Page EA Compliant Stand Alone Flare Stack

Design Calculation Page

UF10-1750 High Temperature Flare @ 60%CH4

CALCULATION OF RETENTION TIME					
CALCULATION OF COMPOSITION OF COMBUSTION PRODUCTS BS 5854					
per one volume of fuel @ 15° C and 1013 mbar					
Constitituent	Percentage in fuel	rel den	rel den fuel to air		
CH4	60%	0.554	0.3324		
CO2	40%	1.5198	0.60792		
	1	OK	0.94032		
STOICHIOMETRIC AIR PER UNIT VOLUME OF METHANE IS 9.55					
	biogas flow rate	1750	m3h-1 >	1050	m3h-1 CH4
	min air required	10027.5	m3h-1		
	excess air	200%			
	specific volume of air	0.819	m3 kg-1		
	mass flow rate of air	36731	kg h-1		
	mass flow rate of biogas	2009	kg h-1		
	total mass flow rate	38740	kg h-1		
fuel gases above their dew point have a specific volume similar to air at the relevant temperature					
	the volume of 1 kg of				
	flue gases at	1000	° C is		
		4	m3 kg-1		
	therefore the volume flow rate	147948	m3 h-1		
		41	m3 s-1		
	hot face diameter	2.133	m		
	area	3.57	m2		
	velocity	11.5	m s-1		
	height above flame	5.5	m		
	retention time	0.48	s		
	Retention time at sample port	0.39	s	Port 1m down from top	
	Heat release turn down ratio	5	:1		
	Combustion heat release full load	10.47	MW		
	Minimum heat release	2.09	MW	**Created**	RPB
EA Guidance on Landfill Gas Flaring 4.8.7 Page 24				**Checked**	MIJ

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UF10 1750 Emissions Page EA Compliant Stand Alone Flare Stack

UF10-950 High Temperature Flare @ 97%CH4

CALCULATION OF RETENTION TIME					
CALCULATION OF COMPOSITION OF COMBUSTION PRODUCTS BS 5854					
per one volume of fuel @ 15° C and 1013 mbar					
Constitituent	Percentage	rel den	rel den fuel		
	in fuel		to air		
CH4	97%	0.554	0.53738		
CO2	3%	1.5198	0.045594		
	1	OK	0.582974		
STOICHIOMETRIC AIR PER UNIT VOLUME OF METHANE IS 9.55					
	biogas flow rate	950	m3h-1 >	921.5	m3h-1 CH4
	min air required	8800.325	m3h-1		
	excess air	200%			
	specific volume of air	0.819	m3 kg-1		
	mass flow rate of air	32236	kg h-1		
	mass flow rate of biogas	676	kg h-1		
	total mass flow rate	32912	kg h-1		
fuel gases above their dew point have a specific volume similar to air at the relevant temperature					
	the volume of 1 kg of				
	flue gases at	1000	° C is		
		4	m3 kg-1		
	therefore the volume flow rate	125690	m3 h-1		
		35	m3 s-1		
	hot face diameter	1.966	m		
	area	3.04	m2		
	velocity	11.5	m s-1		
	height above flame	5.5	m		
	retention time	0.48	s		
	Retention time at sample port	0.39	s	Port 1m down from top	
	Heat release turn down ratio	5	:1		
	Combustion heat release full load	9.19	MW		
	Minimum heat release	1.84	MW	**Created**	RPB
EA Guidance on Landfill Gas Flaring 4.8.7 Page 24				**Checked**	MIJ

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CODE	DESCRIPTION		Size
PIPEM32B	COMPRESSED AIR	COMPRESSED AIR	150MM
TBC	GLYCEROL	GLYCEROL	150MM
TBC	FeCl	FeCl	150MM
PIPEM21B	NON-POTABLE WATER	NON-POTABLE WATER	150MM
PIPEM205	DIGESTATE	DIGESTATE	275mm
PIPEM249	SUBSTRATE	SUBSTRATE	275mm
PIPEM77	BIOGAS	BIOGAS	275mm
PIPEM04-FBX	HTG FLOW	HTG FLOW	150MM
PIPEM04-RBX	HTG RETURN	HTG RETURN	150MM
TBC	VEGETABLE OIL	VEGETABLE OIL	150MM
PIPEM02BX	CONDENSATE	CONDENSATE	150MM

general maintenance
Manufacturer: BioConstruct GmbH;

biogas plant

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
biogas plant	Tour and visual inspection of all components		x												
container level	Perform level control visually through sight glass		x												
fault signals	Regular removal of acknowledged messages in the mobile phone		x												
Empty driving silo areas	visual inspection					x									
Software/Visualization	Backup PC of the databases to external data memory						x								
emergency stop switch	Functional testing of all emergency stop chains							x							
Uninterruptible power supply (UPS) PC	Replacing the battery (battery) of the UPS								x						
Fire extinguisher (CO2 and powder)	Inspection of fire extinguishers (by specialist company)									x					
GSM Prepaid card Alarm modem	Checking the credit balance on the card						x								
Reference Gas Analysis	Examination of a biogas sample from an external accredited laboratory							x							
Switchboard	Clean the filter mats of the fan grilles, if necessary replace them if they are too dirty.							x							
Opening the roofs of the tanks	Routine maintenance of the tanks. Roof opening and inspection of the inner coating and all other internal components. Removal of sulphur from the nets and inspection glasses.									x					
Pressure vessels	Periodic inspection in accordance with the Pressure Equipment Directive. For this purpose, please contact the appropriate testing authority (e.g. TÜV).								x						
Concrete protection foil	Check each time the container is opened (at least every 4 years). The concrete protection foil must be intact at all times. To do this, empty the container so that all areas with a protective film are visible. If the foil is damaged, incomplete or no longer present, or if a deterioration is visible, repair or replacement must be carried out immediately. Depending on the composition of the substrate, the interval may be shortened. The operator must take this into account accordingly and adjust it if necessary.									x					

Emergency power generator
Manufacturer: German Generator GmbH; D 250 GX Heavy Duty

biogas plant

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Radiator	Clean								x						
Cable between generator and control panel at generator	Check for good condition and replace if necessary.													2000	
Tightness of the nuts and bolts and fittings	Check												1 years	2500	
Lifting eye bolts and/or lifting hooks	Replace										x				
Exhaust silencer	Replace													8000	
Tank and retention basin	Clean												1 years	2500	
Sound-proofing material of the canopy	Replace													10000	
Lubricating oil level	Check (if necessary top up)		x												
Coolant level	Check (top up if necessary)		x												
Engine tightness	Check and visual inspection for leaks		x												
Suction air filter/dry air filter	Check and maintain in accordance with maintenance indicator		x												
Fuel pre-cleaner and fuel pre-filter with water trap	Clean renew the filter insert if necessary													500	
V-belt/V-rib belt	Check and retighten if necessary, replace if damaged													500	
Coolant	Check (additive concentration)													500	
Coolant level	Check (top up if necessary)													500	
Lubricating oil	Replace													500	
Lubricating oil filter/insert	Replace (every time the lubricating oil is changed)													500	
Charge air cooler	Check (drain lubricating oil and condensation)													1000	
Check glow plugs and heating flange	Check for functioning													1000	
Flame glow system	Check for functioning													1000	
EGR compensator line	Check (replace if damaged)													1000	
Battery and cable connectors	Check													1000	
Engine monitor	Check, warning system Maintenance only to be carried out by authorised service personnel													1000	
Filter cartridge of the crank space ventilation valve	Check													1000	
Engine mountings	Check and tighten if necessary (renew in case of damage)													1000	
Fastenings, hose unions / clips	Check (renew if damaged)													1000	
Fuel filter insert (main filter)	Replace													1000	
Suction air filter/dry air filter	Replace (maintain in accordance with maintenance indicator)													1000	
Fuel pre-cleaner and fuel pre-filter with water trap	Replace (renew the filter insert if necessary). If the warning system responds (lamp/horn), the water trap bowl must be emptied immediately.													1000	
V-rib belt and tensioning pulley	Check (replace if wear limit is fallen below)													3000	
EGR (optional) adjustment lever and valve	Check replace if necessary													3000	
EGR (optional) adjusting bar	Replace													3000	
Electronic injector test via EMR3	Check (only for DEUTZ Common Rail System)													6000	
Charge air cooler inlet area/charge air cooler, lubricating oil/drain	Clean													6000	
Check valve of the exhaust gas recirculation system	Clean													6000	
Cooler of the exhaust gas recirculation system	Clean													6000	
Fuel injector (EPA only)	Exchange													6000	
Flame glow plugs	Replace													6000	
Crankcase breather valve / incl. filter (EPA only)	Exchange													6000	

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Charge air cooler inlet area	Clean (lubricating oil/drain condensation), (only with EPA)								x						
Fuel precleaner / fuel prefilter	Replace (if necessary change filter insert)								x						
Motor monitoring	Replacement (warning system Maintenance must only be carried out by authorised service personnel)								x						
EGR (optional) adjusting lever and valve	Check, replace if necessary									x					
Coolant	Replace (additive concentration)									x					
V-belt, V-rib belt and tensioning pulley	Replace									x					
Crankcase breather valve filter insert (EPA only)	Replace									x					
Emergency showers Manufacturer: Hughes Safety Showers; EXP-MH-14K/350 biogas plant															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Complete shower, eye bath / eyes / face wash	Functional and activity testing. The manufacturer's help note can be used.			x											
Complete shower, eye bath / eyes / face wash	Cleaning the entire unit. Unscrew shower head and nozzles, clean and disinfect.					x									
Legal regulations	Familiarize yourself with local laws and regulations. Add these points to the maintenance plan.														
Pusher plate container Manufacturer: Huning Anlagenbau GmbH & Co. KG; SBCK Depacking station															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Total unit	Visual inspection for externally visible defects			x											
Positioning sensors	Check condition and function of the positioning sensors			x											
Hydraulic system	Check the hydraulic system for leaks (hydraulic screw connections, hydraulic cylinder, hydraulic unit, hydraulic lines)			x											
Hydrailic unit	Check oil level			x											
Screw and terminal connections	Inspection of all screw and terminal connections including the hydraulic connections to ensure that they are firmly seated as machine is exposed to vibrations.						x								
Container inside	Visual inspection of the parts in the inside of the container (sliding frame, connecting bolts, cylinder rods, blank holder plates)												**3 months**	**400**	
Felt ring seal	Visual inspection							x							
Total unit	Perform visual inspection of the material thickness of the spiral thread, gear motors, cover, plastic cladding, wear rails							x							
Gear motor	Visual inspection of gear motor; Check the oil level and the gear seals for leaks.												**6 months**	**3000**	
Hydraulic oil	Testing hydraulic oil by oil sample; if contaminated, replace hydraulic oil or clean via bypass filtering.								x						
Hydraulic hose lines and gaskets	Exchange of hydraulic hose lines and gaskets on hydraulic cylinders for safety reasons, even if no defects are apparent.										x				
Gear motor	Gear motor oil change												**3 years**	**10000**	
Pneumatic slide	Check the silencer and clean if necessary								x						
Pneumatic slide	Check the pneumatic cylinder. Replace the sealing or the pneumatic cylinder if necessary.					x									

Hydraulic cover Manufacturer: Huning Anlagenbau GmbH & Co. KG; Hydraulische Abdeckung Depacking station															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Positioning sensors	Check condition and function of the positioning sensors			x											
Hydraulic system	Check the hydraulic system for leaks (hydraulic screw connections, hydraulic cylinder, hydraulic unit, hydraulic lines)			x											
Joints	Lubricate			x											
Sealing kit of the hydraulic arms	Replace										x				
Disintegration roller 1 Manufacturer: Huning Anlagenbau GmbH & Co. KG; Auflockerungswelle Depacking station															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Bearings	Lubricate the bearings on the break-up shaft.					x									
Total unit	Perform visual inspection of the material thickness of the spiral thread, gear motors, cover, plastic cladding, wear rails							x							
Gear unit	Check oil and oil level. check running noise for possible bearing damage. visual inspection of the seals for leakage. check that all screw plugs, any oil sight glass, the breather valve and the gear unit cover scres are thight. for gear units with a torque arm: check and replace the rubber buffers, if necessary.												**6 months**	**3000**	
Tension spring	Renew								x						
Loosening tool (screw helix)	Check and renew if necessary.					x									
Gear oil	Change mineral oil. Replace bearing grease. replace oil seal.										x				
Syntetic oil	Change syntetic oil. Replace bearing grease. Replace oil seal.								x						
Gearbox	Touch up or renew the surfaces / anti-corrosion coating.								x						
Motor brake	Measure the working air gab. Inspect the switch contacts and replace them, if necessary. Measuring the brake disk thickness. Check brake disk, lining. Measure and set working air gap. Check pressure plate. Check driver/gearing. Check pressure rings. Suck of any abrasion. Inspect the switch contacts and replace them, if necessary.													**3000**	
Motor	Check rolling gearing and change if necessary. Replace the oul seal Clean the cooling air ducts.													**10000**	
Drive	Touch up or renew the surface/anti-corrosion coating. Check and clean the air filter. If applicable, clean condensation drain hole at the bottom of the fan guard. Clean clogged bores.							x							
Connection cable	Check for damage and replace if necessary.					x									

Disintegration roller 2
Manufacturer: Huning Anlagenbau GmbH & Co. KG; Auflockerungswelle

Depacking station

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
Bearings	Lubricate the bearings on the break-up shaft.					x									
Total unit	Perform visual inspection of the material thickness of the spiral thread, gear motors, cover, plastic cladding, wear rails							x							
Gear unit	Check oil and oil level. check running noise for possible bearing damage. visual inspection of the seals for leakage. check that all screw plugs, any oil sight glass, the breather valve and the gear unit cover scres are thight. for gear units with a torque arm: check and replace the rubber buffers, if necessary.												**6 months**	**3000**	
Tension spring	Renew								x						
Loosening tool (screw helix)	Check and renew if necessary.					x									
Gear oil	Change mineral oil. Replace bearing grease. replace oil seal.										x				
Syntetic oil	Change syntetic oil. Replace bearing grease. Replace oil seal.								x						
Gearbox	Touch up or renew the surfaces / anti-corrosion coating.								x						
Motor brake	Measure the working air gab. Inspect the switch contacts and replace them, if necessary. Measuring the brake disk thickness. Check brake disk, lining. Measure and set working air gap. Check pressure plate. Check driver/gearing. Check pressure rings. Suck of any abrasion. Inspect the switch contacts and replace them, if necessary.													**3000**	
Motor	Check rolling gearing and change if necessary. Replace the oul seal Clean the cooling air ducts.													**10000**	
Drive	Touch up or renew the surface/anti-corrosion coating. Check and clean the air filter. If applicable, clean condensation drain hole at the bottom of the fan guard. Clean clogged bores.							x							
Connection cable	Check for damage and replace if necessary.					x									

Disintegration roller 3
Manufacturer: Huning Anlagenbau GmbH & Co. KG; Auflockerungswelle

Depacking station

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
Bearings	Lubricate the bearings on the break-up shaft.					x									
Total unit	Perform visual inspection of the material thickness of the spiral thread, gear motors, cover, plastic cladding, wear rails							x							
Gear unit	Check oil and oil level. check running noise for possible bearing damage. visual inspection of the seals for leakage. check that all screw plugs, any oil sight glass, the breather valve and the gear unit cover scres are thight. for gear units with a torque arm: check and replace the rubber buffers, if necessary.												**6 months**	**3000**	
Tension spring	Renew								x						
Loosening tool (screw helix)	Check and renew if necessary.					x									
Gear oil	Change mineral oil. Replace bearing grease. replace oil seal.										x				
Syntetic oil	Change syntetic oil. Replace bearing grease. Replace oil seal.								x						
Gearbox	Touch up or renew the surfaces / anti-corrosion coating.								x						
Motor brake	Measure the working air gab. Inspect the switch contacts and replace them, if necessary. Measuring the brake disk thickness. Check brake disk, lining. Measure and set working air gap. Check pressure plate. Check driver/gearing. Check pressure rings. Suck of any abrasion. Inspect the switch contacts and replace them, if necessary.													**3000**	
Motor	Check rolling gearing and change if necessary. Replace the oul seal Clean the cooling air ducts.													**10000**	
Drive	Touch up or renew the surface/anti-corrosion coating. Check and clean the air filter. If applicable, clean condensation drain hole at the bottom of the fan guard. Clean clogged bores.							x							
Connection cable	Check for damage and replace if necessary.					x									

Discharge screw conveyor pusher plate container
Manufacturer: Huning Anlagenbau GmbH & Co. KG; spiral worm SP-460

Depacking station

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Felt ring seal	Visual inspection of the felt ring seal of the shaft sealing ring.							x							
Total unit	Visual inspection for externally visible defects (e.g. wiring, covers) Clean in case of coarse soiling.					x									
Screw and terminal connections	Inspection of all screw and terminal connections to ensure that they are firmly seated as machine is exposed to vibrations.						x								
Total unit	Perform visual inspection of the inner and outer parts for integrity; spiral thread, gear motors, cover, plastic cladding, wear rails.							x							
Connection cable	Check for damage and replace if necessary.					x									
Drive	Touch up or renew the surface/anti-corrosion coating. Check and clean the air filter. If applicable, clean condensation drain hole at the bottom of the fan guard. Clean clogged bores.							x							
Gear oil	Change mineral oil. Replace bearing grease. replace oil seal.										x				
Syntetic oil	Change syntetic oil. Replace bearing grease. Replace oil seal.								x						
Gearbox	Touch up or renew the surfaces / anti-corrosion coating.								x						
Motor brake	Measure the working air gab. Inspect the switch contacts and replace them, if necessary. Measuring the brake disk thickness. Check brake disk, lining. Measure and set working air gap. Check pressure plate. Check driver/gearing. Check pressure rings. Suck of any abrasion. Inspect the switch contacts and replace them, if necessary.													**3000**	
Motor	Check rolling gearing and change if necessary. Replace the oul seal Clean the cooling air ducts.													**10000**	

Inclined screw conveyor
Manufacturer: Huning Anlagenbau GmbH & Co. KG; spiral worm SP-460

Depacking station

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
Felt ring seal	Visual inspection of the felt ring seal of the shaft sealing ring.							x							
Total unit	Visual inspection for externally visible defects (e.g. wiring, covers) Clean in case of coarse soiling.					x									
Screw and terminal connections	Inspection of all screw and terminal connections to ensure that they are firmly seated as machine is exposed to vibrations.						x								
Total unit	Perform visual inspection of the inner and outer parts for integrity; spiral thread, gear motors, cover, plastic cladding, wear rails.							x							
Connection cable	Check for damage and replace if necessary.					x									
Drive	Touch up or renew the surface/anti-corrosion coating. Check and clean the air filter. If applicable, clean condensation drain hole at the bottom of the fan guard. Clean clogged bores.							x							
Gear oil	Change mineral oil. Replace bearing grease. replace oil seal.										x				
Syntetic oil	Change syntetic oil. Replace bearing grease. Replace oil seal.								x						
Gearbox	Touch up or renew the surfaces / anti-corrosion coating.								x						
Motor brake	Measure the working air gab. Inspect the switch contacts and replace them, if necessary. Measuring the brake disk thickness. Check brake disk, lining. Measure and set working air gap. Check pressure plate. Check driver/gearing. Check pressure rings. Suck of any abrasion. Inspect the switch contacts and replace them, if necessary.													**3000**	
Motor	Check rolling gearing and change if necessary. Replace the oul seal Clean the cooling air ducts.													**10000**	

Separating crusher Manufacturer: Huning Anlagenbau GmbH & Co. KG; HTZ-3-1120 Depacking station															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
Crusher unit	Visual inspection of the crushing unit (beater pins, hammer beaters, ejector beaters, spacer rings, perforated			x											
Safety sensor	Checking the condition and function of the safety sensor.			x											
Total unit	Inspection for externally visible faults (e.g. wiring, housing halves, covers).			x											
Hydraulic system	Check the hydraulic system for leaks (hydraulic screw connections, hydraulic cylinder, hydraulic unit, hydraulic lines).					x									
Screw and clamp connections	Inspect all screw and clamp connections to ensure that they are firmly seated as the machine is exposed to						x								
Lubrication bearings	Lubrication bearings of conveyor worm (discharge screw).							x							
Hydraulic cylinders	Lubricating the bearings of the hydraulic cylinders.							x							
Housing	Lubricating the bearing bolts for the housing halves.							x							
Felt ring seal	Visual inspection of felt ring seal on housing halves.							x							
Discharge screw	Visual inspection of parts of discharge screw for intactness (spiral worm, plastic cladding).							x							
Gear motor for discharge screw	Visual inspection of gear motor for discharge screw. Check the oil level and the gear seals for leaks.												**3 months**	**3000**	
Gear motor for discharge screw	Oil change of gear motor for discharge screw, (For oil grade / quantity see maintenance drawing for discharge screw)												**5 years**	**18000**	
pedestal bearings	Open pedestal bearings, remove grease, clean and fill with new grease (see manufacture manuel).									x					
Hydraulic hose lines and gaskets	Exchange of hydraulic hose lines and gaskets on hydraulic cylinders for safety reasons, even if no defects are apparent.								x						
Bearing side A	Lubrication of the bearings on the electrical motor see therfore manufacutre manuel.													**2800**	
Bearing side B	Lubrication of the bearings on the electrical motor see therfore manufacutre manuel.													**3300**	
Electric motor	Observe the manufacturer´s operation manuel.					x									
Hydraulic unit separating crusher Manufacturer: Laimer Hydraulik GmbH; H0904132 - 0,55 kW Depacking station															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
Leak	Check for leaks, especially at connection transitions.		x												
Total unit	Check for abnormal noise		x												
Hydraulic connections	Check for tight fit		x												
Flexible tube connections	Visual check for leaks and tight fit		x												
Heatexchanger	Check, clean if necessary. Check cooling circuit for functionality.		x												
Hydraulic fluid	Check and refill if necessary. Use the manufacturer's user manual for this purpose.					x									
Operating conditions	Check pressure, temperature, gas pressure in the storage tank. Observe the manufacturer's user manual.					x									
Total unit	Clean from dirt and impurities.					x									
Service check	Have it carried out by qualified personnel. Observe the manufacturer's user manual.							x							
Hydraulic oil	Testing hydraulic oil by oil sample; if contaminated, replace hydraulic oil or clean via bypass filtering.								x						

Waste-discharge screw conveyor 1
Manufacturer: Huning Anlagenbau GmbH & Co. KG; spiral worm SP-300

Depacking station

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Felt ring seal	Visual inspection of the felt ring seal of the shaft sealing ring.							x							
Total unit	Visual inspection for externally visible defects (e.g. wiring, covers) Clean in case of coarse soiling.					x									
Screw and terminal connections	Inspection of all screw and terminal connections to ensure that they are firmly seated as machine is exposed to vibrations.						x								
Total unit	Perform visual inspection of the inner and outer parts for integrity; spiral thread, gear motors, cover, plastic cladding, wear rails.							x							
Connection cable	Check for damage and replace if necessary.					x									
Drive	Touch up or renew the surface/anti-corrosion coating. Check and clean the air filter. If applicable, clean condensation drain hole at the bottom of the fan guard. Clean clogged bores.							x							
Gear oil	Change mineral oil. Replace bearing grease. replace oil seal.										x				
Syntetic oil	Change syntetic oil. Replace bearing grease. Replace oil seal.								x						
Gearbox	Touch up or renew the surfaces / anti-corrosion coating.								x						
Motor brake	Measure the working air gab. Inspect the switch contacts and replace them, if necessary. Measuring the brake disk thickness. Check brake disk, lining. Measure and set working air gap. Check pressure plate. Check driver/gearing. Check pressure rings. Suck of any abrasion. Inspect the switch contacts and replace them, if necessary.													**3000**	
Motor	Check rolling gearing and change if necessary. Replace the oul seal Clean the cooling air ducts.													**10000**	

Waste-discharge screw conveyor 2
Manufacturer: Huning Anlagenbau GmbH & Co. KG; spiral worm SP-300

Depacking station

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Felt ring seal	Visual inspection of the felt ring seal of the shaft sealing ring.							x							
Total unit	Visual inspection for externally visible defects (e.g. wiring, covers) Clean in case of coarse soiling.					x									
Screw and terminal connections	Inspection of all screw and terminal connections to ensure that they are firmly seated as machine is exposed to vibrations.						x								
Total unit	Perform visual inspection of the inner and outer parts for integrity; spiral thread, gear motors, cover, plastic cladding, wear rails.							x							
Connection cable	Check for damage and replace if necessary.					x									
Drive	Touch up or renew the surface/anti-corrosion coating. Check and clean the air filter. If applicable, clean condensation drain hole at the bottom of the fan guard. Clean clogged bores.							x							
Gear oil	Change mineral oil. Replace bearing grease. replace oil seal.										x				
Syntetic oil	Change syntetic oil. Replace bearing grease. Replace oil seal.								x						
Gearbox	Touch up or renew the surfaces / anti-corrosion coating.								x						
Motor brake	Measure the working air gab. Inspect the switch contacts and replace them, if necessary. Measuring the brake disk thickness. Check brake disk, lining. Measure and set working air gap. Check pressure plate. Check driver/gearing. Check pressure rings. Suck of any abrasion. Inspect the switch contacts and replace them, if necessary.													**3000**	
Motor	Check rolling gearing and change if necessary. Replace the oul seal Clean the cooling air ducts.													**10000**	

Discharge screw conveyor Buffertank 1
Manufacturer: Huning Anlagenbau GmbH & Co. KG; spiral worm SP-190

Depacking station

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Felt ring seal	Visual inspection of the felt ring seal of the shaft sealing ring.							x							
Total unit	Visual inspection for externally visible defects (e.g. wiring, covers) Clean in case of coarse soiling.					x									
Screw and terminal connections	Inspection of all screw and terminal connections to ensure that they are firmly seated as machine is exposed to vibrations.						x								
Total unit	Perform visual inspection of the inner and outer parts for integrity; spiral thread, gear motors, cover, plastic cladding, wear rails.							x							
Connection cable	Check for damage and replace if necessary.					x									
Drive	Touch up or renew the surface/anti-corrosion coating. Check and clean the air filter. If applicable, clean condensation drain hole at the bottom of the fan guard. Clean clogged bores.							x							
Gear oil	Change mineral oil. Replace bearing grease. replace oil seal.										x				
Syntetic oil	Change syntetic oil. Replace bearing grease. Replace oil seal.								x						
Gearbox	Touch up or renew the surfaces / anti-corrosion coating.								x						
Motor brake	Measure the working air gab. Inspect the switch contacts and replace them, if necessary. Measuring the brake disk thickness. Check brake disk, lining. Measure and set working air gap. Check pressure plate. Check driver/gearing. Check pressure rings. Suck of any abrasion. Inspect the switch contacts and replace them, if necessary.													**3000**	
Motor	Check rolling gearing and change if necessary. Replace the oul seal Clean the cooling air ducts.													**10000**	

Discharge screw conveyor Buffertank 2
Manufacturer: Huning Anlagenbau GmbH & Co. KG; spiral worm SP-190

Depacking station

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
Felt ring seal	Visual inspection of the felt ring seal of the shaft sealing ring.							x							
Total unit	Visual inspection for externally visible defects (e.g. wiring, covers) Clean in case of coarse soiling.					x									
Screw and terminal connections	Inspection of all screw and terminal connections to ensure that they are firmly seated as machine is exposed to vibrations.						x								
Total unit	Perform visual inspection of the inner and outer parts for integrity; spiral thread, gear motors, cover, plastic cladding, wear rails.							x							
Connection cable	Check for damage and replace if necessary.					x									
Drive	Touch up or renew the surface/anti-corrosion coating. Check and clean the air filter. If applicable, clean condensation drain hole at the bottom of the fan guard. Clean clogged bores.							x							
Gear oil	Change mineral oil. Replace bearing grease. replace oil seal.										x				
Syntetic oil	Change syntetic oil. Replace bearing grease. Replace oil seal.								x						
Gearbox	Touch up or renew the surfaces / anti-corrosion coating.								x						
Motor brake	Measure the working air gab. Inspect the switch contacts and replace them, if necessary. Measuring the brake disk thickness. Check brake disk, lining. Measure and set working air gap. Check pressure plate. Check driver/gearing. Check pressure rings. Suck of any abrasion. Inspect the switch contacts and replace them, if necessary.													**3000**	
Motor	Check rolling gearing and change if necessary. Replace the oul seal Clean the cooling air ducts.													**10000**	

Hydraulic unit pusher plate container Manufacturer: Laimer Hydraulik GmbH; H0204191 - 11 kW Depacking station															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Leak	Check for leaks, especially at connection transitions.		x												
Total unit	Check for abnormal noise		x												
Hydraulic connections	Check for tight fit		x												
Flexible tube connections	Visual check for leaks and tight fit		x												
Heatexchanger	Check, clean if necessary. Check cooling circuit for functionality.		x												
Hydraulic fluid	Check and refill if necessary. Use the manufacturer's user manual for this purpose.					x									
Operating conditions	Check pressure, temperature, gas pressure in the storage tank. Observe the manufacturer's user manual.					x									
Total unit	Clean from dirt and impurities.					x									
Service check	Have it carried out by qualified personnel. Observe the manufacturer's user manual.							x							
Hydraulic oil	Testing hydraulic oil by oil sample; if contaminated, replace hydraulic oil or clean via bypass filtering.								x						
Pump depacking station Manufacturer: Pumpenfabrik Wangen GmbH; KL65S 125.1 Depacking station															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Base frame	Retighten the screws and nuts for fastening the machine on the base and the bolts to the foundation											**50 h**			
Stator	Check stator. Replace when worn (depending on plant and wear)			x											
Rotor	Check rotor. Replace when worn (depending on plant and wear)			x											
Joint	Check joint. Replace when worn (depending on plant and wear)			x											
Shaft sealing	Check shaft sealing for leakage, replace in case of permanent leakage			x											
Motor	Remove dust from the surface			x											
Motor	Clean and grease rolling bearings (every 5 years for horizontal installation of motor, observe manufacturers specifications)													**5000**	
motor - roller bearings	Check and replace if necessary													**10000**	
motor - roller bearings	Remove shaft sealing rings													**10000**	
Electrical connections	Check connections and cables													**10000**	
Motor fan	Check for strength and damage													**10000**	
Gear unit	Check oil and oil level													**3000**	
Gear unit	Check running noises													**3000**	
Gear unit	Visual inspection of the seals for leakage													**3000**	
Gear unit	For gearboxes with three-phase current support: Check rubber buffer, replace if necessary													**3000**	
Gear unit	Change mineral oil										x				
Gear unit	Replace rolling bearing grease (recommended)										x				
Gear unit	Replace shaft seal (do not reinstall on the same running track)										x				

Feeding system
Manufacturer: Huning Anlagenbau GmbH & Co. KG; SFC

Feeding system

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
Total unit	Visual inspection for externally visible defects			x											
Positioning sensors	Check condition and function of the positioning sensors			x											
Hydraulic system	Check the hydraulic system for leaks (hydraulic screw connections, hydraulic cylinder, hydraulic unit, hydraulic lines)			x											
Hydrailic unit	Check oil level			x											
Bearings on the loosening shaft	Lubricate					x									
Screw and terminal connections	Inspection of all screw and terminal connections including the hydraulic connections to ensure that they are firmly seated as machine is exposed to vibrations.						x								
Container inside	Visual inspection of the parts in the inside of the container (sliding frame, connecting bolts, cylinder rods, blank holder plates)												**3 months**	**400**	
Felt ring seal	Visual inspection							x							
Total unit	Perform visual inspection of the material thickness of the spiral thread, gear motors, cover, plastic cladding, wear rails							x							
Gear motor	Visual inspection of gear motor; Check the oil level and the gear seals for leaks.												**6 months**	**3000**	
Hydraulic oil	Testing hydraulic oil by oil sample; if contaminated, replace hydraulic oil or clean via bypass filtering.								x						
Hydraulic hose lines and gaskets	Exchange of hydraulic hose lines and gaskets on hydraulic cylinders for safety reasons, even if no defects are apparent.										x				
Gear motor	Gear motor oil change												**3 years**	**10000**	
Pneumatic slide	Check the silencer and clean if necessary								x						
Pneumatic slide	Check the pneumatic cylinder. Replace the sealing or the pneumatic cylinder if necessary.					x									
Engine	Check oil and oil level. Check running noise for possible bearing damage. cisual inspection of the seals for leackage. Check that all scre plugs, any oil sight glass, the breather valve ant the gear unit cover screws are tight. For gear units with a torque arm: check and replace the rubber buffers, if necessary.												**6 months**	**3000**	
Gear oil	Change mineral oil. Replace bearing grease. replace oil seal.										x				
Syntetic oil	Change syntetic oil. Replace bearing grease. Replace oil seal.								x						
Gearbox	Touch up or renew the surfaces / anti-corrosion coating.								x						
Motor brake	Measure the working air gab. Inspect the switch contacts and replace them, if necessary. Measuring the brake disk thickness. Check brake disk, lining. Measure and set working air gap. Check pressure plate. Check driver/gearing. Check pressure rings. Suck of any abrasion. Inspect the switch contacts and replace them, if necessary.													**3000**	
Motor	Check rolling gearing and change if necessary. Replace the oul seal Clean the cooling air ducts.													**10000**	

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
Drive	Touch up or renew the surface/anti-corrosion coating. Check and clean the air filter. If applicable, clean condensation drain hole at the bottom of the fan guard. Clean clogged bores.							x							
Connection cable	Check for damage and replace if necessary.					x									
Hydraulic cover 1 Manufacturer: Huning Anlagenbau GmbH & Co. KG; Hydraulische Abdeckung Feeding System															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
Positioning sensors	Check condition and function of the positioning sensors			x											
Hydraulic system	Check the hydraulic system for leaks (hydraulic screw connections, hydraulic cylinder, hydraulic unit, hydraulic lines)			x											
Joints	Lubricate			x											
Sealing kit of the hydraulic arms	Replace										x				

Disintegrating roller 1
Manufacturer: Huning Anlagenbau GmbH & Co. KG; Auflockerungswelle

Feeding system

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
Bearings	Lubricate the bearings on the break-up shaft.					x									
Total unit	Perform visual inspection of the material thickness of the spiral thread, gear motors, cover, plastic cladding, wear rails							x							
Gear unit	Check oil and oil level. check running noise for possible bearing damage. visual inspection of the seals for leakage. check that all screw plugs, any oil sight glass, the breather valve and the gear unit cover scres are thight. for gear units with a torque arm: check and replace the rubber buffers, if necessary.												**6 months**	**3000**	
Tension spring	Renew								x						
Loosening tool (screw helix)	Check and renew if necessary.					x									
Gear oil	Change mineral oil. Replace bearing grease. replace oil seal.										x				
Syntetic oil	Change syntetic oil. Replace bearing grease. Replace oil seal.								x						
Gearbox	Touch up or renew the surfaces / anti-corrosion coating.								x						
Motor brake	Measure the working air gab. Inspect the switch contacts and replace them, if necessary. Measuring the brake disk thickness. Check brake disk, lining. Measure and set working air gap. Check pressure plate. Check driver/gearing. Check pressure rings. Suck of any abrasion. Inspect the switch contacts and replace them, if necessary.													**3000**	
Motor	Check rolling gearing and change if necessary. Replace the oul seal Clean the cooling air ducts.													**10000**	
Drive	Touch up or renew the surface/anti-corrosion coating. Check and clean the air filter. If applicable, clean condensation drain hole at the bottom of the fan guard. Clean clogged bores.							x							
Connection cable	Check for damage and replace if necessary.					x									

Disintegrating roller 2
Manufacturer: Huning Anlagenbau GmbH & Co. KG; Auflockerungswelle

Feeding System

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
Bearings	Lubricate the bearings on the break-up shaft.					x									
Total unit	Perform visual inspection of the material thickness of the spiral thread, gear motors, cover, plastic cladding, wear rails							x							
Gear unit	Check oil and oil level. check running noise for possible bearing damage. visual inspection of the seals for leakage. check that all screw plugs, any oil sight glass, the breather valve and the gear unit cover scres are thight. for gear units with a torque arm: check and replace the rubber buffers, if necessary.												**6 months**	**3000**	
Tension spring	Renew								x						
Loosening tool (screw helix)	Check and renew if necessary.					x									
Gear oil	Change mineral oil. Replace bearing grease. replace oil seal.										x				
Syntetic oil	Change syntetic oil. Replace bearing grease. Replace oil seal.								x						
Gearbox	Touch up or renew the surfaces / anti-corrosion coating.								x						
Motor brake	Measure the working air gab. Inspect the switch contacts and replace them, if necessary. Measuring the brake disk thickness. Check brake disk, lining. Measure and set working air gap. Check pressure plate. Check driver/gearing. Check pressure rings. Suck of any abrasion. Inspect the switch contacts and replace them, if necessary.													**3000**	
Motor	Check rolling gearing and change if necessary. Replace the oul seal Clean the cooling air ducts.													**10000**	
Drive	Touch up or renew the surface/anti-corrosion coating. Check and clean the air filter. If applicable, clean condensation drain hole at the bottom of the fan guard. Clean clogged bores.							x							
Connection cable	Check for damage and replace if necessary.					x									

Disintegrating roller 3
Manufacturer: Huning Anlagenbau GmbH & Co. KG; Auflockerungswelle

Feeding System

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
Bearings	Lubricate the bearings on the break-up shaft.					x									
Total unit	Perform visual inspection of the material thickness of the spiral thread, gear motors, cover, plastic cladding, wear rails							x							
Gear unit	Check oil and oil level. check running noise for possible bearing damage. visual inspection of the seals for leakage. check that all screw plugs, any oil sight glass, the breather valve and the gear unit cover scres are thight. for gear units with a torque arm: check and replace the rubber buffers, if necessary.												**6 months**	**3000**	
Tension spring	Renew								x						
Loosening tool (screw helix)	Check and renew if necessary.					x									
Gear oil	Change mineral oil. Replace bearing grease. replace oil seal.										x				
Syntetic oil	Change syntetic oil. Replace bearing grease. Replace oil seal.								x						
Gearbox	Touch up or renew the surfaces / anti-corrosion coating.								x						
Motor brake	Measure the working air gab. Inspect the switch contacts and replace them, if necessary. Measuring the brake disk thickness. Check brake disk, lining. Measure and set working air gap. Check pressure plate. Check driver/gearing. Check pressure rings. Suck of any abrasion. Inspect the switch contacts and replace them, if necessary.													**3000**	
Motor	Check rolling gearing and change if necessary. Replace the oul seal Clean the cooling air ducts.													**10000**	
Drive	Touch up or renew the surface/anti-corrosion coating. Check and clean the air filter. If applicable, clean condensation drain hole at the bottom of the fan guard. Clean clogged bores.							x							
Connection cable	Check for damage and replace if necessary.					x									

Discharge screw conveyor 1
Manufacturer: Huning Anlagenbau GmbH & Co. KG; spiral worm SP-460

Feeding system

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
Felt ring seal	Visual inspection of the felt ring seal of the shaft sealing ring.							x							
Total unit	Visual inspection for externally visible defects (e.g. wiring, covers) Clean in case of coarse soiling.					x									
Screw and terminal connections	Inspection of all screw and terminal connections to ensure that they are firmly seated as machine is exposed to vibrations.						x								
Total unit	Perform visual inspection of the inner and outer parts for integrity; spiral thread, gear motors, cover, plastic cladding, wear rails.							x							
Connection cable	Check for damage and replace if necessary.					x									
Drive	Touch up or renew the surface/anti-corrosion coating. Check and clean the air filter. If applicable, clean condensation drain hole at the bottom of the fan guard. Clean clogged bores.							x							
Gear oil	Change mineral oil. Replace bearing grease. replace oil seal.										x				
Syntetic oil	Change syntetic oil. Replace bearing grease. Replace oil seal.								x						
Gearbox	Touch up or renew the surfaces / anti-corrosion coating.								x						
Motor brake	Measure the working air gab. Inspect the switch contacts and replace them, if necessary. Measuring the brake disk thickness. Check brake disk, lining. Measure and set working air gap. Check pressure plate. Check driver/gearing. Check pressure rings. Suck of any abrasion. Inspect the switch contacts and replace them, if necessary.													**3000**	
Motor	Check rolling gearing and change if necessary. Replace the oul seal Clean the cooling air ducts.													**10000**	

Troughed belt Manufacturer: Apullma Maschinenfabrik A.Pulsfort Gmbh & Co. KG; MB800/9-VA Feeding system															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
Conveyor belt	Cleaning (Only use non-fibrous cleaning wipes for cleaning work)			x											
Electrical equipment	Check the electrical equipment of the machine regularly. Remove loose connections and damaged cables immediately					x									
Motor	Check oil and oil level. Check running noise for possible bearing damage. Visual inspection of the seals for leakage. Check that all screw plugs, any oil sight glass, the breather valve and the gear uinit cover screws are tight. For gear units with a torque arm: Check and replace the rubber buffers, if necessary												**6 months**	**3000**	
Gear oil	Change mineral oil. Replace bearing grease. replace oil seal.										x				
Syntetic oil	Change syntetic oil. Replace bearing grease. Replace oil seal.								x						
Gearbox	Touch up or renew the surfaces / anti-corrosion coating.								x						

Magnetic conveyor
Manufacturer: Apullma Maschinenfabrik A.Pulsfort Gmbh & Co. KG; FBMA 800/2-VA

Feeding system

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
Conveyor belt	Cleaning (Only use non-fibrous cleaning wipes for cleaning work)			x											
Electrical equipment	Check the electrical equipment of the machine regularly. Remove loose connections and damaged cables immediately					x									
Motor	Check oil and oil level. Check running noise for possible bearing damage. Visual inspection of the seals for leakage. Check that all screw plugs, any oil sight glass, the breather valve and the gear uinit cover screws are tight. For gear units with a torque arm: Check and replace the rubber buffers, if necessary												**6 months**	**3000**	
Gear oil	Change mineral oil. Replace bearing grease. replace oil seal.										x				
Syntetic oil	Change syntetic oil. Replace bearing grease. Replace oil seal.								x						
Gearbox	Touch up or renew the surfaces / anti-corrosion coating.								x						
Conveyor belt	Cleaning (Only use non-fibrous cleaning wipes for cleaning work)			x											
Electrical equipment	Check the electrical equipment of the machine regularly. Remove loose connections and damaged cables immediately					x									
Motor	Check oil and oil level. Check running noise for possible bearing damage. Visual inspection of the seals for leakage. Check that all screw plugs, any oil sight glass, the breather valve and the gear uinit cover screws are tight. For gear units with a torque arm: Check and replace the rubber buffers, if necessary												**6 months**	**3000**	
Gear oil	Change mineral oil. Replace bearing grease. replace oil seal.										x				
Syntetic oil	Change syntetic oil. Replace bearing grease. Replace oil seal.								x						
Gearbox	Touch up or renew the surfaces / anti-corrosion coating.								x						

Discharge screw conveyor 2
Manufacturer: Huning Anlagenbau GmbH & Co. KG; spiral worm SP-460

Feeding system

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Felt ring seal	Visual inspection of the felt ring seal of the shaft sealing ring.							x							
Total unit	Visual inspection for externally visible defects (e.g. wiring, covers) Clean in case of coarse soiling.					x									
Screw and terminal connections	Inspection of all screw and terminal connections to ensure that they are firmly seated as machine is exposed to vibrations.						x								
Total unit	Perform visual inspection of the inner and outer parts for integrity; spiral thread, gear motors, cover, plastic cladding, wear rails.							x							
Connection cable	Check for damage and replace if necessary.					x									
Drive	Touch up or renew the surface/anti-corrosion coating. Check and clean the air filter. If applicable, clean condensation drain hole at the bottom of the fan guard. Clean clogged bores.							x							
Gear oil	Change mineral oil. Replace bearing grease. replace oil seal.										x				
Syntetic oil	Change syntetic oil. Replace bearing grease. Replace oil seal.								x						
Gearbox	Touch up or renew the surfaces / anti-corrosion coating.								x						
Motor brake	Measure the working air gab. Inspect the switch contacts and replace them, if necessary. Measuring the brake disk thickness. Check brake disk, lining. Measure and set working air gap. Check pressure plate. Check driver/gearing. Check pressure rings. Suck of any abrasion. Inspect the switch contacts and replace them, if necessary.													**3000**	
Motor	Check rolling gearing and change if necessary. Replace the oul seal Clean the cooling air ducts.													**10000**	

Hammermill
Manufacturer: Huning Anlagenbau GmbH & Co. KG; Optimatic

Feeding System

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
Total unit	Visual inspection for externally visible defects (housing, cover, coupling, screw connection)			x											
Rotor blades	Checking the rotor with beater bolts, impact plates and beaters or blades												**1 weeks**	**30**	
Motor	Checking the condition and function of the motor					x									
Plastic lining	Check trough plastic lining for wear							x							
Beaters or blades, spacer rings, beater	Check and replace if necessary					x									
Coupling packing	Check and replace if necessary					x									
Impact plates	Check and replace if necessary					x									
Trough plastic lining	Check and replace if necessary					x									
Motor	Check whether the motor runs vibration-free and generates abnormal noises.			x											
V-belts	Check tensile stress			x											
Motor	Cleaning of dust, dirt, oil, etc. Cooling air supply must not be blocked or constricted.			x											
Ball bearing	Check, relubricate, replace if necessary.													**20000**	

Discharge screw conveyor 3
Manufacturer: Huning Anlagenbau GmbH & Co. KG; spiral worm SP-460

Feeding system

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
Motor	Check rolling gearing and change if necessary. Replace the oul seal Clean the cooling air ducts.													**10000**	
Felt ring seal	Visual inspection of the felt ring seal of the shaft sealing ring.							**x**							
Total unit	Visual inspection for externally visible defects (e.g. wiring, covers) Clean in case of coarse soiling.					**x**									
Screw and terminal connections	Inspection of all screw and terminal connections to ensure that they are firmly seated as machine is exposed to vibrations.						**x**								
Total unit	Perform visual inspection of the inner and outer parts for integrity; spiral thread, gear motors, cover, plastic cladding, wear rails.							**x**							
Connection cable	Check for damage and replace if necessary.					**x**									
Drive	Touch up or renew the surface/anti-corrosion coating. Check and clean the air filter. If applicable, clean condensation drain hole at the bottom of the fan guard. Clean clogged bores.							**x**							
Gear oil	Change mineral oil. Replace bearing grease. replace oil seal.										**x**				
Syntetic oil	Change syntetic oil. Replace bearing grease. Replace oil seal.								**x**						
Gearbox	Touch up or renew the surfaces / anti-corrosion coating.								**x**						
Motor brake	Measure the working air gab. Inspect the switch contacts and replace them, if necessary. Measuring the brake disk thickness. Check brake disk, lining. Measure and set working air gap. Check pressure plate. Check driver/gearing. Check pressure rings. Suck of any abrasion. Inspect the switch contacts and replace them, if necessary.													**3000**	

Hydraulic unit Manufacturer: Laimer Hydraulik GmbH; H0703193 - 7,5 kW Feeding System															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Leak	Check for leaks, especially at connection transitions.		x												
Total unit	Check for abnormal noise		x												
Hydraulic connections	Check for tight fit		x												
Flexible tube connections	Visual check for leaks and tight fit		x												
Heatexchanger	Check, clean if necessary. Check cooling circuit for functionality.		x												
Hydraulic fluid	Check and refill if necessary. Use the manufacturer's user manual for this purpose.					x									
Operating conditions	Check pressure, temperature, gas pressure in the storage tank. Observe the manufacturer's user manual.					x									
Total unit	Clean from dirt and impurities.					x									
Service check	Have it carried out by qualified personnel. Observe the manufacturer's user manual.							x							
Hydraulic oil	Testing hydraulic oil by oil sample; if contaminated, replace hydraulic oil or clean via bypass filtering.								x						
Mixing pump Manufacturer: Pumpenfabrik Wangen GmbH; KL80R 165.0 Feeding System															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Base frame	Retighten the screws and nuts for fastening the machine on the base and the bolts to the foundation											**50 h**			
Stator	Check stator. Replace when worn (depending on plant and wear)			x											
Rotor	Check rotor. Replace when worn (depending on plant and wear)			x											
Joint	Check joint. Replace when worn (depending on plant and wear)			x											
Shaft sealing	Check shaft sealing for leakage, replace in case of permanent leakage			x											
Motor	Check oil and oil level. Check running noise for possible bearing damage. Visual inspection of the seals for leakage. Check that all screw plugs, any oil sight glass, the breather valve and the gear uinit cover screws are tight. For gear units with a torque arm: Check and replace the rubber buffers, if necessary												**6 months**	**3000**	
Gear oil	Change mineral oil. Replace bearing grease. replace oil seal.										x				
Syntetic oil	Change syntetic oil. Replace bearing grease. Replace oil seal.								x						
Gearbox	Touch up or renew the surfaces / anti-corrosion coating.								x						
Substrate pipes Manufacturer: Hans-Jürgen Keil Anlagenbau GmbH & Co.KG; Substratleitungen Substrate distribution															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Gaskets	Check for leaks						x								
Flanges and pipe connections	Check the screw connections of the flanges for tightness.					x									

Substrate distributor Manufacturer: WZ - Verteiler GmbH; Substrate distribution															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
Flanges and pipe connections	Visual inspection Leaks for leaks; check screw connections of flanges for tightness			x											
Flanges and pipe connections	Tighten the screw connections of the flanges; tighten the pipe screw connections.						x								
Gaskets	Check for leaks by visual inspection						x								
Valve Manufacturer: EBRO ARMATUREN Gebr.Bröer GmbH; Handrad/-hebelschieber WB/WB11 Substrate distribution															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
Entire substrate slider	Check for pressure tightness, leakage of liquid		x												
Entire substrate slider	Check function			x											
Pneumatic valve Manufacturer: EBRO ARMATUREN Gebr.Bröer GmbH; Pneumatikschieber WB/WB11 Substrate distribution															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
Screws	Retighten screws after commissioning	x													
Seal and gland packing	Regularly check for leak tightness, replacement according to wear off. Replace if necessary					x									
Entire unit	Visual inspection		x												
Pneumatic cylinder / protective cover	Visual / acoustical inspection (replace damaged or broken parts if necessary)		x												
Compressed air line	Visual / acoustical inspection (replace damaged or broken parts if necessary)		x												
Entire unit	Functionality test				x										
Pistons, bearings	Visual inspection				x										
Plate slider	Check for pressure tightness, leakage of liquid (replace damaged or broken parts if necessary)		x												
Drain ball valve / flushing nozzle Manufacturer: MSP Armaturen GmbH & Co. KG; MSP-AB-10-064-IG Substrate distribution															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
Entire substrate slider	Check function			x											
Entire substrate slider	Check for pressure tightness, leakage of liquid		x												

Central pump 1
Manufacturer: Pumpenfabrik Wangen GmbH; KL65S 125.0

Substrate distribution

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Base frame	Retighten the screws and nuts for fastening the machine on the base and the bolts to the foundation											**50 h**			
Stator	Check stator. Replace when worn (depending on plant and wear)			**x**											
Rotor	Check rotor. Replace when worn (depending on plant and wear)			**x**											
Joint	Check joint. Replace when worn (depending on plant and wear)			**x**											
Shaft sealing	Check shaft sealing for leakage, replace in case of permanent leakage			**x**											
Motor	Remove dust from the surface			**x**											
Motor	Clean and grease rolling bearings (every 5 years for horizontal installation of motor, observe manufacturers specifications)													**5000**	
motor - roller bearings	Check and replace if necessary													**10000**	
motor - roller bearings	Remove shaft sealing rings													**10000**	
Electrical connections	Check connections and cables													**10000**	
Motor fan	Check for strength and damage													**10000**	
Electrical connections	Check connections and cables													**10000**	
Gear unit	Check oil and oil level													**3000**	
Gear unit	Check running noises													**3000**	
Gear unit	Visual inspection of the seals for leakage													**3000**	
Gear unit	For gearboxes with three-phase current support: Check rubber buffer, replace if necessary													**3000**	
Gear unit	Change mineral oil										**x**				
Gear unit	Replace rolling bearing grease (recommended)										**x**				
Gear unit	Replace shaft seal (do not reinstall on the same running track)										**x**				

Central pump 2 Manufacturer: Pumpenfabrik Wangen GmbH; KL65S 125.0 Substrate distribution															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Base frame	Retighten the screws and nuts for fastening the machine on the base and the bolts to the foundation											**50 h**			
Stator	Check stator. Replace when worn (depending on plant and wear)			x											
Rotor	Check rotor. Replace when worn (depending on plant and wear)			x											
Joint	Check joint. Replace when worn (depending on plant and wear)			x											
Shaft sealing	Check shaft sealing for leakage, replace in case of permanent leakage			x											
Motor	Remove dust from the surface			x											
Motor	Clean and grease rolling bearings (every 5 years for horizontal installation of motor, observe manufacturers specifications)													**5000**	
motor - roller bearings	Check and replace if necessary													**10000**	
motor - roller bearings	Remove shaft sealing rings													**10000**	
Electrical connections	Check connections and cables													**10000**	
Motor fan	Check for strength and damage													**10000**	
Electrical connections	Check connections and cables													**10000**	
Gear unit	Check oil and oil level													**3000**	
Gear unit	Check running noises													**3000**	
Gear unit	Visual inspection of the seals for leakage													**3000**	
Gear unit	For gearboxes with three-phase current support: Check rubber buffer, replace if necessary													**3000**	
Gear unit	Change mineral oil										x				
Gear unit	Replace rolling bearing grease (recommended)										x				
Gear unit	Replace shaft seal (do not reinstall on the same running track)										x				
Central pump 3 Manufacturer: Vogelsang GmbH & Co. KG; VX186-130Q Substrate distribution															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Grease nipples	Lubricate grease nipples														
Screws for fastening the pump connectors	Retighten the screws for fastening the pump connectors											**20 h**		**2000**	
Entire unit	Retighten the screws and nuts for fastening the motor and the machine on the base											**20 h**		**2000**	
Coupling guard	Check fixed screw connection of coupling guard (base C)											**20 h**		**2000**	
Buffer or quenching fluid	Check the buffer or quenching fluid											**20 h**		**200**	
Gear oil	Change gear oil											**20 h**		**2000**	
Gear oil	Check gear oil													**500**	
Coupling	Check pump/motor (coupling) orientation (base C)													**2000**	
Buffer or quenching fluid	Change the buffer or quenching fluid													**2000**	
Entire unit	Retighten the screws and nuts for fastening the machine (without base)											**20 h**		**2000**	

Rota-cut
Manufacturer: Vogelsang GmbH & Co. KG; Rota-Cut RCX-58G

Substrate distribution

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Screws	Tighten the screws for the base											**20 h**			
Screws	Tighten the screws for the base													**200**	
Buffer fluid	Check the buffer fluid											**20 h**		**200**	
Sealing liquid	Change													**2000**	
Rota-Cut pot	Visual inspection for wear and corrosion (In case of decrease of the wall thickness by more than 1 mm the pot should be replaced)					**x**									
Rota-Cut pot	Remove foreign matter from the RotaCut pot and clean it. The foreign objects can be removed via the cleaning opening.			**x**											
Cutting blades	Check after long breakes from operation the cutting blades in the blade rotor for movability. Clean and lubricate if necessary				**x**										
Pressure transmission unit	Check oil level, change if necessary when it is dirty					**x**									
Pressure transfer unit	Change oil													**4000**	
Motor	Check the motor for unusual running noises and vibrations			**x**											
Motor - roller bearings	Check, replace if necessary													**10000**	
Electrical connections	Check the connections and cables													**10000**	
Motor fan	Check for strength and damage													**10000**	
Motor	Check the surface of the motor for dust deposits and clean it if necessary			**x**											
Motor	General overhaul (carried out by a specialist)													**40000**	
Cutting blades	Check the wear value! If the wear value is near 0%, the cutting blades must be replaced			**x**											

Separator
Manufacturer: Börger GmbH; Bioselect RC150 HP

Substrat distribution

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
External surfaces	Check the surfaces, clean if necessary			**x**											
Adjustment mechanism	Cleaning and lubricating the adjustment mechanism					**x**									
Column filter tube	Check for contamination and blockages.			**x**											
Entire unit	Visual inspection for leaks, replace seals if necessary		**x**												
Entire unit	Check function and quantity/quality of the mass. If the mass is of poor quality, adjust operating parameters and replace defective parts if necessary.		**x**												
Entire unit	Check separator and attachments for tightness and						**x**								
Quentch liquid	Check the level of the quench liquid in the intermediate chamber and replace if necessary						**x**								
Lubricant	Change lubricant									**x**					
Motor	Check for unusual noises and vibrations			**x**											
roller bearings	Check the roller bearings, replace if damaged and worn if necessary													**10000**	
Electrical connections and cables	Check for fit and integrity													**10000**	
Insulation	Check the function of the insulation system				**x**										
Shaft seal	Renew shaft seal													**10000**	
Motor surface	Check the surface and radiator fins of the engine for deposits and dirt. Cleaning as required					**x**									
Motor	General overhaul of the drive motor								**x**						

Component	test	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Clean pump Manufacturer: Vogelsang GmbH & Co. KG; VX186-130Q Substrate distribution															
Grease nipples	Lubricate grease nipples														
Screws for fastening the pump connectors	Retighten the screws for fastening the pump connectors											**20 h**		**2000**	
Entire unit	Retighten the screws and nuts for fastening the motor and the machine on the base											**20 h**		**2000**	
Coupling guard	Check fixed screw connection of coupling guard (base C)											**20 h**		**2000**	
Buffer or quenching fluid	Check the buffer or quenching fluid											**20 h**		**200**	
Gear oil	Change gear oil											**20 h**		**2000**	
Gear oil	Check gear oil													**500**	
Coupling	Check pump/motor (coupling) orientation (base C)													**2000**	
Buffer or quenching fluid	Change the buffer or quenching fluid													**2000**	
Entire unit	Retighten the screws and nuts for fastening the machine (without base)											**20 h**		**2000**	
Liquid phase pump separator Manufacturer: Vogelsang GmbH & Co. KG; VX186-130Q Substrate distribution															
Grease nipples	Lubricate grease nipples														
Screws for fastening the pump connectors	Retighten the screws for fastening the pump connectors											**20 h**		**2000**	
Entire unit	Retighten the screws and nuts for fastening the motor and the machine on the base											**20 h**		**2000**	
Coupling guard	Check fixed screw connection of coupling guard (base C)											**20 h**		**2000**	
Buffer or quenching fluid	Check the buffer or quenching fluid											**20 h**		**200**	
Gear oil	Change gear oil											**20 h**		**2000**	
Gear oil	Check gear oil													**500**	
Coupling	Check pump/motor (coupling) orientation (base C)													**2000**	
Buffer or quenching fluid	Change the buffer or quenching fluid													**2000**	
Entire unit	Retighten the screws and nuts for fastening the machine (without base)											**20 h**		**2000**	
Extraction pump Manufacturer: Vogelsang GmbH & Co. KG; VX186-130Q Substrate distribution															
Grease nipples	Lubricate grease nipples														
Screws for fastening the pump connectors	Retighten the screws for fastening the pump connectors											**20 h**		**2000**	
Entire unit	Retighten the screws and nuts for fastening the motor and the machine on the base											**20 h**		**2000**	
Coupling guard	Check fixed screw connection of coupling guard (base C)											**20 h**		**2000**	
Buffer or quenching fluid	Check the buffer or quenching fluid											**20 h**		**200**	
Gear oil	Change gear oil											**20 h**		**2000**	
Gear oil	Check gear oil													**500**	
Coupling	Check pump/motor (coupling) orientation (base C)													**2000**	
Buffer or quenching fluid	Change the buffer or quenching fluid													**2000**	
Entire unit	Retighten the screws and nuts for fastening the machine (without base)											**20 h**		**2000**	

Pump Mixing pit Manufacturer: Franz Eisele u. Söhne GmbH & Co. KG; AT 44F - AT 304S Substrate distribution															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Motor cable	Check for damage and porosity							x							
Oil	Check oil level and oil quality												6 months	500	
Motor	Visual and acoustic test						x								
oil	Change oil												2 years	1000	
Screw connections	Check all screw connections for tightness							x				20 h			
Entire unit	Check for contamination, corrosion and function					x									
Collection pit Manufacturer: BioConstruct GmbH; Sammelschacht Substrate distribution															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Condensate pit	Check, clean if necessary					x									
Ring seals	Visual inspection of the tightness					x									
Condensate level	Check min.-max alarm threshold (min. = Above submersible pump, max. = Below siphon tube)					x									
Check valve	Functional test					x									
Collection pit pump 1 Manufacturer: Heide-Pumpen GmbH; Turbo 35F Substrate distribution															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Insulation resistance	Messung des Isolationswiderstands					x									
Load current	Measurement of the load current (comparison with the specified nominal current of the pump)					x									
Voltage measurement	Voltage measurement (tolerance = ±5% of the specified voltage)					x									
Propellers	Inspection of the propeller (if the throughput capacity is lost, the propeller is worn out)					x									
Entire pump	Overhaul of the entire pump (5 years under normal conditions). Under extreme conditions the pump must be overhauled earlier.									x					
Collection pit pump 2 Manufacturer: Heide-Pumpen GmbH; Turbo 35F Substrate distribution															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Insulation resistance	Messung des Isolationswiderstands					x									
Load current	Measurement of the load current (comparison with the specified nominal current of the pump)					x									
Voltage measurement	Voltage measurement (tolerance = ±5% of the specified voltage)					x									
Propellers	Inspection of the propeller (if the throughput capacity is lost, the propeller is worn out)					x									
Entire pump	Overhaul of the entire pump (5 years under normal conditions). Under extreme conditions the pump must be overhauled earlier.									x					

Collection pit pump 3 Manufacturer: Heide-Pumpen GmbH; Turbo 35F Substrage distribution															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
Insulation resistance	Messung des Isolationswiderstands					x									
Load current	Measurement of the load current (comparison with the specified nominal current of the pump)					x									
Voltage measurement	Voltage measurement (tolerance = ±5% of the specified voltage)					x									
Propellers	Inspection of the propeller (if the throughput capacity is lost, the propeller is worn out)					x									
Entire pump	Overhaul of the entire pump (5 years under normal conditions). Under extreme conditions the pump must be overhauled earlier.									x					
Concrete tank Manufacturer: Wolf System GmbH; Betonbehälter Tanks															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
Concrete tanks	Check general condition of tank cladding, insulation and cladding openings					x									
Concrete tanks	Visual inspection for leaks			x											
Coating inside wall surface	Check for wear and damage.								x						
Gas storage roof Manufacturer: Baur Folien GmbH; DMGS Tanks															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
Blower and auxiliary devices	Check function visual and audible, check soiling of suction opening and rotation direction		x												
Blower and auxiliary devices	Check Pressure, delivery volume of Measurement devices								x						
Blower and auxiliary devices	Audible Check bearings Cleaning of impeller Audible / Visible Check valve function Exhaust air damper wear Free movement of eyhaust air damper Visual Spiral hose attachment, impermeability						x								
Blower and auxiliary devices	Measure mehtane contained in of support air				x										
Compressed air connections	Functional check of pressure switch, pressure reducer and impermeability						x								
Clamp hose and attachment to container coping	Check operating pressure Check for impermeability		x												
Clamp hose and attachment to container coping	Check for damage Check for correct positioning								x						
Clamping rail	Check for impermeability Check for effective clamping								x						
Fill-level measurement	Visual and functional check of Rope, Rope guide, for free movement, wear						x								
Films	Visual check for damage								x						
Antibalance tabs	Visual check of substructure, intermediate support, net, belt								x						

Over-under pressure valve Manufacturer: Baur Folien GmbH; ÜUDS 150 V2 Tanks															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Excess/low pressure safeguard	Check for soiling and internal blockage		x												
Excess/low pressure safeguard	Check sealing liquids fill level		x												
Excess/low pressure safeguard	Function test		x												
Antifreeze	Check the antifreeze content in the sealing liquid. Check whether heating is switched on. Check free movement.		x												
Screw connections and fixing parts	Check for secure fitting							x							
Tank connection	Check for tightness and any leaks							x							
Entire unit	Clean with water and detergent as required							x							
Gas pressure	Observe the gas pressure and take measures to reduce it if the pressure is too high.		x												
Heating	If ,have it serviced by authorized personnel. Observe the manufacturer's user manual.								x						
Total unit	Service and clean overpressure safety device. Observe the maintenance instructions in the operating instructions!							x					**1 years**		
Blower air roof Manufacturer: Baur Folien GmbH; DNG 4-14S Tanks															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Blower	Check function visual and audible		x												
Blower	Discharge condensed water			x											
Blower	Check rotation direction (at the comissioning and whenever switching on)	x		x											
Bearing	Audible check						x								
Impellor	Clean the fan grille/intake opening and impellor						x								
Ball bearings	Replace (manufacturer or authorized company, not later than 18,000 operating hours)									x					
Check valve	Visual and audible check						x								
Exhaust air damper	Visual check of wear						x								
Exhaust air damper	Funtion check of the free movement						x								
Spiral hose	Visual check attachment, impermeability						x								
Blower	Visual inspection for corrosion						x								
Sight glasses Manufacturer: Max Müller AG; SG-Armatur Tanks															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Inspection glasses	Check if the inspection glasses are dirty. Clean glasses if necessary			x											
Ring seals	Check for tightness						x								

GRP Tank
Manufacturer: Polem B.V.; TVV 13/35/67

Tanks

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
Warning shields, pictograms, technical documentation	Inspection of warning signs, pictograms, manuals and technical documentation. In the event of damage or illegibility, they must be replaced immediately.								x						
Supporting construction	Check the fixing screws, the frame and the foundation. After a severe storm or earthquake, all tank fastenings must be thoroughly checked.			x											
Railings and connecting bridges	Check fastening. Tighten screw connections if necessary.					x									
Corrosion	Inspection of all steel parts for corrosion and damage to welds. Also check hot-dip galvanized parts.					x									
Surface	Check the surface – inside and outside – for hair cracks and possible damage caused by chemical effects.					x									
Filters and sieves	Cleaning. If cleaning is no longer possible, these must be replaced.					x									
Venting pipes and pressure equalizing valves	Check functionality					x									
anti-slip coating on the roof	Check function and repair if necessary								x						
Seals	Seals of inspection hatches, valves and other parts. Parts that are exposed to the fluid or its vapours must be checked for their chemical resistance.	x													
Fastening of cables and pipes	Check					x									
General leakage	Visual check for leaks and leakage. Tighten screw and flange connections if necessary.			x											

Pasteurization tank
Manufacturer: Reiner Schmitt GmbH Brennereitechnik; Pasteurisation tank

Tanks

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
Screw connections	Check for tight fit							x							
Bottom bearing	Check if there is no play					x									
Motor oil level	Check oil level							x							
Agitator shaft, propeller	Clean if necessary														
Agitator shaft bearing (motor side)	Lubricate			x											
Heating coil	Remove deposits					x									

Central mixer pasteurization tank 1
Manufacturer: Reiner Schmitt GmbH Brennereitechnik; Rührwerk für Hygenisierungsbehälter

Tanks

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
BE brake	Check: Measuring the brake disk thickness, brake disk lining, measure and set working air gap, pressure plate, driver/gearing, pressure rings, sucking off any abrasion, inspet the switch contacts and replace them, if necessary (e.g. in case of burn-out)													**3000**	
Motor	Check rolling bearing and change if necessary replace the oil seal clean cooling air ducts													**10000**	
Drive	Touch up or renew the surfaces/anti-corrosion coating. If applicable, clean condensation drain hole at the bottom of the fan guard. Clean clogged bores.								**x**						
Closing plug	If no manuel brake release is installed. Exchange durring each disassembly.													**10000**	
Oil seal at non-input end	Exchange													**10000**	
Backstop sealing ring	Check the sealing ring seat for corrosion. Replace brake, if necessary													**10000**	
O-ring of manuel brake release	Check. Exchange during each disassembly.													**10000**	
Nut / Mounting	SEW-L-Spezial must be replaced durching each inspection or maintenance. Nuts / Mounting rest for the nuts on the magnet body must be replaced durcing each disassembly.													**10000**	
Sealing strip	Check the sealing strip for plastic deformation during each inspection or maintenance and replace it if necessary. It the sealing strip seats show sign of corrosion, replace the brake. After 10.000 operating hours, replace.													**10000**	
Sealing ring incl. manuel brake release seal	Check. Check the sealing ring seat for corrosion. If the seats show signs fof corrosion, replace the brake or the magnet body													**10000**	
Input end oil seal	Check / Replace													**10000**	
Cable bushing stator	Exchange during each disassembly													**10000**	
Stator	Replace at each disassembly													**10000**	
Friction disk brake endshield	Exchange durching each disassembly													**10000**	
Backstop housing brake	Exchange during each disasselbly													**10000**	
Friction disk screwq	Exchange durching each disassembly													**10000**	
Oil - Oil level	check												**6 months**	**3000**	
Bearing	Check running noise for possible braring damage												**6 months**	**3000**	
Leakage	Visual inspection of the seals for leakage												**6 months**	**3000**	
Overall Agitator	Check all screw plugs, any oil sight glass, the breather valve and gear unit cover screws. For gear units with torque arm: Check and replace the rubber buffers, if necessary												**6 months**	**3000**	
Rotational clearance	check													**10000**	
Bearing grease	change													**25000**	

Central mixer pasteurization tank 2
Manufacturer: Reiner Schmitt GmbH Brennereitechnik; Rührwerk für Hygenisierungsbehälter

Tanks

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
BE brake	Check: Measuring the brake disk thickness, brake disk lining, measure and set working air gap, pressure plate, driver/gearing, pressure rings, sucking off any abrasion, inspet the switch contacts and replace them, if necessary (e.g. in case of burn-out)													**3000**	
Motor	Check rolling bearing and change if necessary replace the oil seal clean cooling air ducts													**10000**	
Drive	Touch up or renew the surfaces/anti-corrosion coating. If applicable, clean condensation drain hole at the bottom of the fan guard. Clean clogged bores.								**x**						
Closing plug	If no manuel brake release is installed. Exchange durring each disassembly.													**10000**	
Oil seal at non-input end	Exchange													**10000**	
Backstop sealing ring	Check the sealing ring seat for corrosion. Replace brake, if necessary													**10000**	
O-ring of manuel brake release	Check. Exchange during each disassembly.													**10000**	
Nut / Mounting	SEW-L-Spezial must be replaced durching each inspection or maintenance. Nuts / Mounting rest for the nuts on the magnet body must be replaced durcing each disassembly.													**10000**	
Sealing strip	Check the sealing strip for plastic deformation during each inspection or maintenance and replace it if necessary. It the sealing strip seats show sign of corrosion, replace the brake. After 10.000 operating hours, replace.													**10000**	
Sealing ring incl. manuel brake release seal	Check. Check the sealing ring seat for corrosion. If the seats show signs fof corrosion, replace the brake or the magnet body													**10000**	
Input end oil seal	Check / Replace													**10000**	
Cable bushing stator	Exchange during each disassembly													**10000**	
Stator	Replace at each disassembly													**10000**	
Friction disk brake endshield	Exchange durching each disassembly													**10000**	
Backstop housing brake	Exchange during each disasselbly													**10000**	
Friction disk screwq	Exchange durching each disassembly													**10000**	
Oil - Oil level	check												**6 months**	**3000**	
Bearing	Check running noise for possible braring damage												**6 months**	**3000**	
Leakage	Visual inspection of the seals for leakage												**6 months**	**3000**	
Overall Agitator	Check all screw plugs, any oil sight glass, the breather valve and gear unit cover screws. For gear units with torque arm: Check and replace the rubber buffers, if necessary												**6 months**	**3000**	
Rotational clearance	check													**10000**	
Bearing grease	change													**25000**	

Central mixer pasteurization tank 3
Manufacturer: Reiner Schmitt GmbH Brennereitechnik; Rührwerk für Hygenisierungsbehälter

Tanks

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
BE brake	Check: Measuring the brake disk thickness, brake disk lining, measure and set working air gap, pressure plate, driver/gearing, pressure rings, sucking off any abrasion, inspet the switch contacts and replace them, if necessary (e.g. in case of burn-out)													**3000**	
Motor	Check rolling bearing and change if necessary replace the oil seal clean cooling air ducts													**10000**	
Drive	Touch up or renew the surfaces/anti-corrosion coating. If applicable, clean condensation drain hole at the bottom of the fan guard. Clean clogged bores.								**x**						
Closing plug	If no manuel brake release is installed. Exchange durring each disassembly.													**10000**	
Oil seal at non-input end	Exchange													**10000**	
Backstop sealing ring	Check the sealing ring seat for corrosion. Replace brake, if necessary													**10000**	
O-ring of manuel brake release	Check. Exchange during each disassembly.													**10000**	
Nut / Mounting	SEW-L-Spezial must be replaced durching each inspection or maintenance. Nuts / Mounting rest for the nuts on the magnet body must be replaced durcing each disassembly.													**10000**	
Sealing strip	Check the sealing strip for plastic deformation during each inspection or maintenance and replace it if necessary. It the sealing strip seats show sign of corrosion, replace the brake. After 10.000 operating hours, replace.													**10000**	
Sealing ring incl. manuel brake release seal	Check. Check the sealing ring seat for corrosion. If the seats show signs fof corrosion, replace the brake or the magnet body													**10000**	
Input end oil seal	Check / Replace													**10000**	
Cable bushing stator	Exchange during each disassembly													**10000**	
Stator	Replace at each disassembly													**10000**	
Friction disk brake endshield	Exchange durching each disassembly													**10000**	
Backstop housing brake	Exchange during each disasselbly													**10000**	
Friction disk screwq	Exchange durching each disassembly													**10000**	
Oil - Oil level	check												**6 months**	**3000**	
Bearing	Check running noise for possible braring damage												**6 months**	**3000**	
Leakage	Visual inspection of the seals for leakage												**6 months**	**3000**	
Overall Agitator	Check all screw plugs, any oil sight glass, the breather valve and gear unit cover screws. For gear units with torque arm: Check and replace the rubber buffers, if necessary												**6 months**	**3000**	
Rotational clearance	check													**10000**	
Bearing grease	change													**25000**	

Large wing mixer 1 fermenter 1
Manufacturer: Steverding Rührwerkstechnik GmbH; Hydromixer

Tanks

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Gear unit	Change gear oil											**100 h**		**2500**	
Bearing	Regrease bearing with 2 strokes					**x**						**100 h**			
Entire unit	Visual inspection for leakages and irregularities		**x**												
Breating screw	Visual inspection for cleanliness of the breathing screw		**x**												
Leakage drain hole	Visual inspection for cleanliness of the leakage drain hole		**x**												
Seal	Regrease seal unit with 5 strokes					**x**									
Gear unit	Check gear unit oil level			**x**											
Leakage drain hole	Clean the leakage drain hole					**x**									
Filling level	Check the level of the medium in the filling level reservoir (optional)			**x**											
Bearing and seal units	Check bearing and seal units through specialised personnel (Within the warranty period, these works must be carried out by specialised personnel and documented in writing otherwise the warranty will expire)								**x**						

Large wing mixer 2 fermenter 1
Manufacturer: Steverding Rührwerkstechnik GmbH; Hydromixer

Tanks

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Gear unit	Change gear oil											**100 h**		**2500**	
Bearing	Regrease bearing with 2 strokes					**x**						**100 h**			
Entire unit	Visual inspection for leakages and irregularities		**x**												
Breating screw	Visual inspection for cleanliness of the breathing screw		**x**												
Leakage drain hole	Visual inspection for cleanliness of the leakage drain hole		**x**												
Seal	Regrease seal unit with 5 strokes					**x**									
Gear unit	Check gear unit oil level			**x**											
Leakage drain hole	Clean the leakage drain hole					**x**									
Filling level	Check the level of the medium in the filling level reservoir (optional)			**x**											
Bearing and seal units	Check bearing and seal units through specialised personnel (Within the warranty period, these works must be carried out by specialised personnel and documented in writing otherwise the warranty will expire)								**x**						

Large wing mixer 1 fermenter 2
Manufacturer: Steverding Rührwerkstechnik GmbH; Hydromixer

Tanks

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Gear unit	Change gear oil											**100 h**		**2500**	
Bearing	Regrease bearing with 2 strokes					**x**						**100 h**			
Entire unit	Visual inspection for leakages and irregularities		**x**												
Breating screw	Visual inspection for cleanliness of the breathing screw		**x**												
Leakage drain hole	Visual inspection for cleanliness of the leakage drain hole		**x**												
Seal	Regrease seal unit with 5 strokes					**x**									
Gear unit	Check gear unit oil level			**x**											
Leakage drain hole	Clean the leakage drain hole					**x**									
Filling level	Check the level of the medium in the filling level reservoir (optional)			**x**											
Bearing and seal units	Check bearing and seal units through specialised personnel (Within the warranty period, these works must be carried out by specialised personnel and documented in writing otherwise the warranty will expire)								**x**						

Large wing mixer 2 fermenter 2
Manufacturer: Steverding Rührwerkstechnik GmbH; Hydromixer

Tanks

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Gear unit	Change gear oil											**100 h**		**2500**	
Bearing	Regrease bearing with 2 strokes					**x**						**100 h**			
Entire unit	Visual inspection for leakages and irregularities		**x**												
Breating screw	Visual inspection for cleanliness of the breathing screw		**x**												
Leakage drain hole	Visual inspection for cleanliness of the leakage drain hole		**x**												
Seal	Regrease seal unit with 5 strokes					**x**									
Gear unit	Check gear unit oil level			**x**											
Leakage drain hole	Clean the leakage drain hole					**x**									
Filling level	Check the level of the medium in the filling level reservoir (optional)			**x**											
Bearing and seal units	Check bearing and seal units through specialised personnel (Within the warranty period, these works must be carried out by specialised personnel and documented in writing otherwise the warranty will expire)								**x**						

Large wing mixer 1 post fermenter
Manufacturer: Steverding Rührwerkstechnik GmbH; Hydromixer

Tanks

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Gear unit	Change gear oil											**100 h**		**2500**	
Bearing	Regrease bearing with 2 strokes					**x**						**100 h**			
Entire unit	Visual inspection for leakages and irregularities		**x**												
Breating screw	Visual inspection for cleanliness of the breathing screw		**x**												
Leakage drain hole	Visual inspection for cleanliness of the leakage drain hole		**x**												
Seal	Regrease seal unit with 5 strokes					**x**									
Gear unit	Check gear unit oil level			**x**											
Leakage drain hole	Clean the leakage drain hole					**x**									
Filling level	Check the level of the medium in the filling level reservoir (optional)			**x**											
Bearing and seal units	Check bearing and seal units through specialised personnel (Within the warranty period, these works must be carried out by specialised personnel and documented in writing otherwise the warranty will expire)								**x**						

Large wing mixer 2 post fermenter
Manufacturer: Steverding Rührwerkstechnik GmbH; Hydromixer

Tanks

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Gear unit	Change gear oil											**100 h**		**2500**	
Bearing	Regrease bearing with 2 strokes					**x**						**100 h**			
Entire unit	Visual inspection for leakages and irregularities		**x**												
Breating screw	Visual inspection for cleanliness of the breathing screw		**x**												
Leakage drain hole	Visual inspection for cleanliness of the leakage drain hole		**x**												
Seal	Regrease seal unit with 5 strokes					**x**									
Gear unit	Check gear unit oil level			**x**											
Leakage drain hole	Clean the leakage drain hole					**x**									
Filling level	Check the level of the medium in the filling level reservoir (optional)			**x**											
Bearing and seal units	Check bearing and seal units through specialised personnel (Within the warranty period, these works must be carried out by specialised personnel and documented in writing otherwise the warranty will expire)								**x**						

Submersible mixer 1 fermenter 1 Manufacturer: Franz Eisele u. Söhne GmbH & Co. KG; GTWSB 204 Tanks															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Winch and wire rope	Check (always keep wire rope tense! Operating Instructions and the wire cable is to be checked for fibrous fractures, pinches and other damage along the complete								x						
Bearing bushing, drum hub, sprocket	Oil / grease (Do not lubricate the brake system!)					x									
Bolt connections	Check / retighten					x									
Motor cable	Check for bends and pinches as wellas for damage			x											
Cable protection system	Checked for damage, pinches, moved or loose clamps etc.			x											
Rope guide	Grease grease nipple, establish gas tightness (after every operation of the winch)			x											
Slewing mechanism	Lubricate (after every operation of the winch)					x									
Oil level	Check (red screw)													**500**	
Mechanical seal	Check													**500**	
Mechanical seal	Change													**3000**	
Gear oil	Change (red screw)													**1000**	
Bearing	Change													**11000**	
Connection cable	Insulation measurement							x							
Motor	Motor inspecrtion; Change components as necessary					x							**500 h**		
Control system, connection and cable	E-Check; Test acc. DIN VDE 0702. Clean, clean inside if necessary. Have defects repaired					x									
Submersible motor	Replace bearing														

Submersible mixer 2 fermenter 1 Manufacturer: Franz Eisele u. Söhne GmbH & Co. KG; GTWSB 204 Tanks															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Winch and wire rope	Check (always keep wire rope tense! Operating Instructions and the wire cable is to be checked for fibrous fractures, pinches and other damage along the complete								x						
Bearing bushing, drum hub, sprocket	Oil / grease (Do not lubricate the brake system!)					x									
Bolt connections	Check / retighten					x									
Motor cable	Check for bends and pinches as wellas for damage			x											
Cable protection system	Checked for damage, pinches, moved or loose clamps etc.			x											
Rope guide	Grease grease nipple, establish gas tightness (after every operation of the winch)			x											
Slewing mechanism	Lubricate (after every operation of the winch)					x									
Oil level	Check (red screw)													**500**	
Mechanical seal	Check													**500**	
Mechanical seal	Change													**3000**	
Gear oil	Change (red screw)													**1000**	
Bearing	Change													**11000**	
Connection cable	Insulation measurement							x							
Motor	Motor inspecrtion; Change components as necessary					x							**500 h**		
Control system, connection and cable	E-Check; Test acc. DIN VDE 0702. Clean, clean inside if necessary. Have defects repaired					x									
Submersible motor	Replace bearing														

Submersible mixer 1 fermenter 2 Manufacturer: Franz Eisele u. Söhne GmbH & Co. KG; GTWSB 204 Tanks															
Component	***test***	**once**	**daily**	**weekly**	**every 2 weeks**	**monthly**	**quarterly**	**half-yearly**	**yearly**	**every 2 years**	**every 3 years**	**first time**	**not later than**	**Interval bsz**	**Maintenance is carried out by:**
Winch and wire rope	Check (always keep wire rope tense! Operating Instructions and the wire cable is to be checked for fibrous fractures, pinches and other damage along the complete								x						
Bearing bushing, drum hub, sprocket	Oil / grease (Do not lubricate the brake system!)					x									
Bolt connections	Check / retighten					x									
Motor cable	Check for bends and pinches as wellas for damage			x											
Cable protection system	Checked for damage, pinches, moved or loose clamps etc.			x											
Rope guide	Grease grease nipple, establish gas tightness (after every operation of the winch)			x											
Slewing mechanism	Lubricate (after every operation of the winch)					x									
Oil level	Check (red screw)													**500**	
Mechanical seal	Check													**500**	
Mechanical seal	Change													**3000**	
Gear oil	Change (red screw)													**1000**	
Bearing	Change													**11000**	
Connection cable	Insulation measurement							x							
Motor	Motor inspecrtion; Change components as necessary					x							**500 h**		
Control system, connection and cable	E-Check; Test acc. DIN VDE 0702. Clean, clean inside if necessary. Have defects repaired					x									
Submersible motor	Replace bearing														

Submersible mixer 2 fermenter 2 Manufacturer: Franz Eisele u. Söhne GmbH & Co. KG; GTWSB 204 Tanks															
Component	***test***	**once**	**daily**	**weekly**	**every 2 weeks**	**monthly**	**quarterly**	**half-yearly**	**yearly**	**every 2 years**	**every 3 years**	**first time**	**not later than**	**Interval bsz**	**Maintenance is carried out by:**
Winch and wire rope	Check (always keep wire rope tense! Operating Instructions and the wire cable is to be checked for fibrous fractures, pinches and other damage along the complete								x						
Bearing bushing, drum hub, sprocket	Oil / grease (Do not lubricate the brake system!)					x									
Bolt connections	Check / retighten					x									
Motor cable	Check for bends and pinches as wellas for damage			x											
Cable protection system	Checked for damage, pinches, moved or loose clamps etc.			x											
Rope guide	Grease grease nipple, establish gas tightness (after every operation of the winch)			x											
Slewing mechanism	Lubricate (after every operation of the winch)					x									
Oil level	Check (red screw)													**500**	
Mechanical seal	Check													**500**	
Mechanical seal	Change													**3000**	
Gear oil	Change (red screw)													**1000**	
Bearing	Change													**11000**	
Connection cable	Insulation measurement							x							
Motor	Motor inspecrtion; Change components as necessary					x							**500 h**		
Control system, connection and cable	E-Check; Test acc. DIN VDE 0702. Clean, clean inside if necessary. Have defects repaired					x									
Submersible motor	Replace bearing														

Submersible mixer 1 post fermenter Manufacturer: Franz Eisele u. Söhne GmbH & Co. KG; GTWSB 204 Tanks															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Winch and wire rope	Check (always keep wire rope tense! Operating Instructions and the wire cable is to be checked for fibrous fractures, pinches and other damage along the complete								x						
Bearing bushing, drum hub, sprocket	Oil / grease (Do not lubricate the brake system!)					x									
Bolt connections	Check / retighten					x									
Motor cable	Check for bends and pinches as wellas for damage			x											
Cable protection system	Checked for damage, pinches, moved or loose clamps etc.			x											
Rope guide	Grease grease nipple, establish gas tightness (after every operation of the winch)			x											
Slewing mechanism	Lubricate (after every operation of the winch)					x									
Oil level	Check (red screw)													**500**	
Mechanical seal	Check													**500**	
Mechanical seal	Change													**3000**	
Gear oil	Change (red screw)													**1000**	
Bearing	Change													**11000**	
Connection cable	Insulation measurement							x							
Motor	Motor inspecrtion; Change components as necessary					x							**500 h**		
Control system, connection and cable	E-Check; Test acc. DIN VDE 0702. Clean, clean inside if necessary. Have defects repaired					x									
Submersible motor	Replace bearing														

Submersible mixer 2 post fermenter Manufacturer: Franz Eisele u. Söhne GmbH & Co. KG; GTWSB 204 Tanks															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Winch and wire rope	Check (always keep wire rope tense! Operating Instructions and the wire cable is to be checked for fibrous fractures, pinches and other damage along the complete								x						
Bearing bushing, drum hub, sprocket	Oil / grease (Do not lubricate the brake system!)					x									
Bolt connections	Check / retighten					x									
Motor cable	Check for bends and pinches as wellas for damage			x											
Cable protection system	Checked for damage, pinches, moved or loose clamps etc.			x											
Rope guide	Grease grease nipple, establish gas tightness (after every operation of the winch)			x											
Slewing mechanism	Lubricate (after every operation of the winch)					x									
Oil level	Check (red screw)													**500**	
Mechanical seal	Check													**500**	
Mechanical seal	Change													**3000**	
Gear oil	Change (red screw)													**1000**	
Bearing	Change													**11000**	
Connection cable	Insulation measurement							x							
Motor	Motor inspecrtion; Change components as necessary					x							**500 h**		
Control system, connection and cable	E-Check; Test acc. DIN VDE 0702. Clean, clean inside if necessary. Have defects repaired					x									
Submersible motor	Replace bearing														

Submersible mixer 1 digestate storage tank 1 Manufacturer: Franz Eisele u. Söhne GmbH & Co. KG; GTWSI-EX 204 Tanks															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Winch and wire rope	Check (always keep wire rope tense! Operating Instructions and the wire cable is to be checked for fibrous fractures, pinches and other damage along the complete								x						
Bearing bushing, drum hub, sprocket	Oil / grease (Do not lubricate the brake system!)					x									
Bolt connections	Check / retighten					x						3 h			
Motor cable	Check for bends and pinches as wellas for damage			x											
Cable protection system	Checked for damage, pinches, moved or loose clamps etc.			x											
Rope guide	Grease grease nipple, establish gas tightness (after every operation of the winch)			x											
Slewing mechanism	Lubricate (after every operation of the winch)					x									
Oil level	Check (red screw)													500	
Mechanical seal	Check													500	
Mechanical seal	Change													3000	
Gear oil	Change (red screw)													1000	
Bearing	Change													11000	
Connection cable	Insulation measurement							x							
Motor	Motor inspecrtion; Change components as necessary					x							500 h		
Control system, connection and cable	E-Check; Test acc. DIN VDE 0702. Clean, clean inside if necessary. Have defects repaired					x									
Submersible motor	Replace bearing														
Submersible mixer 2 digestate storage tank 1 Manufacturer: Franz Eisele u. Söhne GmbH & Co. KG; GTWSI-EX 204 Tanks															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Winch and wire rope	Check (always keep wire rope tense! Operating Instructions and the wire cable is to be checked for fibrous fractures, pinches and other damage along the complete								x						
Bearing bushing, drum hub, sprocket	Oil / grease (Do not lubricate the brake system!)					x									
Bolt connections	Check / retighten					x						3 h			
Motor cable	Check for bends and pinches as wellas for damage			x											
Cable protection system	Checked for damage, pinches, moved or loose clamps etc.			x											
Rope guide	Grease grease nipple, establish gas tightness (after every operation of the winch)			x											
Slewing mechanism	Lubricate (after every operation of the winch)					x									
Oil level	Check (red screw)													500	
Mechanical seal	Check													500	
Mechanical seal	Change													3000	
Gear oil	Change (red screw)													1000	
Bearing	Change													11000	
Connection cable	Insulation measurement							x							
Motor	Motor inspecrtion; Change components as necessary					x							500 h		
Control system, connection and cable	E-Check; Test acc. DIN VDE 0702. Clean, clean inside if necessary. Have defects repaired					x									
Submersible motor	Replace bearing														

Submersible mixer 3 digestate storage tank 1 Manufacturer: Franz Eisele u. Söhne GmbH & Co. KG; GTWSI-EX 204 Tanks															
Component	***test***	**once**	**daily**	**weekly**	**every 2 weeks**	**monthly**	**quarterly**	**half-yearly**	**yearly**	**every 2 years**	**every 3 years**	**first time**	**not later than**	**Interval bsz**	**Maintenance is carried out by:**
Winch and wire rope	Check (always keep wire rope tense! Operating Instructions and the wire cable is to be checked for fibrous fractures, pinches and other damage along the complete								x						
Bearing bushing, drum hub, sprocket	Oil / grease (Do not lubricate the brake system!)					x									
Bolt connections	Check / retighten					x						3 h			
Motor cable	Check for bends and pinches as wellas for damage			x											
Cable protection system	Checked for damage, pinches, moved or loose clamps etc.			x											
Rope guide	Grease grease nipple, establish gas tightness (after every operation of the winch)			x											
Slewing mechanism	Lubricate (after every operation of the winch)					x									
Oil level	Check (red screw)													500	
Mechanical seal	Check													500	
Mechanical seal	Change													3000	
Gear oil	Change (red screw)													1000	
Bearing	Change													11000	
Connection cable	Insulation measurement							x							
Motor	Motor inspecrtion; Change components as necessary					x							500 h		
Control system, connection and cable	E-Check; Test acc. DIN VDE 0702. Clean, clean inside if necessary. Have defects repaired					x									
Submersible motor	Replace bearing														

Submersible mixer 1 pre storage tank 1 Manufacturer: Franz Eisele u. Söhne GmbH & Co. KG; GTWSI-EX 204 Tanks															
Component	***test***	**once**	**daily**	**weekly**	**every 2 weeks**	**monthly**	**quarterly**	**half-yearly**	**yearly**	**every 2 years**	**every 3 years**	**first time**	**not later than**	**Interval bsz**	**Maintenance is carried out by:**
Winch and wire rope	Check (always keep wire rope tense! Operating Instructions and the wire cable is to be checked for fibrous fractures, pinches and other damage along the complete								x						
Bearing bushing, drum hub, sprocket	Oil / grease (Do not lubricate the brake system!)					x									
Bolt connections	Check / retighten					x						3 h			
Motor cable	Check for bends and pinches as wellas for damage			x											
Cable protection system	Checked for damage, pinches, moved or loose clamps etc.			x											
Rope guide	Grease grease nipple, establish gas tightness (after every operation of the winch)			x											
Slewing mechanism	Lubricate (after every operation of the winch)					x									
Oil level	Check (red screw)													500	
Mechanical seal	Check													500	
Mechanical seal	Change													3000	
Gear oil	Change (red screw)													1000	
Bearing	Change													11000	
Connection cable	Insulation measurement							x							
Motor	Motor inspecrtion; Change components as necessary					x							500 h		
Control system, connection and cable	E-Check; Test acc. DIN VDE 0702. Clean, clean inside if necessary. Have defects repaired					x									
Submersible motor	Replace bearing														

Submersible mixer mixing pit Manufacturer: Franz Eisele u. Söhne GmbH & Co. KG; GTWSI-EX 204 Tanks															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Winch and wire rope	Check (always keep wire rope tense! Operating Instructions and the wire cable is to be checked for fibrous fractures, pinches and other damage along the complete								x						
Bearing bushing, drum hub, sprocket	Oil / grease (Do not lubricate the brake system!)					x									
Bolt connections	Check / retighten					x						3 h			
Motor cable	Check for bends and pinches as wellas for damage			x											
Cable protection system	Checked for damage, pinches, moved or loose clamps etc.			x											
Rope guide	Grease grease nipple, establish gas tightness (after every operation of the winch)			x											
Slewing mechanism	Lubricate (after every operation of the winch)					x									
Oil level	Check (red screw)													500	
Mechanical seal	Check													500	
Mechanical seal	Change													3000	
Gear oil	Change (red screw)													1000	
Bearing	Change													11000	
Connection cable	Insulation measurement							x							
Motor	Motor inspecrtion; Change components as necessary					x							500 h		
Control system, connection and cable	E-Check; Test acc. DIN VDE 0702. Clean, clean inside if necessary. Have defects repaired					x									
Submersible motor	Replace bearing														
Compulsory mixer Mixing pit Manufacturer: FF-Maschinenbau GmbH; OMPG X160-15 Tanks															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Entire unit	If the coating of the agitator motor is damaged, it must be replaced.		x												
Entire unit	Testing for unusual operating behaviour (noise and vibration)		x												
Electrical connections and safety devices	Check all safety devices, fastenings as well as electrical connections and lines for perfect condition		x												
Height adjustment	Check height adjustment for dirt and lubrication.			x											
Screws and connections	Check all screws and connections for tightness.			x											
Potential equalization	Check equipotential bonding							x							
Propeller	Check agitator motor / propeller for deformation, damage and wear. Replace by a specialist company if necessary.							x							
Gear oil	Changing the gear oil of the geared motor								x						
Cable winch	Have the winch checked by a specialist company.								x						
Mechanical seals and bearings	Inspection of the mechanical seals and bearings. In case of damage replace seals or bearings.								x						
Stone catcher Manufacturer: WZ - Verteiler GmbH; Steinfang Tanks															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Entire unit	Check for leaks and cracks			x											
flanges	Check tightness			x											
Total unit	Check for dirt and clean if necessary.							x							
Sinkstoffe	Menge an Sinkstoffen kontrollieren und ggf. Entleeren / Reinigen					x									

Liquid phase tank separation
Manufacturer: WASMUS Anlagenbau GmbH; Vorlagebehälter

Tanks

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Entire unit	Check for leaks and cracks			x											
flanges	Check tightness			x											
Total unit	Check for dirt and clean if necessary.							x							

Air compressor 1
Manufacturer: D&N Drucklufttechnik GmbH & Co KG; Atlas Copco AC55-11E 270T V

Compressed air technology

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Condensed water	Discharge condensed water			x											
Oil level	Check oil level (inspection glass)					x									
Screws	Reighten all screws							x				**30 h**			
Cylinder-head bolts	Reighten all screws (After first operation, in warm condition - observe instruction manual!)											**30 h**			
Savety valve	Check saftey valve					x									
Belt	Check belt tension					x									
Entire unit	Check entire unit for oil leakages					x									
Air filter	Clean the air filter					x									
Air cartridge	Replace air cartridge						x								
Compressor settings	Control the settings of the compessor						x								
Entire unit	General cleaning							x							
Oil	Change oil							x							
Belt and pulleys	Control belt and pulleys							x							
Electrical connections	Control electrical connection and cable gland							x							

Air dryer 1
Manufacturer: D&N Drucklufttechnik GmbH & Co KG; SMC - IDFA 6E-23-C

Compressed air technology

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Entire unit	Check if ther is no air leakage		x												
Running lamp	Check if the running lamp is lightning during operation		x												
Drain tube	Discharge drain from drain tube		x												
Thermometers	Check. The pointer of the evaporation thermometer indicates in the green zone when it is running with pressurized air supply		x												
Entire unit	Visual and audible check of abnormal sound and vibration		x												
Entire unit	Check for abnormal smell and smoke		x												
Maintanance record	It is recommended to keep a maintenance/service record. Please refer to “Chapter 14-1 Service Record”		x												
Entire unit	Clean dust and other foreign particles from the ventilation area with vacuum cleaner or air blow nozzle					x									
Filter mat	Clean filter mat and replace if necessary						x								

Air compressor 2
Manufacturer: D&N Drucklufttechnik GmbH & Co KG; Atlas Copco AC55-11E 270T V

Compressed air technology

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Electrical connections	Control electrical connection and cable gland							x							

Air dryer 2 Manufacturer: D&N Drucklufttechnik GmbH & Co KG; SMC - IDFA 6E-23-C Compressed air technology															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Entire unit	Check if ther is no air leakage		x												
Running lamp	Check if the running lamp is lightning during operation		x												
Drain tube	Discharge drain from drain tube		x												
Thermometers	Check. The pointer of the evaporation thermometer indicates in the green zone when it is running with pressurized air supply		x												
Entire unit	Visual and audible check of abnormal sound and vibration		x												
Entire unit	Check for abnormal smell and smoke		x												
Maintanance record	It is recommended to keep a maintenance/service record. Please refer to “Chapter 14-1 Service Record”		x												
Entire unit	Clean dust and other foreign particles from the ventilation area with vacuum cleaner or air blow nozzle					x									
Filter mat	Clean filter mat and replace if necessary						x								
Valve cluster Manufacturer: D&N Drucklufttechnik GmbH & Co KG; SMC - VQC2000 Compressed air technology															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Entire unit / tubes	Check for air leakages		x												
Every valve	Functionality test of all valves					x									
Air tubes	Check the air tubes of moisture					x									
Maintenance unit Manufacturer: D&N Drucklufttechnik GmbH & Co KG; EIC 4010-04 Compressed air technology															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Filter	Dismantle and drain condensate			x											
Oiler	Check filling level and refill if necessary. Observe the manufacturer's maintenance instructions.					x									
Pressure regulator	Functional test					x									
Heating distributor Manufacturer: Sinusverteiler GmbH; HydroFixx 280/320 Heating technology															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Total unit	Check for leaks and leakages		x												
Flange connections	Check flange connections and retighten if necessary.						x					**1 weeks**			
Heating pipes Manufacturer: Hans-Jürgen Keil Anlagenbau GmbH & Co.KG; Heizungsleitungen Heating technology															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Gaskets	Check for leaks						x								
Flanges and pipe connections	Check the screw connections of the flanges for tightness.					x									
Heating pump Manufacturer: Grundfos GmbH; Magna 3 Heating technology															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
indicator lamp (gn)	Check if the pump in operation		x												
Entire pump	Visual and audible inspection for noises and damages			x											
Entire pump	Clean						x								

Mixing valve heating
Manufacturer: Honeywell Deutschland Holding GmbH ; DR65GFLA

Heating technology

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Mixing valve	Functional check					x									
Mixing valve	Functional check					x									

Butterfly valve
Manufacturer: KSB Aktiengesellschaft; BOAX-S

Heating technology

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Entire flap	Check for leakage			x											
Entire flap	Check function			x											

Expansion vessel
Manufacturer: Reflex Winkelmann GmbH ; Reflex Ausdehnungsgefäß

Heating technology

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Diaphragm	Diaphragm test by actuating the nitrogen valve. Replace if water escapes.								x						
Total unit	Check for damage e.g. corrosion								x						
Water quality and pressure settings	Adjust water quality to setpoint. Pressure setting: Operate at constant temperature.								x						

Compressor expansion vessel
Manufacturer: Reflex Winkelmann GmbH ; Reflexomat RS90

Heating technology

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Compressor	Check for leaks. Check the screw connections of the compressed air connections.								x						
Compressor	Check the starting pressure of the compressor. Check lack of water and top up with water if necessary.								x						
Dirt trap	Check and clean if necessary.					x									
Basic vessel	Clean the basic vessel and, if necessary, the secondary vessels of condensate.								x						

Safety valve
Manufacturer: Goetze KG Armaturen; Sicherheitsventil Reihe 651

Heating technology

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Total valve	Leaktest					x									
Total valve	Functional test								x						

Condensate shaft
Manufacturer: BioConstruct GmbH;

Gas technology

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Condensate pit	Check, clean if necessary					x									
Ring seals	Visual inspection of the tightness					x									
Condensate level	Check min.-max alarm threshold (min. = Above submersible pump, max. = Below siphon tube)					x									
Siphon	Check filling level, after soiling and icing		x												
Check valve	Functional test					x									

Condensate pump
Manufacturer: HOMA Pumpenfabrik GmbH ; H508D

Gas technology

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Entire unit	Check functionality			x											
current consumption and voltage	Check current consumption and voltage with suitable measuring instruments					x									
Pump parts and impeller	Check for possible wear. Replace devective parts								x						
Power supply leads	Visual inspection							x							

Steam traps
Manufacturer: Mankenberg GmbH; Kondensatableiter Schwimmergesteuert KA 2

Gas technology

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Entire valve	Functional test			x											
Housing	Vent until steam or gas escapes.			x											
Condensate chamber	Cleaning.					x									
Leak tightness	Visual inspection of the housing and the pipe connection.					x									
Preventive maintenance	Dismantle the valve. Replace all parts of the maintenance kit. Refer to the manufacturer's manual.								x						

Gas pipes
Manufacturer: Hans-Jürgen Keil Anlagenbau GmbH & Co.KG; Gasleitungen

Gas technology

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Gaskets	Check for leaks						x								
Flanges and pipe connections	Check the screw connections of the flanges for tightness.					x									

Gas flap
Manufacturer: MSP Armaturen GmbH & Co. KG; Sylax Gas DN32...300mm

Gas technology

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Entire gas flap	Check for pressure tightness, leakage of liquid / gas		x												
Entire gas flap	Check function			x											

Gas flap with actuator
Manufacturer: MSP Armaturen GmbH & Co. KG; Sylax Gas DN32...300mm mit Antieb Rotork 232-08

Gas technology

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Entire gas flap	Check for pressure tightness, leakage of liquid / gas		x												
Entire gas flap	Check function			x											
Actuator	If dirty, clean with a cloth. If damaged, return to manufacturer.			x											
Entire gas flap	Check for pressure tightness, leakage of liquid / gas		x												
Entire gas flap	Check function			x											
Actuator	If dirty, clean with a cloth. If damaged, return to manufacturer.			x											

Compensator
Manufacturer: FLEXOMAT GmbH; Axialkompensator P33090

Gas technology

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Axial compensator	Check for damage and solid fitting. Clean if necessary.						x								
Axial-Compensator	Spray with leak indication spray								x						

Gas compressor 1
Manufacturer: Continental Industrie GmbH; GB100

Gas technology

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Ball bearing	Excange ball bearing									x					
V-belts	Replace V-belt									x					
Gaskets	Replace gaskets									x					
Gearbox bearings	Gearing bearing grease					x									
Belt drive	Check belt tension, belt alignment, belt wear, Fixing and general condition			x											
Electrical connections	Checking the general condition and the cable fastening			x											
Entire machine	Inspection of the attachment of the attachments as well as the paint condition and corrosion			x											
Entire machine	Check cleanliness of the machine Clean if necessary		x												
Ball bearing temperature	Verification and data acquisition			x											
Ball bearing	Checking the noise development and vibrations at the ball bearing and data recording			x											
Long-life grease lubrication	Checking the lubrication and its seals			x											
Entire machine	Noise generation Data recording			x											

Ammonia scrubbing
Manufacturer: Helmut Breuer GmbH; WFV-05/05

Gas technology

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Total unit	Check for contamination.			x								1 days			
Strainer	Clean			x								1 days			
Total unit	Check flange and screw connections for tightness.			x											
pH probe	Clean					x									
pH probe	Calibration						x								

Ammonia dosing station
Manufacturer: Helmut Breuer GmbH; DS-IBC-2

Gas technology

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Total unit	Check for contamination.			x								1 days			
Strainer	Clean			x								1 days			
Total unit	Check flange and screw connections for tightness.			x											

Centrifugal pump ammonia washing
Manufacturer: IWAKI Europe GmbH; MX-Serie (MX-250/-505)

Gas technology

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Leakage	Check.		x												
Running noise	Check for anomalies.		x												
Drive magnet unit	Check: - Wear trace; contact with manufacturer -If the drive magnet is correctly mounted by hex. socket set screws and they are not loose; Reset the drive magnet to the motor shaft and retighten the screws -Decentering of magnet and motor shaft (Max.1/10mm); contact with manufacturer							x							
Rear casing / Rear thrust	Check: -Wear tracks on an inner surface; contact with manufacutrer -Cracks; Replace if necassary -Wear of the rear thrust; contact with manufacturer -Contamination in rear casing; Remove contamination.							x							
Magnet capsule unit	Check: -Wear tracks on the rear end or side face of the magnet capsule; contact with manufacturer -Cracks on the rear end or side face of the magnet capsule; contact with manufacturer -Wear of the bearing; replace if necassary -Loose fit of the impeller unit; contact with manufacturer							x							
Impeller unit	Check: -Wear of the mouth ring; replace if necassary -Cracks; replace if necassary -Contamination in the impeller; Remove contamination -Impeller deformation; replace if necassary							x							
Front case / Rear case / Liner ring	Check: -Contamination; Remove contamination -Cracks; Replace as necessary -Wear, cracks and wear tracks on a liner ring; Contact with manufacurter -Swelling or a crack on O ring; replace as necessary -Wear tracks on an unlikely portion; contact with manufacturer							x							
Spindle	Check: -Cracks; Replace as necessary -Wear degree; Replace as necessary							x							

Waste water pump ammonia washing
Manufacturer: IWAKI Europe GmbH; MX-Serie (MX-250/-505)

Gas technology

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Leakage	Check.		x												
Running noise	Check for anomalies.		x												
Drive magnet unit	Check: - Wear trace; contact with manufacturer -If the drive magnet is correctly mounted by hex. socket set screws and they are not loose; Reset the drive magnet to the motor shaft and retighten the screws -Decentering of magnet and motor shaft (Max.1/10mm); contact with manufacturer							x							
Rear casing / Rear thrust	Check: -Wear tracks on an inner surface; contact with manufacutrer -Cracks; Replace if necassary -Wear of the rear thrust; contact with manufacturer -Contamination in rear casing; Remove contamination.							x							
Magnet capsule unit	Check: -Wear tracks on the rear end or side face of the magnet capsule; contact with manufacturer -Cracks on the rear end or side face of the magnet capsule; contact with manufacturer -Wear of the bearing; replace if necassary -Loose fit of the impeller unit; contact with manufacturer							x							
Impeller unit	Check: -Wear of the mouth ring; replace if necassary -Cracks; replace if necassary -Contamination in the impeller; Remove contamination -Impeller deformation; replace if necassary							x							
Front case / Rear case / Liner ring	Check: -Contamination; Remove contamination -Cracks; Replace as necessary -Wear, cracks and wear tracks on a liner ring; Contact with manufacurter -Swelling or a crack on O ring; replace as necessary -Wear tracks on an unlikely portion; contact with manufacturer							x							
Spindle	Check: -Cracks; Replace as necessary -Wear degree; Replace as necessary							x							

Dosing pump Ammonia wash Manufacturer: sera ProDos GmbH; C409.2-25e Pro+ Gas technology															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Process connection	Check for tight fit and leaks.			x											
Pressure and suction valve	Check thight fit.			x											
Electrical connections	Check for proper condition			x											
Screws for fastening	Check for tight fit and tighten if necessary.						x								
Oil level	Check via oil eye			x											
Drive motor	Motor von Staub, Schmutz, Öl oder anderen Verunreinigungen säubern.			x											
Oilchange	Change the oil according to the manufacturer's operating manual.								x						
Diaphragm	Replace according to the manufacturer's operating												**1 years**	**3000**	
Diaphragm	Check					x									
Overflow valve	Replace the diaphragm according to the manufacturer's user manual.												**1 years**	**3000**	
Diaphragm rupture electrode	Change												**1 years**	**3000**	
Valve kit	Change												**1 years**	**3000**	
O-Ring	Change												**1 years**	**3000**	
Motor control valve Manufacturer: Georg Fischer GmbH; Type 546 Gas technology															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Valve	Check for leakage and smooth running					x									
Total unit	Check on functionality					x									
Chillers / Gas cooling 1 Manufacturer: Novatherm Klimageräte GmbH; Aermec Typ ANL... Gas technology															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Total unit	Visual and audible checks for abnormal vibration, noise or other phenomena		x												
Water cycle	Check filling level								x						
Water filters	Check cleanliness								x						
Pressure switches or flow switches	Check								x						
Water cycle	venting								x						
Evaporator	Check whether the water flow rate at the evaporator is always constant.								x						
Thermal insulation of the water pipe	Check condition								x						
Glycol concentration	Check								x						
Security outflow	Checking the effectiveness of the back-up fuses								x						
Supply voltage	Check								x						
Current consumption	Check								x						
Ports	Check the tight fit of the connections								x						
Heating resistance of the compressor housing	Check function								x						
Compressor	Check condition								x						
Heating resistance of the plate heat exchanger	Check function								x						
Operating pressure	Check								x						
Cooling circuit	Leakage check								x						
Max. min. pressure switch	Check function								x						
Screw connections	Check the tightness of the compressor screws, switch box and outer casing.								x						

Gas cooling buffer tank
Manufacturer: Mibec Limited; ACQ R/C GBVT 1000LT Buffer Tank

Gas technology

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
Total unit	Visual inspection of all flange and screw connections for leaks.					x									

Gas cooling heat exchanger
Manufacturer: APROVIS Energy Systems GmbH; GFP, GWP, GCP, GCD, GXD, GXP, GLD or GLP

Gas technology

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
Lubrication	The tightening bolts must be kept lubricated with molybdenum disulphide or its equivalent, particularly on the sections of thread used for opening and closing the equipment.					x									
Heat exchanger plates	Check for reduced capacity or pressure loss. Clean if necessary.					x									
Gaskets	Check for leaks and replace if necessary.			x											

Safety valve cooling circuit
Manufacturer: Goetze KG Armaturen; Sicherheitsventil Reihe 651

Gas technology

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
Total valve	Leaktest					x									
Total valve	Functional test								x						

Active carbon filter
Manufacturer: Reiner Schmitt GmbH Brennereitechnik; Aktivkohlefolter 3m³

Gas technology

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
Screw connections	Check for tight fit							x							
Ladder	Check, follwo national regulations.								x						
Activated carbon quality	The effectiveness of the activated carbon must be checked daily during operation. The H2S content in the biogas in chamber 1 of the filter must be measured for this purpose. If the biogas is loaded by 180 ppm or more at the measuring point (4), the activated carbon in chamber 1 must be replaced.		x												
Condensate	Drain condensate			x											
Entire unit	Check for leaks and cracks			x											
Fittings	Leak testing							x							
Sieves	When replacing the activated carbon, clean the sieves						x								
Seals	Seal changes on the doors after each opening						x								
flanges	Check tightness		x												

Gas non-return valve
Manufacturer: WITT-GASETECHNIK GmbH & Co KG; 600-ES

Gas technology

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
gas tightness	Check against gas backflow and gas tightness to atmosphere								x						
Filter	Check and clean if dirty and replace if necessary							x							

Oxygen generator Manufacturer: AIRTEXX Gassysteme & Equipment e.K.; PO / PSA-O Gas technology															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
Total unit	Visual inspection of the generator (error messages). Control of filtration on condensate. Review of pressure air quality.		x												
Gesamte Einheit	1. Control input and output pressure 2. Adjusting the input pressure control 3. Dew point control and total pressure 4. Measuring gas purity 5. Reference measurement of the gas analysis sensors 6. Renewal of the gas analysis sensor as required 7. Review and adjustment of gas trim valves 8. Leak check of the entire system 9. Checking the flow rate 10. Review of the pneumatic circuit elements 11. Functional control of the entire electrical 12. Review of the trap operates on function 13. Checking the tightness condensate escape 14. Functional test of the oxygen generator								x				**4000 h**		
Valves	Disassembly and visual inspection of the valves. If necessary, replace the valve cores.													**4000**	
Valves	Change of the valves													**24000**	
Tanks	Visual inspection for corrosion					x									

Oxygen generator equipment
Manufacturer: BOGE KOMPRESSOREN Otto Boge GmbH & Co. KG; BEKOMAT 32-2 inkl. Ausrüstung

Gas technology

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
Service unit	Change													**17520**	
Total unit	Visual inspection for dirt or damage. Clean if necessary.					**x**									
Condensate separator CC 5-2	Replace the condensate separator elements								**x**						
Compressed Air Filters F6 ... F	Check the float drain for tightness and propper function			**x**											
Compressed Air Filters F6 ... F 380	Element types P and M must be replaced. Check the float drain for contamination durcing this procedere and clean it if nessessary.								**x**						
Compressed Air Filters F6 ... F	Elements of type A must be echanged													**650**	
Belt.driven screw compressors Series C / F / FD - General mainteanance work	Check final compression temperature. Check system relief on system pressure gauge. Check or change supply filter. Check automativ condensate drainage.			**x**											
Belt.driven screw compressors Series C / F / FD - General mainteanance work	Check function of emergancy-stop switch / button					**x**									
Belt.driven screw compressors Series C / F / FD - General mainteanance work	Cleaning the oil unit. Check if electical connetions are tighened													**1500**	
Belt.driven screw compressors Series C / F / FD - General mainteanance work	Check compressor for leaks													**3000**	
Belt.driven screw compressors Series C / F / FD - Air system	Check and if necessary clean suction filter					**x**									
Belt.driven screw compressors Series C / F / FD - Air system	Change suction filter cartridge. Functional test of safety valve(s). Replace minimum pressure valve (wearing parts set).													**26280000**	
Belt.driven screw compressors Series C / F / FD - Air system	Replace suction controller													**9000**	
Belt.driven screw compressors Series C / F / FD - Oil circuit	Check oil level and top up as required.					**x**									
Belt.driven screw compressors Series C / F / FD - Oil circuit	Change oil separator. Change oil filter. Change oil. Replace oil regulator (wearing part set). Replace nozzel with dirt catch.													**3000**	
Belt.driven screw compressors Series C / F / FD - Oil circuit	Oil change (HighLub 6000)													**6000**	
Belt.driven screw compressors Series C / F / FD - Oil circuit	Change oil													**9000**	
Belt.driven screw compressors Series C / F / FD - Drive	Check / replace V-belt.													**3000**	
Belt.driven screw compressors Series C / F / FD - Drive	Lubrucate drive motor bearings with permanent lubrication.	**x**										**1 h**			
Belt.driven screw compressors Series C / F / FD - Drive	Replace motor bearing.													**8000**	
Belt.driven screw compressors Series C / F / FD - Drive	Replace motor bearing.													**10000**	
Refrigeration Dryer - Series DS4-2 / DS100-2	Check POWER ON indicator is lit. Check control panel indicators.		**x**												
Refrigeration Dryer - Series DS4-2 / DS100-2	Check condensate drain.			**x**											
Refrigeration Dryer - Series DS4-2 / DS100-2	Clean condenser fins. Check electrical absorption.					**x**									
Refrigeration Dryer - Series DS4-2 / DS100-2	Depressureize the dryer. Complentate drain maintanance. Depressurize the dryer. Replace pre- and post-filter elements.								**x**						

Gas flare
Manufacturer: FLARE PRODUCTS LTD; E.T.C. 1400

Gas consumer

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
Main line Drain Point	Drain condensate				x										
Igniter line Drain Point	Drain condensate				x										
Pilot line Drain Point	Release condensate				x										
Operation of System (If unused)	Follow operational sequence				x										
200NB Hand valve	Check operation							x							
Pilot air injector	Removing, cleaning and re-inserting							x							
Igniter air injector	Removing, cleaning and re-inserting							x							
Main Line Flame Arrester	See operation manuel of manufacturer						x								
Main Line Flame Arrester	See operation manuel of manufacturer						x								
Spark Plug	Check. If necessary, remove, clean, if necessary reset the spark gap and reinsert.					x									
Low Pressure Switch	Check. If necessary, remove cover, clean and replace.					x									
Main Flame Thermocouple	Replace								x						
Pilot Thermocouple	Replace								x						
Flashback Thermocouple	Replace								x						

CHP 1
Manufacturer: 2G Energietechnik GmbH; avus 500plus - Biogas

Gas consumer

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Entire CHP	Visual inspection for leaks		x												
Coolant	Check coolant level/pressure		x												
Hydrogen sulphide content	Check hydrogen sulphide content in biogas (see Technical Instructions Gas 2G-TA 04)		x												
Batteries	Check the liquid level of the batteries			x											
Engine oil	Check engine oil level			x											
Engine oil	Analyse engine oil and change if necessary													**500**	
Air filter cartridge	Check air filter cartridge and replace if necessary					x									
Spark plugs	Check spark plugs and replace if necessary					x									
Entire CHP	Check cleanliness and clean if necessary			x											
Room ventilator	Visual inspection of the function of the room ventilator					x									
Room ventilator	Bearing replacement													**30000**	
Strainer	Visual inspection of the dirt trap; if dirty: Clean or replace the filter element.							x							
Gas meter	Checking the values of the gas meter to ensure long-term accuracy (maintenance only if values are changed)					x									
Operational data	Entering operating data in the maintenance logbook		x												
Entire CHP	Control of running characteristics and system parameters		x												
100 hours maintenance	2g Call customer service and observe 2g maintenance schedule - Check pressures and temperatures for plausibility - Change oil and oil filter - Adjusting the valve - Check electrical components	x												**100**	
2000 hours maintenance	2g Call customer service and observe 2g maintenance schedule - Check engine oil and change if necessary - Check ignition - Check electrical components - Check exhaust system - Testing R&I Systems													**2000**	
8000 hours maintenance	2g Call customer service and observe 2g maintenance schedule - Check motor mechanics - Check ignition - Check filter elements													**8000**	
16000 hours maintenance	2g Call customer service and observe 2g maintenance schedule - Check engine oil - Check motor mechanics - Check ignition - Check electrical components - Check exhaust system - Check filter elements													**16000**	
20000 hours maintenance	2g Call customer service and observe 2g maintenance schedule													**20000**	
32000 hour maintenance	2g Call customer service and observe 2g maintenance schedule													**32000**	
40000 hour maintenance	2g Call customer service and observe 2g maintenance schedule													**40000**	
60000 hour maintenance	2g Call customer service and observe 2g maintenance schedule													**60000**	

Biogas boiler
Manufacturer: WE-HO Beton - Heiztechnik; Vitoplex 200 SX2A

Gas consumer

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Heating Oil filter	Check for leak tightness							x							
Heating Oil Filter	Check and replace if necessary						x								
Reflex - Diaphragm	Diaphragm test by actuating the nitrogen valve. Replace if water escapes.								x						
Reflex - Total unit	Check for damage e.g. corrosion								x						
Reflex - Water quality and pressure settings	Adjust water quality to setpoint. Pressure setting: Operate at constant temperature.								x						
Multica 603 - Total unit	Functional check								x						
Magna 3 - indicator lamp (gn)	Check if the pump in operation		x												
Magna 3 - Entire pump	Visual and audible inspection for noises and damages			x											
Magna 3 - Entire pump	Clean						x								
Viessmann Vitotronic Base CC1E	Maintenance according to the manufacturer's user								x						
Fan	Maintenance according to the manufacturer's user							x							
Valves - Ari	Auf Leckagen prüfen. Ggf. Dichtung austauschen.					x									
Strainer - Ari	Cleaning the filter element					x									
Viessmann - DHW cylinder (if installed)	Clean									x					
Viessmann - Safety valve (DHW cylinder)	Functional check							x							
Viessmann - Potable water filter (if installed)	Visual check					x									
Viesmann - Cable	Check for damage. Replace if necessary.					x									

Gas treatment
Manufacturer: Pentair Haffmans BV; Biogas Upgrading Unit - Blaise

Gas consumers

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Screwcompressor	Replacement of oil and oil filter. Check wear parts of Compressor and replace if necessary. Re-grease bearings of the electromotor. Pressure test inter- and after cooler. General check instrumentation and function.								x						
Polishing filter	Replacement filter element of CPM coalescence filter.						x								
Polishing filter	Drain oil from liquid vessel.					x									
Polishing filter	Replacement active carbon.									x					
Water separator	Check for strange noises and vibrations. Check working condensate drain.		x												
Water separator	Based on contamination the demister should be cleaned. Check condensate drain.								x						
Dehumidification unit	Based on contamination the demister should be cleaned. Check heating element. Check condensate drain. Check thermostat.								x						
Screw compressor	Check Oil level. Check Oil pressure. Check Working condensate drain. CheckTemperature water outlet oil cooling. Check Check for strange noises and vibrations.		x												
Polishing filter	Check Oil level liquid vessel. Check Oil breakthrough with Dräger Impaktor.			x											
Dehumidification unit	Check for strange noises and vibrations Check working condensate drain		x												
Three Strage Membrane	Check if there is condensate water in the inlet filters by opening the drain valves.		x												
Three Strage Membrane	Check membrane inlet filters and replace if necessary.								x						
Heat exchanger plates	Check for reduced capacity or pressure loss. Clean if necessary.					x									
Alfa Laval - Heat exchanger	Check for leaks and replace gaskets if necessary.			x											
Atlas Copco - Piston compressor	Test safety valve.							x							
Atlas Copco - Piston compressor	Inspect air inlet filter.							x							
Atlas Copco - Piston compressor	On LF 5 and LF 7, replace air inlet filter.												**1 years**	**600**	
Atlas Copco - Piston compressor	On LF 3, replace air inlet filter.												**1 years**	**800**	
Atlas Copco - Piston compressor	Replace valve discs.													**7500**	
Bitzer - Liquid receivers and oil separators	Check pressure drip. The filter cartridges in combined and secondary oul separators must be changed if the pressure drip exceeds 0.5 bar.					x									
Crowcon - Sensor O2	Calibrationwith periodic exposure to CAL gas							x							
Crowcon - Sensor O2	Replace O2 Sensor.									x					
Dräger - Polytron 7000	Inspection by specialists							x							
Dräger - Polytron 7000	Check and calibrate if necessary.						x								
Econosto - Ball valve	Check for leaks. If necessary, retighten ball packing and/or replace seal.					x									
Econosto - Pneumatic actuator	Functional check							x							
End Armaturen - Strainer	Check for reduced flow rate. Cleaning of the mesh if necessary.			x											
Flamco - Flexcon Top	Check expansion vessel								x						

Component	*test*	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Haffmans - Activated carbon filter type PSMF-AK	Reflacement Check if the required filter element is available before								x						
Leser - Safety Valve 441, 442	Check the local conditions of use for creating a maintenance plan. Check function at least once a year.								x			1 days			
Lowara - Pump ESHE ESHS	Replace the grease in the motor bearings.								x						
Lowara - Pump ESHE ESHS	Replace the motor bearings.													25000	
Lowara - Pump ESHE ESHS	Check for leakage of the mechanical seal. Replace the mechanical seal if leakage is found.			x											
Meidinger - IGW Fans and accessories	Check / Relubricate Bearing. Check / Relubricate Shaft sealing. Check Belt tension, flexible connections, starting-up coupling. Check Coupling (Alignment/ rubber elements). Radial vane – check mobility of blades. Measure Vibration level at the motor B-Bearing . Measure Vibration level at the casing. Measure Sound pressure level. record Electrical values . Visual check for corrosion and other damages. Check all screw connections at the fan. Check catch device/ catch rope. Insulation check at the warm motor. If stainless steal fan/ silencer -> all kind of corroding particles sticking to the surface removed. Functioning of fluctuation observation checked.							x							
Leser - Safety Valve 441, 442	Check the local conditions of use for creating a maintenance plan. Check function at least once a year.								x			1 days			
RTK - Control valves	Check for leaks. If necessary, replace stuffing box packing / bellows / plug group.					x									
SAMSON - Control valves	Check wearing parts and replace if necessary							x							
Smokestack Manufacturer: VL Staal a/s; Smokestack Gas consumer															
Component	*test*	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Local regulations	Check if there are any local regulations for maintenance. Implement them to the maintenance shedule. Check for further information the operational manuel of the manufacturer.														
Bolts at the base plate	Check for corrosion and tightened if necessary								x						
Reinforcement frame	Check for fatigue								x						
Bolts at the flange connections	Check for corrosion and tightened if necessary								x						
Inner liners	Check for corrosion of the inner liners								x						
Drain at the bottom and from the liner	Check and clean, if necessary.								x						
Cleaning hatch and cover plate for measuring nozzles	Tighten if necessary. Defect sealing are to be replaced.								x						
Ladder and platform	Check for corrosion, joints and bolts tighten if necessary. The fall protection rail is to be kept free in the ladders full length, and any climbing on the ladder should be carried out using fall protection equipment. Trolley and belt are to be stored in a dry environment.								x						
The outer shell	Check for damage in the surface treatment and a repair is to be performed according to the painting specifications.								x						

Level measurement tanks Manufacturer: Endress+Hauser Messtechnik GmbH+Co. KG; Cerabar PMP11 Measuring technology															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
External parts of the equipment	Clean					x									
Measurement / value	Function test (observe the value on the control unit)			x											
Process connection	Check for blockages at the process connection. This could be a reason for extremly wrong measureing results.								x						
Maximum level measurement tank Manufacturer: Endress+Hauser Messtechnik GmbH+Co. KG; Liquipoint T FTW31 Measuring technology															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
External parts of the equipment	Clean					x									
Measuring rods	Check for deposits and clean if necessary					x									
Measurement	Function test			x											
Foam sensor Manufacturer: Endress+Hauser Messtechnik GmbH+Co. KG; Liquicap M FTI51 Measuring technology															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
External parts of the equipment	Clean					x									
Measuring rods	Check for deposits and clean if necessary					x									
Measurement	Function test			x											
Temperature measurement tank Manufacturer: Endress+Hauser Messtechnik GmbH+Co. KG; TR10 Measuring technology															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
External parts of the equipment	Clean					x									
Measurement / value	Function test (observe the value on the control unit)			x											
Gas preassure measurement tank Manufacturer: Endress+Hauser Messtechnik GmbH+Co. KG; Cerabar PMC21 Measurement technology															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
External parts of the equipment	Clean					x									
Measurement / value	Function test (observe the value on the control unit)			x											
Process connection	Check for deposits, blocking of measurement membrane by sulphur and dirt, clean if necessary. This could be a reason for extremly wrong measureing results.								x						

Gas level measurement tank
Manufacturer: Endress+Hauser Messtechnik GmbH+Co. KG; Prosonic M FMU40

Measurement technology

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
External parts of the equipment	Clean					x									
Measurement / value	Function test (observe the value on the control unit)			x											
Sensor	Check the sensor for dirt. Ensure that no dirt, deposits or foreign matter impairs the measurement in the detection range of the sensor. Clean sensor and measuring range if necessary.					x									

Level measurement condensate shaft
Manufacturer: Endress+Hauser Messtechnik GmbH+Co. KG; Liquipoint T FTW31

Measuring technology

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
External parts of the equipment	Clean					x									
Measuring rods	Check for deposits and clean if necessary					x									
Measurement	Function test			x											

Pressure measurement heating
Manufacturer: Endress+Hauser Messtechnik GmbH+Co. KG; Cerabar PMC11

Measuring technology

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
External parts of the equipment	Clean					x									
Measurement / value	Function test (observe the value on the control unit)			x											
Process connection	Check for deposits, blocking of measurement membrane by sulphur and dirt, clean if necessary. This could be a reason for extremly wrong measureing results.								x						

Temperature measurement heating technology
Manufacturer: Endress+Hauser Messtechnik GmbH+Co. KG; Easytemp TMR31

Measuring technology

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
External parts of the equipment	Clean					x									
Measurement / value	Function test (observe the value on the control unit)			x											

Level measurement collection pit
Manufacturer: Endress+Hauser Messtechnik GmbH+Co. KG; Liquicap T FMI21

Measurment technology

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
External parts of the equipment	Clean					x									
Measuring rods	Check for deposits and clean if necessary					x									
Measurement / value	Check for deposits and clean if necessary			x											

Substrate flow measurment
Manufacturer: Endress+Hauser Messtechnik GmbH+Co. KG; Promag 55

Measurement technology

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
External parts of the equipment	Clean					x									
Measurement / value	Function test (observe the value on the control unit)			x											

Inductive switch Manufacturer: ifm electronic gmbh; IGK3008BBPKG/US-104 Measuring technology															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Mounting	Check the mounting of the proximity switches of the sliders for tightness. Tighten if necessary.						x								
Cable connection	Check the cable connection plug of the proximity switch for tightness						x								
Proximity switch	Functional test. The signal lamp of the can be used to detect whether switching has taken place. Check distance between sensor and actuator (max. 5mm)						x								
Pressure switch pump Manufacturer: Vogelsang GmbH & Co. KG; SMD.080.N1 Measuring technology															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
External parts of the equipment	Clean					x									
Measurement / value	Function test (observe the value on the control unit)			x											
Process connection	Check for deposits, blocking of measurement process connection by sulphur and dirt, clean if necessary. This could be a reason for extremly wrong measureing results.								x						
Preassure measurement substrate Manufacturer: Endress+Hauser Messtechnik GmbH+Co. KG; Cerabar PMP11 Measuring technology															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
External parts of the equipment	Clean					x									
Measurement / value	Function test (observe the value on the control unit)			x											
Process connection	Check for blockages at the process connection. This could be a reason for extremly wrong measureing results.								x						
Level measurement pasteurization Manufacturer: Endress+Hauser Messtechnik GmbH+Co. KG; Cerabar PMP21 Measurement technology															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
External parts of the equipment	Clean					x									
Measurement / value	Function test (observe the value on the control unit)			x											
Process connection	Check for blockages at the process connection. This could be a reason for extremly wrong measureing results.								x						
Maximum level measurement pre storage tank Manufacturer: Endress+Hauser Messtechnik GmbH+Co. KG; Cerabar PMP21 Measurement technology															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
External parts of the equipment	Clean					x									
Measurement / value	Function test (observe the value on the control unit)			x											
Process connection	Check for blockages at the process connection. This could be a reason for extremly wrong measureing results.								x						

Level Measurement radar mixing pit
Manufacturer: Endress+Hauser Messtechnik GmbH+Co. KG; Micropilot FMR20

Measuring technology

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
External parts of the equipment	Clean					x									
Measurement / value	Function test (observe the value on the control unit)			x											
Sensor	Check the sensor for dirt. Ensure that no dirt, deposits or foreign matter impairs the measurement in the detection range of the sensor. Clean sensor and measuring range if necessary.					x									

Leakage detection
Manufacturer: Endress+Hauser Messtechnik GmbH+Co. KG; Liquiphant FTL31

Measuring technology

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
External parts of the equipment	Clean					x									
Measuring rods	Check for deposits and clean if necessary					x									
Measurement	Function test			x											

Gas temperature measurement
Manufacturer: Endress+Hauser Messtechnik GmbH+Co. KG; Easytemp TMR31

Measuring technology

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
External parts of the equipment	Clean					x									
Measurement / value	Function test (observe the value on the control unit)			x											

Gas analyser
Manufacturer: UNION Instruments GmbH; INCA4001 T100-05

Measuring technology

Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
Purge gas inlet	Check if unobstructed (particulary in case of frost)			x											
Exhaust gas line	Check if unobstructed (particulary in case of frost)			x											
Entire unit	Calibrate; according to manufacturer's specifications						x						**1 years**		
Integrated filter in device	Check							x							
Compressed air supply	Check							x							
Lines	Check for condensate							x							
Gas inlets	Check and clean professionally if necessary							x							
Fan	Check							x							
Ejector pumps	Check							x							
Inlet filter	Check							x							
Peltier cooler	Check							x							
Fan of peltier cooler	Check							x							
Air and gas pump	Check by preforming a purge gas calibration								x						
Firmware version	Check and if necessary update							x							
Configuration with INCACrtl	Save							x							
Integrated filters	Replace								x						
pump hoses	Replace									x					
Flame arrester	Replace									x					
Integrated pressure reducer	Replace									x					
Gas delivering pumps	Replace if necessary								x						
Sensors	Replace if necessary								x						

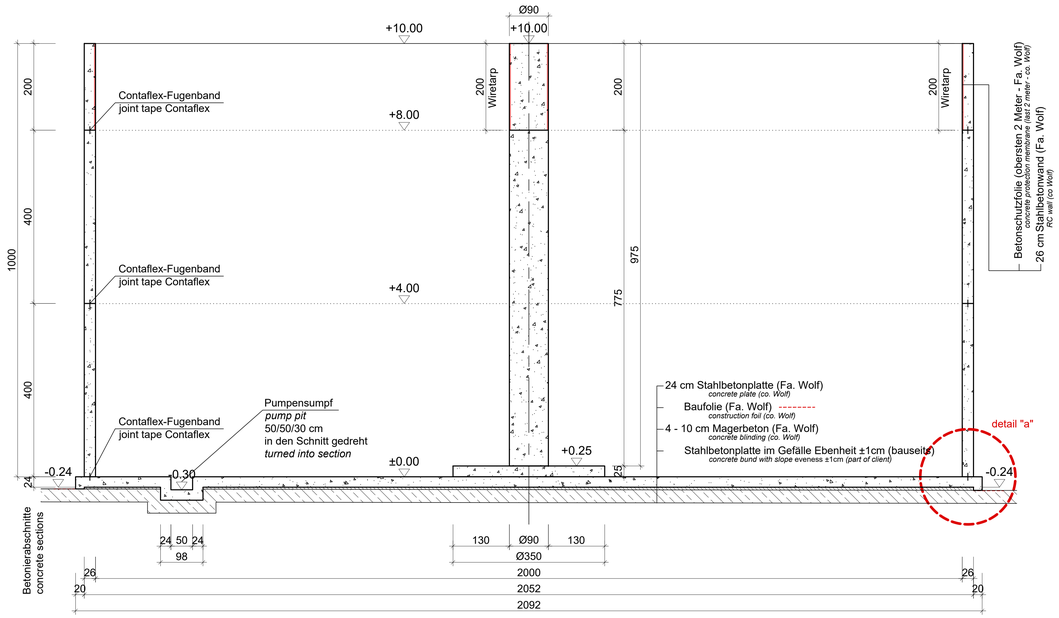
Gas flow measurement Manufacturer: Endress+Hauser Messtechnik GmbH+Co. KG; Prosonic Flow B200 Measurement technology															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
External parts of the equipment	Clean					x									
Measurement / value	Function test (observe the value on the control unit)			x											
Pressure measurement gas Manufacturer: Endress+Hauser Messtechnik GmbH+Co. KG; Cerabar PMC21 Measuring technology															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
External parts of the equipment	Clean					x									
Measurement / value	Function test (observe the value on the control unit)			x											
Process connection	Check for deposits, blocking of measurement membrane by sulphur and dirt, clean if necessary. This could be a reason for extremly wrong measureing results.								x						
Flow measurement oxygen Manufacturer: CS Instruments GmbH; VA520 Measurement technology															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Sensor head	Check for soiling and clean if necessary								x						
Sensor	Re-Calibration								x						
Heat meter Manufacturer: Kamstrup A/S Deutschland; Multical 603 Measuring technology															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Total unit	Functional check								x						
Level measurement ferric chloride tank Manufacturer: Endress+Hauser Messtechnik GmbH+Co. KG; Prosonic M FMU 30 Measurement technology															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
External parts of the equipment	Clean					x									
Measurement / value	Function test (observe the value on the control unit)			x											
Sensor	Check the sensor for dirt. Ensure that no dirt, deposits or foreign matter impairs the measurement in the detection range of the sensor. Clean sensor and measuring range if necessary.					x									
Pressure switch compressed air supply Manufacturer: D&N Drucklufttechnik GmbH & Co KG; DRSZ Measuring technology															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
External parts of the equipment	Clean					x									
Measurement / value	Function test (observe the value on the control unit)			x											
Process connection	Check for deposits, blocking of measurement membrane by sulphur and dirt, clean if necessary. This could be a reason for extremly wrong measureing results.								x						

Pressure switch Clamping hose Manufacturer: SCHMID GmbH & Co. KG; PDC-SW27 Compact-Pressure Switch Measuring technology															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
External parts of the equipment	Clean					x									
Measurement / value	Function test (observe the value on the control unit)			x											
Process connection	Check for deposits, blocking of measurement membrane by sulphur and dirt, clean if necessary. This could be a reason for extremly wrong measureing results.								x						
Gas warning centre 1 Manufacturer: ExTox Gasmess-Systeme GmbH; ET-8D Measurement technology															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
Total unit	Visual check					x									
Total unit	Functional check					x									
Total unit	System check								x						
Gas warning centre 2 Manufacturer: ExTox Gasmess-Systeme GmbH; ET-4D2 Measurement technology															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
Total unit	Visual check					x									
Total unit	Functional check					x									
Total unit	System check								x						
Gas warning centre Transmitter Manufacturer: ExTox Gasmess-Systeme GmbH; ExSens Measurement technology															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
Total unit	Visual check					x									
Total unit	Functional check					x									
Total unit	System check								x						
Iron chloride tank Manufacturer: Likusta Umwelttechnik GmbH; Lagerbehälter Iron chloride dosing															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
Containers	Visiual check		x												
Monitoring safety equipment, Leak probe/Overfill safety	Check							x							
Clamping & flange connections	Check							x							
Leakage	Inspect container for hairline cracks or leaks.			x											
Tank	Check for extra loads (e.g. sand or snow)			x											
Fill level	Visiual check		x												

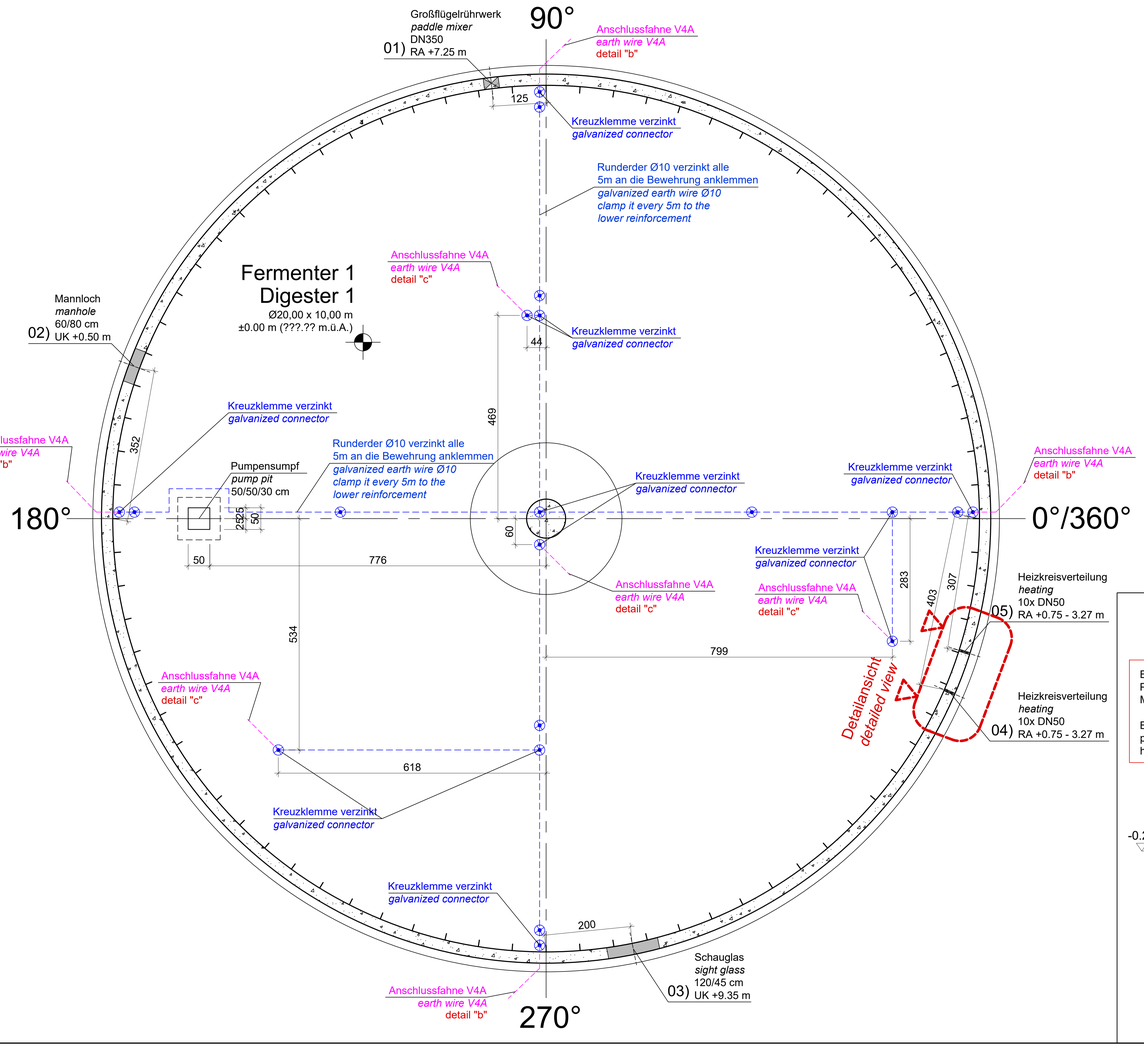
Dosing pump iron chloride Manufacturer: Verder Deutschland GmbH & Co. KG; Dura 5, 7, 10, 15, 25, 35 Iron chloride dosing															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Pump and gearbox	Visual inspection for leaks and damage, repair or replace if necessary. Unusual temperatures or noise during operation.		x												
Lubricant level in pump casing	Visual inspection and control, refill if necessary. Refer to the manufacturer's manual.		x												
Lubricant level of the gear motor unit	Visual inspection and control, refill if necessary. Refer to the manufacturer's manual.		x												
Lubricant in pump casing	Exchange. Also replace after each hose change.							x							
Hose	Check. In case of damage or burst hose or flow <25% replace.					x									
Inside the pump casing, rotor, rotor shoes and inserts	Check								x						
Bearing housings	Replacing and checking for clearance and function													30000	
Bearing housing seal	Check and replace if necessary (wearing parts)								x						
Dosing pump defoamer Manufacturer: Verder Deutschland GmbH & Co. KG; Dura 5, 7, 10, 15, 25, 35 Iron chloride dosing															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Pump and gearbox	Visual inspection for leaks and damage, repair or replace if necessary. Unusual temperatures or noise during operation.		x												
Lubricant level in pump casing	Visual inspection and control, refill if necessary. Refer to the manufacturer's manual.		x												
Lubricant level of the gear motor unit	Visual inspection and control, refill if necessary. Refer to the manufacturer's manual.		x												
Lubricant in pump casing	Exchange. Also replace after each hose change.							x							
Hose	Check. In case of damage or burst hose or flow <25% replace.					x									
Inside the pump casing, rotor, rotor shoes and inserts	Check								x						
Bearing housings	Replacing and checking for clearance and function													30000	
Bearing housing seal	Check and replace if necessary (wearing parts)								x						
Piping Manufacturer: Anlagenbau Franke GmbH; Eisenchloridleitungen / ferric chloride pipes Iron chloride dosing															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Flanges and pipe connections	Check screw connections of flanges for leaks					x									
Seals	Check for leaks						x								
Motor control valve Manufacturer: ASV Stübbe GmbH & Co. KG; K 210 Iron chloride dosing															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	Interval bsz	Maintenance is carried out by:
Engine	Check the engine for unusual running noises and			x											
Engine	Check the surface of the motor for dust deposits and clean if necessary.			x											
Entire valve	Check for pressure tightness, leakage of liquid		x												
Entire valve	Functional test			x											

Iron chloride dosing Manufacturer: Likusta Umwelttechnik GmbH; Dosing station TL-1020-19 Iron chloride dosing															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
Containers, pipes, fittings, pumps	Visiual check		x												
Valves, screw joints, ball valves	Re-tightening		x												
Bearing positions at pumps	Checking the surface temperature during operation.		x												
Electric trace heating	Checking the temperature		x												
Dosing pumps	-Firm fit of the piping -Firm fit of the pressure valve and suction valve -Intactness of electrical connections -Firm fit of the pump body fastening screws -Checking the actuator diaphragm and compensation diaphragm												**1 years**	**2000**	
Motorised ball valve	Functional test						x								
Monitoring safety equipment, Leak probe/Overfill safety	Check							x							
Rinsing / Cleaning the flowmeter	Functional test of the overflow valve and the pressure retention valve							x							
Clamping connections	Check							x							
Exhaust air system 1 Manufacturer: Scandinavian Centriair AB; Exhaust Air System - Blaise Farm Exhaust air system															
Component	***test***	once	daily	weekly	every 2 weeks	monthly	quarterly	half-yearly	yearly	every 2 years	every 3 years	first time	not later than	interval bsz	Maintenance is carried out by:
UV-reactor COLDOX™ - Frej ColdOxTM UV Technology	Inspection of lamps and ballasts, change if required. Inspection gaskets. Inspection of CIP and drainage.						x								
Safety control devices	Functional inspection of over- under pressure switch Functional inspection of door switch						x								
Scheduled replacement	Change of gaskets. Change of electrical cabinet filters.								x						
Scheduled replacement	Change of lamps. Change of CIP-nozzles.									x					
Scheduled replacement	Change of safety control devices.									x					
Double bedded carbon filter	Search of leakage of air/water. Visual inspection on the state of the carbon. Change of seals/gaskets where needed.						x								
Carbon filter - Small carbon high concentration	Search of leakage of air/water. Visual inspection on the state of the carbon. Change of seals/gaskets where needed.						x								
System fans	Check of balance and bearing state. Check of fan wheel balance Check bearing noise. Leakage check. Change of seals/gaskets where needed.						x								
Site gas measurement	Measurement of gases relevant for the odour emissions. Measurement Engineer to evaluate performance.						x								
Remote Monitoring - UV lights & ballast status + H2S readings	Create and send report of UV lights and ballasts as well as H2S readings NB assumes order and installation of measuring equipment.					x									
Carbon filter	Change carbon								x						

VERTIKALSCHNITT / VERTICAL SECTION

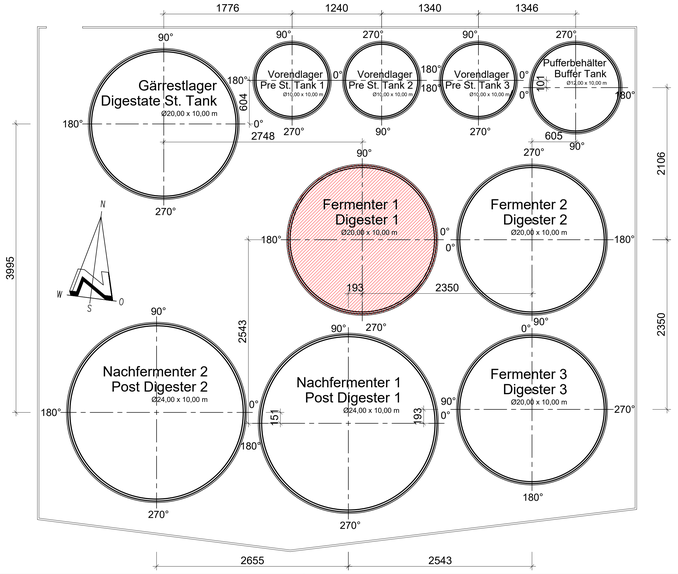


GRUNDRISS / GROUND PLAN



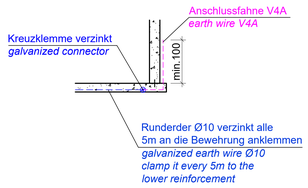
BEHÄLTERÜBERSICHT / TANK OVERVIEW

M/Scale= 1:300

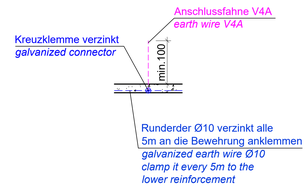


Detail Erdung / *detail earth wire*

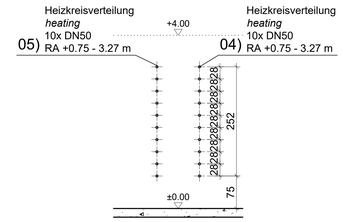
detail "b"



detail "c"



Detailansicht / *detailed view*



ERDUNG / EARTHING

(Beistellung und Einbau Fa. Wolf / delivered and mounting co. Wolf)

Runderder verzinkt / earth wire galvanised	(mind. 50 lfm)
Runderder Edelstahl / earth wire stainless steel	(mind. 12 lfm)
Erdungsklemme	(mind. 20 stk.)

EINBAUTEILE UND DURCHBRÜCHE
IMPLEMENTION PARTS AND BREAKTHROUGHS

POS POS	BESCHREIBUNG DESCRIPTION	GRÖßE SIZE	VERTIKALE POSITION VERTICAL POSITION	LEISTUNGSUMFANG SCOPE OF
02)	Mannloch/manhole	1x Rahmen/Frame 60/80 cm	UK +0.50 m	BioConstruct
04)	Heizkrv./heating	10x RDF DN50	UK +0.75 - 3.27 m	BioConstruct
05)	Heizkrv./heating	10x RDF DN50	UK +0.75 - 3.27 m	BioConstruct
01)	Großflrw./paddle mixer	1x RDF DN350	UK +7.25 m	BioConstruct
03)	Schauglas/sight glass	1x Rahmen/Frame 120/45 cm	UK +9.35 m	BioConstruct

ABKÜRZUNGEN | ABBREVIATION

WDB	= Wanddurchbruch | wall opening	OK	= Oberkante | upper edge
RDF	= Rohrdurchführung | shaft lining	UK	= Unterkante | lower edge
DDB	= Deckendurchbruch | ceiling opening	RA	= Rohrachse | pipe axis
KB	= Kernbohrung | core drilling		

BEHÄLTERSITUIERUNG

Der Mittelpunkt und die Achsen des Behälters müssen vor Baubeginn von BioConstruct eingemessen werden!

TANK POSITIONING

The designation of the tank centre and the axis is the responsibility of BioConstruct!

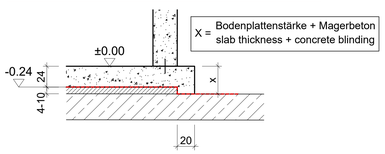
REV.	CHANGES	DATE	SIGN

Detail "a"

M=1:25

Bodenplatte Unterkante = 4 cm Magerbeton auf höchsten Punkt der bauseitigen Bodenplatte.
Magerbetonhöhe lt. Angabe BioConstruct = 4 - 10 cm

Bottom Plate lower edge = 4 cm concrete blinding at the highest point of the client supplied concrete bund. Concrete blinding height according to BioConstruct specification = 4 - 10 cm



24 cm Stahlbetonplatte (Fa. Wolf)
24 cm concrete Plate (co. Wolf)
Baufolie (Fa. Wolf)
construction foil (co. Wolf)
4 - 10 cm Magerbeton (Fa. Wolf)
4 - 10 cm concrete blinding (co. Wolf)
Stahlbetonplatte im Gefälle (bauseits)
concrete bund with slope (part of client)

SCHALPLAN | FORMWORK PLAN

Scale 1:50

AUFTRAGGEBER | CLIENT
BioConstruct GmbH
D-49328 Melle

PROJEKT / BAUSTELLE | PROJECT / SITE
BGA Evercreech
Evercreech Junction
GB-BA 4 6NA Shepton Mallet

BAUWERK | BUILDING
Fermenter 1
Digester 1

DURCHMESSER DIAMETER: 20,00 m
HÖHE HEIGHT: 10,00 m

Betongüte: Concrete Quality: C30/37

Dateiname: File Name: 2021-06-14 BIOCONSTRUCT AU2102125 SP03_DIGESTER 1_20X10

Bewehrungsstahl: Reinforcement: BST500

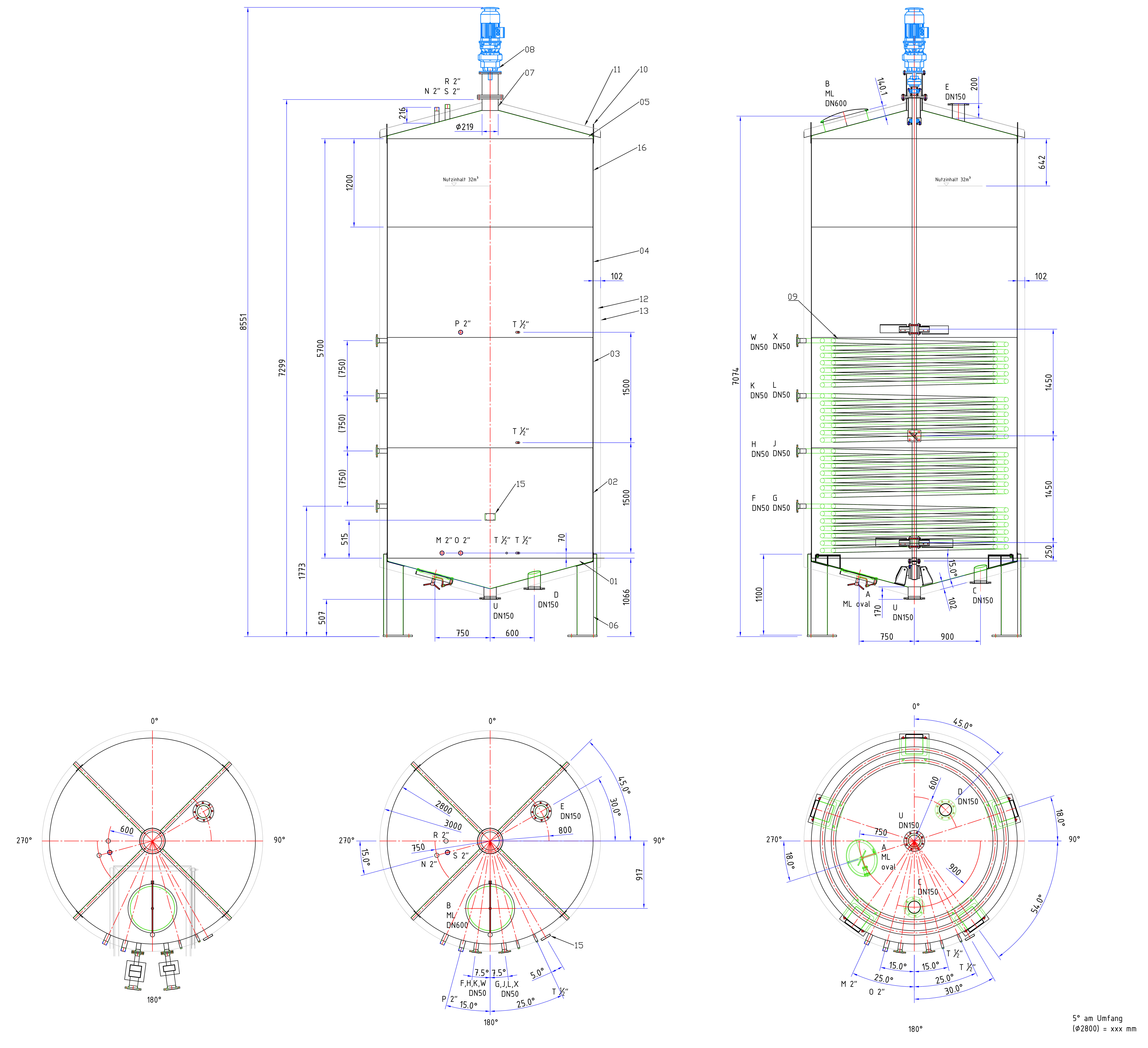
Betondeckung: Concrete Cover: 4,0 cm

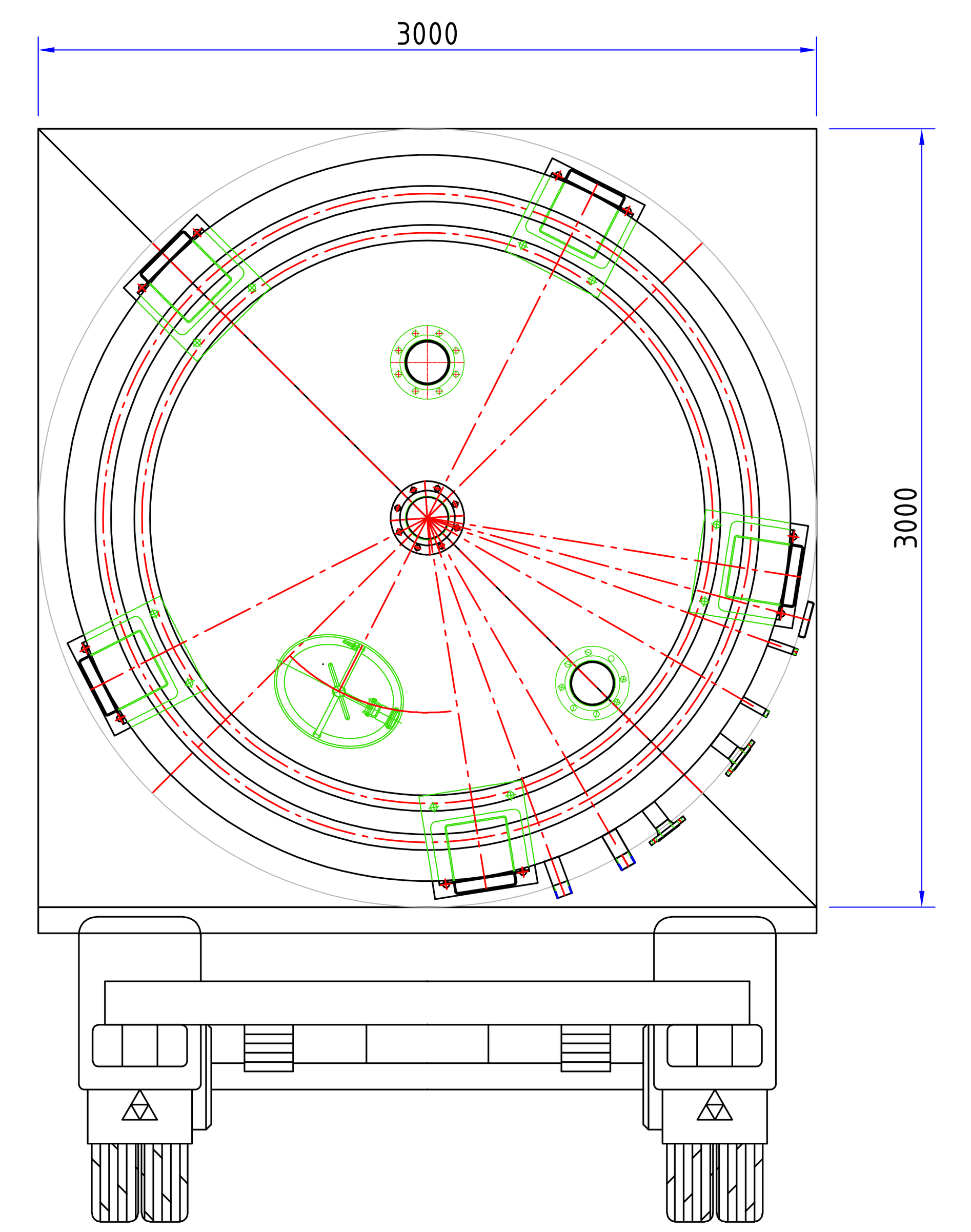
Max. Bodenpressung: Max. Bottom Pressure: -----

Sauberkeitsschichte: Blinding: 4 - 10 cm

Wolf Systembau Gesellschaft m.b.H
Fischerbühel 1
4644 Scharnstein
Tel: 07615/300-0
mail@wolfsystem.at
www.wolfsystem.at

Drawn: Fürlinger Erwin
Plan Date: 14.06.2021
changed:
Plan No.: sp03
Project No.: AU2102125





Stutzenlage der Draufsicht entnehmen!!

Stutzenliste

Pos	Stck	Bauteil	Nummer	Maße	Werkstoff	DIN/EN	WAZ	Bemerkung	Schmelze	Lieferant	Umstempelung
X	1	Flansch	DN50 PN6	Typ-Nr. 02	1.4571	1092-1		Heizkreis 4 aus			
W	1	Flansch	DN50 PN6	Typ-Nr. 02	1.4571	1092-1		Heizkreis 4 ein			
U	1	Flansch	DN150 PN16	Typ-Nr. 11	1.4571	1092-1		Entleerung			
T	4	Muffe	DN15 x 115		1.4571			Temperatur			
S	1	Muffe	2"		1.4571			Grenzstand			
R	1	Nippel	2"		1.4571			Entschäumung			
P	1	Nippel	2" x 140		1.4571			Probeentnahme 2			
O	1	Nippel	2" x 140		1.4571			Probeentnahme 1			
N	1	Nippel	2" x 216		1.4571			Spülung			
M	1	Nippel	2" x 140		1.4571			Füllstand min			
L	1	Flansch	DN50 PN6	Typ-Nr. 02	1.4571	1092-1		Heizkreis 3 aus			
K	1	Flansch	DN50 PN6	Typ-Nr. 02	1.4571	1092-1		Heizkreis 3 ein			
J	1	Flansch	DN50 PN6	Typ-Nr. 02	1.4571	1092-1		Heizkreis 2 aus			
H	1	Flansch	DN50 PN6	Typ-Nr. 02	1.4571	1092-1		Heizkreis 2 ein			
G	1	Flansch	DN50 PN6	Typ-Nr. 02	1.4571	1092-1		Heizkreis 1 aus			
F	1	Flansch	DN50 PN6	Typ-Nr. 02	1.4571	1092-1		Heizkreis 1 ein			
E	1	Flansch	DN150 PN16	Typ-Nr. 11	1.4571	1092-1		Be- & Entlüftung			
D1	1	Rohr	DN150x240	Ø168,3x2,0	1.4571	10217/7					
D	1	Flansch	DN150 PN16	Typ-Nr. 11	1.4571	1092-1		Entnahme			
C1	1	Rohr	DN150x240	Ø168,3x2,0	1.4571	10217/7					
C	1	Flansch	DN150 PN16	Typ-Nr. 11	1.4571	1092-1		Befüllung			
B	1	Mannloch	DN600		1.4571			Druckmannloch mit Verschlusskreuz			
A	1	Mannloch	oval	350x450	1.4571						

Stückliste

Pos	Stck	Bauteil	Nummer	Maße	Werkstoff	DIN/EN	WAZ	Bemerkung	Schmelze	Lieferant	Umstempelung
16	1	Mantelblech	Ø2800x1200	1200x8787x3,0	1.4571						
15	1	Schildträger			1.4301						
14	1	Befest. Isolierung			1.4301						
13	1	Isolier-Mantel			Alu			t=1,0			
12	1	Isolierung			Glaswolle			t=100			
11	4	L-Winkel	L 100x50x5	5,0x139,2x1466	1.4301			1x gespiegelt			
10	4	Anhängeöse			1.4301						
9	4	Heizpaket	P1110_01-3	DN50	1.4571						
8	1	Rührwerk	P1110_01-2	7,5 kW	1.4301/1.4571						
7	1	Lagerflansch	P1110_01-4		1.4571						
6	5	Behälterfuß	P1110_01-1		1.4301						
5	1	Kegelboden	Ø2800x15°	Ø2944 x 3,0	1.4571						
4	1	Mantelblech	Ø2800x1500	1500x8787x3,0	1.4571						
3	1	Mantelblech	Ø2800x1500	1500x8784x4,0	1.4571						
2	1	Mantelblech	Ø2800x1500	1500x8781x5,0	1.4571						
1	1	Kegelboden	Ø2800x15°	Ø2944 x 5,0	1.4571						

Reiner Schmitt GmbH
D - 66919 Weselberg
www.brennereitechnik.de

			Mantel	Rohr	
Fabr.Nr.:	43149	Zul.Betriebs-überdruck:	0,0	6,0	bar
Baujahr:	2021	Prüfdruck:	–	–	bar
Typ:	HY1	Temp:	72	85	°C
	AD Plant Evercreech	Inhalt:	32000	289	Liter
Gepr.:	–	durch:	–		

Zusätzl. Techn. Angaben:

Medium: Substrat

Leergewicht:	3600	kg
Betriebsgewicht:	35600	kg
Gewicht bei vollständiger Wasserfüllung	39100	kg

Schweißnahtfaktor:	0,85	0,85
Schweißverfahren:	WIG	MAG
Schweißzusatz:	A 1121 Nb W / 1.4576	MT-F 316L / 1.4430
Hersteller:	Fontargen	Metal Techn.-Canterbo
Schutzgas:	Schweißargon	Schweißcorgon 18
Zulassung:	DB (43.046.42/QS)	TÜV , UDT

Berechnungsgrundlage:

DGRL / AD-2000

Medium	Dichtung:	k0 x KD	k1
Dampf	Teflonband ePTFE	25 x bD	1,1 x bD
Flüssig-keit	Teflonband ePTFE	20 x bD	1,1 x bD

Hersteller: Rala
BAM Tgb.-Nr. 8677/85-4-2988
DIN-VVGW Reg.Nr.: DG-5127AQ1300
TÜV Prüf-Nr. BB6/6077

	Datum	Name
gezeichn.	14.06.2021	JR
geprüft		

Maßstab 1:25

Quelle: Ersatz: P0945

(COM:) BioConstruct

Hygienisierungstank 1

V = $32 m^3$

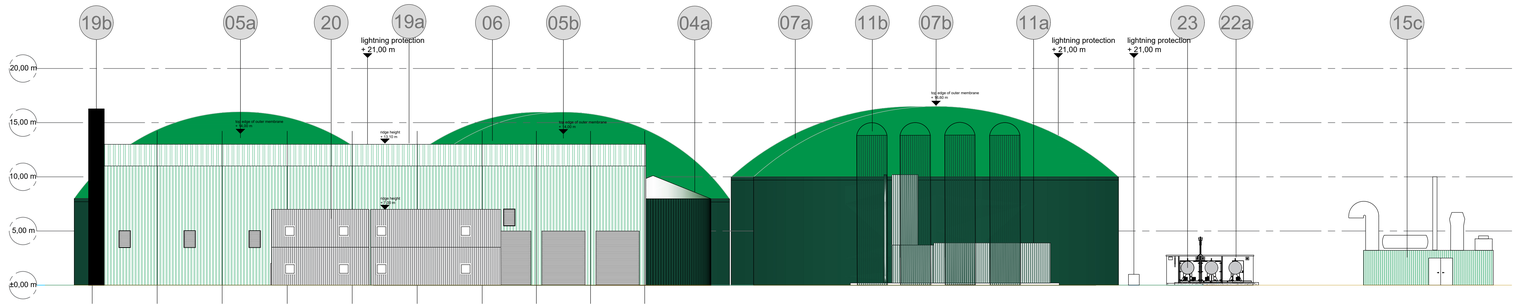
LK: ________

Anzahl: 1

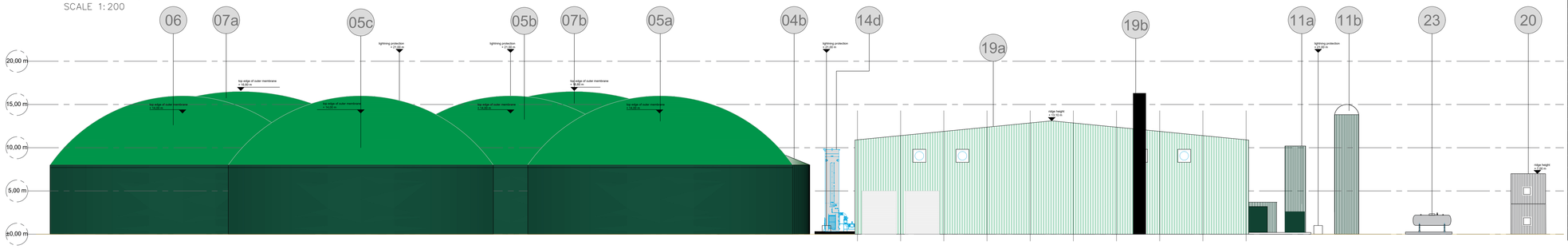
Reiner Schmitt GmbH
Brennereitechnik
Rudolf-Diesel-Straße 9
66919 Weselberg-Zeselberg
www.brennereitechnik.de

(Proj.-Nr.:)	(Zeich.-Nr.:)	(Version:/Dat.)
P1110	10	

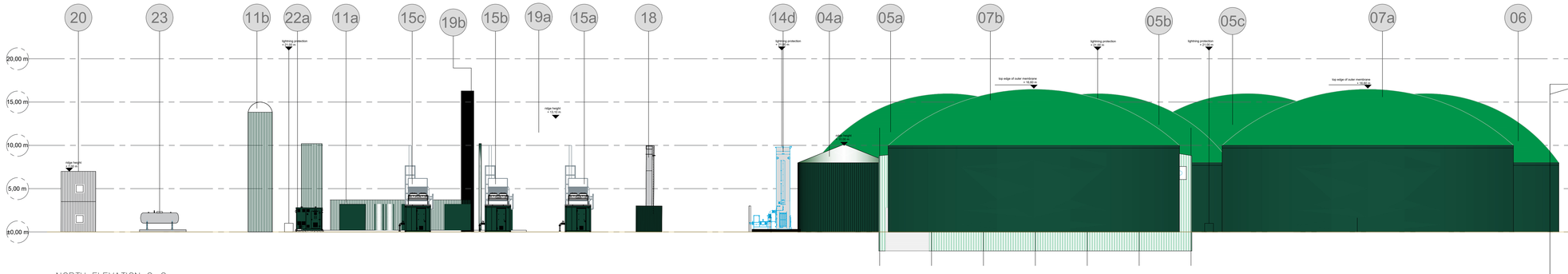
Fertigung: ohne WAZ | ohne TÜV



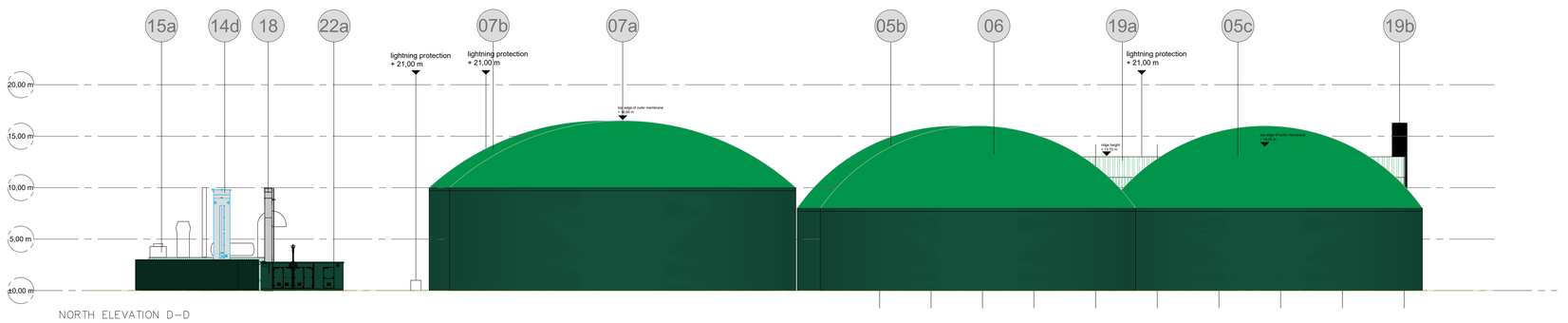
SOUTH ELEVATION A–A
SCALE 1:200



NORTH ELEVATION B–B
SCALE 1:200



NORTH ELEVATION C–C
SCALE 1:200



NORTH ELEVATION D–D
SCALE 1:200

SITE REFERENCE PLAN
NTS

No	plant item	Gross brutto [m³]	height [m]	dimension [m]	Loads
01	depacking unit	30		8 x 12	350 kN
02	feeding system	60	3,90	3,0 x 8,5	700 kN
03	mixing pit	201	4,00	Ø 8,20	70 kN/m²
04a	pre storage tank	628	8,00	Ø 10,00	140 kN/m²
04b	pre storage tank	628	8,00	Ø 10,00	140 kN/m²
04c	pre storage tank	628	8,00	Ø 10,00	140 kN/m²
05a	fermenter 1	5.655	8,00	Ø 30,00	140 kN/m²
05b	fermenter 2	5.655	8,00	Ø 30,00	140 kN/m²
05c	fermenter 3	5.655	8,00	Ø 30,00	140 kN/m²
06	post fermenter	5.655	8,00	Ø 30,00	140 kN/m²
07a	digestate storage tank 1	8.553	10,00	Ø 33,00	170 kN/m²
07b	digestate storage tank 2	8.553	10,00	Ø 33,00	170 kN/m²
08	substrate distribution				50 kN
09	pasteurisation	30	5,50		525 kN
10	Technical building		4,50	28 x 25 x 4	40 kN/m²
11a	biogas upgrading unit (with stack 10m high)		10,00		
11b	CO^2-storage tanks from Air Liquide				
14a	Gas drying unit				150 kN/m²
14b	Activated carbon filter				150 kN/m²
14c	Gas compressor				150 kN/m²
14d	Emergency Biogas flare		8,50		65kN
15a	CHP unit (with stack 10m high)		10,00	12 x 3 x 3	400 kN
15b	CHP unit (with stack 10m high)		10,00	12 x 3 x 3	400 kN
15c	CHP unit (with stack 10m high)		10,00	12 x 3 x 3	400 kN
17a	substation		3,00		40 kN
17b	transformer		3,00		40 kN
17c	LV-Board		3,00		40 kN
17d	emergency generator				40 kN
18	boiler		10,00	12 x 3 x 3	100 kN
19a	process building		14,20		
19b	odour abatement system		14,00	3 x 25	50 kN/m²
20	site office		6,00	21,26 x 4,00	40 kN
21	Weighbridge		0,00		
22	grid entry unit		3,00		
23	propane tanks		3,00		20 kN each
24	FeCl tank			4 x 4	150 kN/m²
25	optional external desulphurisation			3 x 25	50 kN/m²

1:200 Scale Bar
0 5 10 15 20 25

GENERAL NOTES:

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REV	DESCRIPTION	DATE	REV BY	CHKD BY

CLIENT
TCE

PROJECT
Weighbridge Road, AD Facility

DRAWING
GA Elevations

SCALE
1:200

PAPER SIZE
AO

DATE
04/03/2024

DRAWN BY
MDB

DAY DRAWING No.
DAY–XX–ZZ–DR–A–04–0005

REVISION
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PROJECT No.
1175–21

DRAWING STATUS
PLANNING

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W: www.day–architectural.com

RotaCut Datasheet

VOGELSANG

				Date:	31.08.2021
Customer:	BioConstruct GmbH				Vogelsang-Data
Project:	BGA Arrow Bio			Offer:	10051200
Project-Nr.:		Projectpos.-Nr.:	RCX-58G	Orderconfirmation:	12336884
Order-Nr.:	BE21-001897	Orderpos.-Nr.:		Position Nr.:	10

Operating conditions

Medium:	Biosuspensio	Temperature:	< 60 °C
Flowrate:	30 m³/h	Viskosity:	well flowable
		pH-Value:	neutral
Density:	1 - 1,1 kg/dm³	DM-content:	10. Jan %

Machine

RotaCut type: RCX-58G

RotaCut-specification

RotaCut blades:		stainless steel hardened		Suction pipe:	DN250 EN10(. .
RotaCut rotor:		St 52 nitrided		Discharge pipe:	DN250 EN10(. .
Mechanical seal:				Cleaning port:	1 x 8" DN200
wetted O-Rings:		NBR		Gesamtgewicht:	.
Cutter screen:	hochverschleißfester Spezialstahl	Design:		Waben	Ø10mm (Honeycombed)
Separator:					
Cutterhead:					

Drive System

Geared motor:

Manufacturer:	Getriebebau Nord	Frequency:	50 Hz
Type:	SK5282 AZ VL-160 L/4 TF	Motor rev.:	1460 U/min
Power:	16,5 kW	Protection type:	IP 55
Output rev.:	276 min-1	Iso-class:	F
Voltage:	3x400/690 V	Thermistors:	3
			.

Accessories

Zubehör:

Automatic Cut Control (ACC)
Automatic cutting force control via compressed air. For constant contact pressure of the cutter blades on the cutting screen during the operation.
When the blades are worn out, the system switches of with a pressure switch. Besides a position switch indicates a warning for knife change.
Easy adjustment of the contact force with constant pressure, during the blade-lifetime.
Optimal cutting performance at low pre-pressure and low wear.
Adjustment of the contact force via compressed air adaptor, or manual admission with a hand air-pump.

Notes: