**Permit Reference Number:** ERP/NP3030BJ

**Operator:** Enersys Ltd

**Facility:** Enersys Newport

**Form Number:** R1

**Reporting of Waste Disposal and Recovery for the year 2020**

| Waste Disposal & Recovery | | | |
|---|---|---|---|
| Waste Description | Disposal Route | Tonnes | Recovery Tonnes |
| | | | |
| 1) Hazardous Wastes | | | |
| Lead Waste Streams | Smelting | | 2,177 |
| Mixed Hazardous Load | D15 Storage pending D | 63.57 | |
| Oil and Water | D09 Physio-chemical treatment | 64.86 | |
| Acid | D09 Physio-chemical treatment | 186 | |
| Lead Contaminated PPE | R13 Storage pending R | 38.32 | |
| Chemical Waste | R03 and R13 | 70.21 | |
| Total hazardous waste | | 422.96 | 2,177 |
| | | | |
| 2) Non-Hazardous Wastes | | | |
| Plastic Cases | Recycled | | 25.95 |
| General Waste | Energy from waste | | 17.28 |
| Cardboard | Recycled | | 67.73 |
| Wood | Recycled | | 60.30 |
| Metal | Recycled | | 62.30 |
| Separator Paper | Energy from waste | 12.90 | |
| Polythene | Recycled | | 12.48 |
| Total non-hazardous waste | | 12.90 | 246.04 |
| | | | |
| TOTAL WASTE | | 435.86 | 2,423.04 |

| Trends in Waste Disposal and Recovery | | | |
|---|---|---|---|
| | | | |
| Year | Parameter | | |
| | Named Waste | Total Waste | Waste per unit output |
| 2016 | ALL | 2691.04 | 0.138T/T |
| 2016 | RECOVERED | 2527.43 | 0.129T/T |
| 2016 | DISPOSAL | 163.61 | 0.008T/T |
| 2017 | ALL | 3077.28 | 0.133T/T |
| 2017 | RECOVERED | 2929.68 | 0.127T/T |
| 2017 | DISPOSAL | 147.6 | 0.007T/T |
| 2018 | ALL | 3082.09 | 0.125T/T |
| 2018 | RECOVERED | 2824.62 | 0.115T/T |
| 2018 | DISPOSAL | 257.47 | 0.010T/T |
| 2019 | ALL | 4,751.15 | 0.182T/T |
| 2019 | RECOVERED | 3,525.74 | 0.13T/T |
| 2019 | DISPOSAL | 1,225.41 | 0.047T/T |
| 2020 | ALL | 2,858.9 | 0.161T/T |
| 2020 | RECOVERED | 2,423.04 | 0.137T/T |
| 2020 | DISPOSAL | 435.86 | 0.025T/T |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

Date created: 29/01/2021

**Operator's comments:**

**Hazardous Wastes**

Lead Waste Streams and Mixed Hazardous Loads have reduced in 2020 due to the decrease in production volumes in comparison to 2019 levels.

Oil and Water for disposal have seen a rise from 2019 levels due to process waste and waste generated from the movement and associated works at of the facilities demineralisation plant. Reduction to oil and water should be seen throughout 2021.

Acid waste has seen an increase due to the initial set up and calibration of associated with the commissioning of the newly installed lead acid plant as well as continued volumes of waste acid from production.

Lead contaminated PPE waste have seen a reduction due to the reduction of staff levels within Q2 and Q3 of the calendar year, due to current production forecasts lead contaminated PPE will rise. It is of note that a project has been initiated to look at reducing the amount of lead contaminated PPE generated on site which involves the use of reusable PPE instead of disposable PPE.

Chemical Waste have seen an increase from 2019 levels this due to the disposal of obsolete and out of date stocks of chemicals. Furthermore, due to reduced orders, multiple 5S activities have been carried out onsite which have led to an increase in the chemical waste stream. 5S projects are set to increase in 2021 however as sorting activities are coming to an end it is projected that the chemical waste stream is projected to stabilise in 2021.

**Non-Hazardous Wastes**

Plastic Cases waste streams and cardboard waste streams have reduced in 2020 due to the decrease in production volumes in comparison to 2019 levels.

The General waste stream have also reduced in 2020 in part due to a decrease in production volumes and a reduction to staff levels within Q2 and Q3 in comparison to 2019 levels furthermore due to the COVID19 pandemic where possible EnerSys Personnel work from home as a result due to less personnel onsite generating waste EnerSys Ltd have seen a reduction of 10% within the general waste stream.

Over the course of 2020 EnerSys Ltd have seen a reduction within the wood waste stream, this is due to a decrease in production volumes and a focus on the use of reusable pallets to transport products internally within the facility.

Metal waste has increased in comparison to 2019 levels this is a result of an increase in 5S activities within the facilities the disposal of obsolete machinery, parts and racks furthermore it is of note that over the course of 2020 EnerSys have increased proactive maintenance and have undertaken replacement of old pipework and ducting which also increases the amount of waste metal generated onsite.

From the data above it can be determined that although there has been an overall decrease in the amount of paper onsite in relation to 2019 levels. This is due to the reduced onsite production seen over 2020. However, in comparison to 2019 figures it can be identified that paper waste has changed from recycled to disposal. The reasoning behind the change of disposal method is due to the classification of the MMMF separator paper that is utilised onsite. MMMF separator paper has been classified as suspect carcinogenic under REACH and as a result needs to be classified as hazardous waste for disposal and cannot be recycled.

Finally, it can be identified from the data that over the course of 2020 there has been a small increase regarding the Polythene through investigation this small increase is a result of the collection regime employed by EnerSys whereby EnerSys bales and stores polythene until such a time a full wagon can be collected. Due to this process a lag was created between waste creation and waste disposal and as a result we have seen pickup of polythene in the early part of 2020 that was generated in 2019 which equates to the small increase in polythene.

**Signed** .....  ..... **Date 29/01/2021** **(authorised to sign as representative of the Operator)**

**Facility:** Enersys Newport **Form Number:** WU1

## Reporting of Water Usage for the year 2020

| Water Usage | | |
|---|---|---|
| **Water Source** | **Usage ($m^3$)** | **Specific Usage ($m^3/t$)** |
| | | |
| **Mains water** | **21,719** | **1.22$M^3/t$** |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| **TOTAL WATER USAGE** | **21,719** | **1.22$M^3/t$** |

| Trends in Water Usage | | | |
|---|---|---|---|
| **Year** | **Parameter** | | |
| | **Named Water source** | **Total Water usage** | **Water per unit output** |
| **2012** | | **68,640** | **3.4 m3/t** |
| **2013** | | **60,532** | **2.86 $m^3/t$** |
| **2014** | | **47,225** | **1.93 $m^3/t$** |
| **2015** | | **37,463** | **1.80$m^3/t$** |
| **2016** | | **22,460** | **1.15$m^3/t$** |
| **2017** | | **19,056** | **0.82$m^3/t$** |
| **2018** | | **24,892** | **1.01$m^3/t$** |
| **2019** | | **12,230** | **0.47$m^3/t$** |
| **2020** | | **21,719** | **1.22$M^3/t$** |

**Operator's comments:**

From the results above it can be determined that the volume of water usage ($M^3$) and specific usage ($M^3/t$) has increased over 2020 in comparison to the last 3 years, as a result of this finding an investigation was conducted into the reasoning behind the increase into the water usage.

From the internal investigation it can determined that there are a number of factors associated with the rise in water usage. Firstly, within the early part of 2020 EnerSys Ltd installed and commissioned a new acid dilution plant as a result, the process of acid filling changed from the purchasing of diluted acid for the filling of products to the dilution of a higher concentration of acid prior to the filling of products.

Secondly, due to increased quality inspections and tighter parameters set around product specifications regarding lead paste used within the manufacturing process the site has seen an increase in waste (out of specification) lead paste on investigation it was determined that in order to manufacture the correct consistency of lead paste more water has to be added to the paste. there has been increased

Work is scheduled in 2021 to review the pasting process of manufacture to identify opportunities to increase the efficiency of water consumption within the facility to aid in reducing the total water usage onsite and in turn reduce the water usage per unit output.

**Signed** ..... ..... **Date 29/01/2021** **(authorised to sign as representative of the Operator)**

**Permit Reference Number: ERP/NP3030BJ** **Operator: Enersys Ltd**

**Facility:** Enersys Newport **Form Number:** E1

## Reporting of Energy Usage for the year 2020

| Energy Usage | | | |
|---|---|---|---|
| Energy Source | Energy Usage | | $CO_2$ Produced (tonnes) |
| | Quantity | Primary Energy (MWh) | |
| | | | |
| Electricity * | 21,727.62 MWh | 52,146.29 MWh | 8,662.17 |
| Natural Gas | 11,620.55 MWh | 11,620.55 MWh | 2,209.23 |
| Gas Oil | 0 | 0 | 0 |
| Heavy Fuel Oil | 0 | 0 | 0 |
| | | | |
| | | | |
| | | | |
| | | | |
| TOTAL | 33,348.17 | 63,766.84 | 10,871.4 |

*** Conversion factor for delivered electricity to primary energy = Q x 2.4**

| Trends in Energy Usage | | | |
|---|---|---|---|
| Year | Parameter | | |
| | Primary Energy usage | $CO_2$ produced | $CO_2$ per unit output |
| 2011 | 79,334.97 | 13533 | 0.7544T/T |
| 2012 | 87,673.58 | 14037.67 | 0.7039T/T |
| 2013 | 77,719.43 | 13258.59 | 0.6254T/T |
| 2014 | 84,830.98 | 14441.93 | 0.5891T/T |
| 2015 | 77,982.9 | 13282.0 | 0.6338T/T |
| 2016 | 73,253.6 | 12522.5 | 0.6416T/T |
| 2017 | 74,500.3 | 12712.6 | 0.5498T/T |
| 2018 | 77,656.4 | 13242.7 | 0.5375T/T |
| 2019 | 79,403.7 | 13523.6 | 0.5186T/T |
| 2020 | 63,766.84 | 10,871.4 | 0.6141T/T |

**Operator's comments:**
An Investigation has been conducted into the increase in $CO_2$ per unit value. It has been identified that the increase in overall $CO_2$ per unit output due an increase in quality checks and identification faults in batteries after the formation (charging) process of manufacture. This is causing an increase in energy usage and not accounted in the production output, and subsequently increasing the $CO_2$ per unit output as the suspect/failed batteries are broken down and not distributed to customers.

It is of note that in 2021 work has started into increasing quality checks and identification of faults within products prior to the acid filling and formation (charging) processes of manufacture reducing the amount of suspect batteries being processed and charged in 2021 thus decreasing the $CO_2$ per unit output going forward.

**Operator's notes:**
ELECTRICITY CO2 PRODUCED = 52,146.29 / 6.02 = 8,662.17
GAS CO2 PRODUCED = 11,620.55 / 5.26 = 2,209.23
PRODUCTION OUTPUT IS 17,702.48 TONNES

**Signed** ..... ..... **Date 29/01/2021** **(authorised to sign as representative of the Operator)**

**Permit Reference Number: ERP/NP3030BJ** **Operator: Enersys Ltd**

**Facility:** Enersys Newport **Form Number:** PI1

## Reporting of Performance Indicators for the year 2020

| *Annual Production/Treatment* | |
|---|---|
| **Production of Battery Products** | **17,702.48 Tonnes** |

## Environmental Performance Indicators

| Performance Indicators | | |
|---|---|---|
| **Parameter** | **Annual Average** | **Units** |
| **Energy Use** | **1884 kWh/T** | **kWh/tonne** |
| **Potable water use** | **1.22** | **$m^3$/tonne** |
| **Waste disposed** | **0.02** | **T/tonne** |
| **Waste recovered** | **0.27** | **T/tonne** |
| **Mass lead released** | **0.004464** | **Kg/tonne** |
| **Mass lead released** | **4.4638E-06** | **T/tonne** |

| Trends in Environmental Performance | | | | | |
|---|---|---|---|---|---|
| **Year** | **Parameter** | | | | |
| | **Potable water use** | **Energy Use** | **Waste Disposed** | **Waste recovered** | **Mass lead released** |
| **2011** | **3.5 $m^3$/t** | **2208 kWh/T** | **205.04 Tonnes** | **4553.77 Tonnes** | **161.4 Kg** |
| **2012** | **3.4 $m^3$/t** | **2189 kWh/T** | **179.95 Tonnes** | **4907.54 Tonnes** | **228.6 Kg** |
| **2013** | **2.86$m^3$/t** | **1926 kWh/T** | **118.72 Tonnes** | **5046.69 Tonnes** | **176.23 Kg** |
| **2014** | **1.93$m^3$/t** | **1789 kWh/T** | **37.85 Tonnes** | **3707.63 Tonnes** | **93.39 Kg** |
| **2015** | **1.80$m^3$/t** | **1962 kWh/T** | **202 Tonnes** | **3078.20 Tonnes** | **151.08 Kg** |
| **2016** | **1.15$m^3$/t** | **2005 kWh/T** | **163 Tonnes** | **2527.43 Tonnes** | **65.68 Kg** |
| **2017** | **0.82$m^3$/t** | **1697 kWh/T** | **147.6 Tonnes** | **2929.68 Tonnes** | **66.17 Kg** |
| **2018** | **1.01$m^3$/t** | **1652 kWh/T** | **257.5 Tonnes** | **2824.60 Tonnes** | **104.1 Kg** |
| **2019** | **0.47$m^3$/t** | **1579 kWh/T** | **1225.41 Tonnes** | **3525.74 Tonnes** | **95.5 Kg** |
| **2020** | **1.22$m^3$/t** | **1884 kWh/T** | **435.86 Tonnes** | **2423.04 Tonnes** | **79.02 Kg** |

**Operator's comments:**
Energy use, Potable water use, and waste commentary provided previously.

**Mass Lead Released:**
With respect to mass lead (Pb) released, although the mass lead released per tonne of product manufactured is higher than 2019 from the figures above it can be deduced that there has been a decrease in the overall amount of mass lead released in comparison to 2019 levels this is due to a reduction in manufacture of product and the overall running times of the facility dropping from 24/7 production schedule to a 24/5 hour week.

**Operators Notes:**
Mass lead released - Pounds of lead emitted / 2.205, Mass of lead released Kg/tonne – Mass of Lead Released / Production of Battery Products, Mass of lead released T/tonne – Mass of lead released (kg) / 1000

**Signed** ..... ..... **Date 29/01/2021** **(authorised to sign as representative of the Operator)**