

## **Permit Condition 2.4.1.2 – Water Efficiency**

IPPC Permit Number: DP3430LX

Operator: ZF Automotive UK Ltd.

Installation: ZF Automotive UK Ltd. Pontypool Site

### **Water use**

The vast majority of water use at ZF Ltd. is for rinsing purposes on the surface plating processes. Adequate rinsing between process stages is essential to achieving a high quality surface finish required for the product. However, water is also used for making-up new process fluids, topping-up tanks as a result of evaporative losses, and balancing drag-in/drag-out volumes.

### **Types and quantities of water used**

All water used at ZF is sourced from the town's mains supply. Mains water has a water conductivity of about 300 micro Siemens.

Water use and treated effluent discharge is monitored and reviewed continuously. Average annual water consumption for the whole site is given in Table 1.

**Table 1 - Average annual and daily water use.**

	<b>Annual water use 2016</b>	<b>Annual water use 2017</b>	<b>Annual water use 2018</b>	<b>Annual water use 2019</b>
Mains water (M <sup>3</sup> )	72304	70307	50375	48368
Treated effluent discharge (M <sup>3</sup> )	53254	44685	35201	29109
% of Mains water used for Effluent treatment	73.7%	63.6%	69.9%	60.2%
Processed Parts	9,091,746	8,009,182	6,269,630	5,666,326
Water Use (M <sup>3</sup> / 1000 parts)	7.95	8.78	8.03	8.53
Treated Effluent Discharge (M <sup>3</sup> / 1000 parts)	5.86	5.58	5.61	5.14

Water readings are taken from the site meter weekly and a 'V' notch tank and digital flow meter is used to measure the volume of treated water discharged to sewer.

The remainder of mains water not used in the effluent treatment process is used to make up process tank chemical solutions, make up soluble oil solutions for machining processes, provide domestic services, etc.

There has been a significant reduction in Drumbrake production in 2019.

### **Water minimisation programme**

ZF minimise the use of water through the application of ISO14001 objectives and targets. The consumption of water is monitored and targeted as part of this programme. Water use has been minimised in a number of ways at site primarily through the application of best practice in the design phase of the plant. Further improvements have been identified through a recent study carried out on the plant and these are detailed below.

In general, ZF's EMS programme includes:

- The ongoing identification and implementation of water minimisation opportunities;
- The active participation and commitment of staff at all levels; and
- Monitoring of water usage and reporting, as described in Table 1 above.

## **Water Minimisation Improvements Update**

ZF has previously identified water minimisation improvements which it has been pursuing to reduce the site water usage.

### ***Water regeneration***

Water regeneration plants were installed to both the Anodise and Zinc processes during 2008/2009. Initially there were several problems with the installation and commissioning of these units where they were regenerating every few hours instead of weekly. This caused the units to use an excessive amount of caustic and acid solution to correct the rinse waters being passed through the unit.

Following investigations, it was found that the heavier contaminated rinse waters following the process tanks were the cause of the problem and hence had to be removed from the regeneration system. Therefore, to date 4 of the 8 rinse water flows on the zinc plant and 5 of the 7 rinse waters on the Anodise plant have been connected into the regeneration systems and the units are running effectively regeneration at the correct frequency.

However, during 2013 the regeneration plants failed, due to the depletion of the resin. The resin was replaced however after 3 months the units failed again causing the units to again use an excessive amount of caustic and acid solution to correct the rinse waters being passed through the unit. Several attempts have been made to re-commission the units but to date none have been unsuccessful. Following the investigations, the units were deemed beyond economical repair.

At present replacement water regeneration units are not being considered for the plating processes.

### ***Process Actions***

There was an initial increased water usage in 2015 is due to the increase in production through the zinc nickel plating process however since 2015 there has been a gradual reduction in water use by the site and processes. This has coincided with a reduction in the production of Drumbrake parts leading to an overall reduction in throughput for the process plants.

The process dwell and withdrawal times are regularly reviewed to optimise the process and reduce process solution drag out. Also, in order to help reduce process solution drag out the component hanging positions on the jigs are reviewed and where necessary the jig design has been altered to reduce the ability of solution to collect and remain within the components being plated. Presently, all viable actions have been completed to optimize the swill and dwell times of the processes required to maintain the plating quality of the product and there are no further actions currently being undertaken.

New jigs have been introduced to increase the number of parts that can be held per flight bar and therefore minimize the number of flights required to be put through the plant. This will subsequently assist in minimizing the level of drag out from the process tanks.

Rinse tank swill rates are monitored and have been adjusted to minimize the through flow from the process to the effluent treatment process whilst maintaining the required plating quality.

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