



HAGER+ELSÄSSER

## Case History

### Case History – Jaguar Cars Ltd

Jaguar Cars' Halewood factory near Liverpool has been producing the range of Jaguar X-type cars since its introduction. Years ago, the Halewood factory produced the Escort model for the Ford Motor Company, and its production capability is therefore significantly greater than is required for the Jaguar X-type.

It was therefore decided to move production of Land Rover's new Freelander 2 model to Halewood to be manufactured alongside the Jaguar X-type, therefore freeing more capacity for production of Land Rover's other highly popular Discovery 3 and Range Rover models.



Since its production began early in 2007, the new Freelander 2 has proved to be highly popular and is in great demand.

During the manufacturing and assembly of motor vehicles a substantial amount of industrial effluent is produced, primarily from the painting of the vehicle bodies, and this needs to be properly treated to make it safe to discharge to the environment. Halewood had an existing effluent treatment plant serving the Jaguar X-type. However, it was old, required constant attention from operators and in any case was too small for the anticipated combined production. It was therefore decided to invest in a new effluent treatment facility with plenty of capacity for both models plus spare capacity for future increases in production. The new plant had to be automated to a high degree and far more reliable than the old plant, as well as providing spare capacity for further increases in factory output in the years ahead.

This very significant investment clearly shows Jaguar and Land Rover's commitment both to the environment and the future of production at the factory.

#### A Joint Organo and Hager + Elsässer Company

**Head Office:**  
Field Place Estate,  
Broadbridge Heath,  
Horsham,  
West Sussex RH12 3PB  
Tel: +44 (0)1403 272772 Fax: +44 (0)1403 272770  
E-mail: [sales@he-water.co.uk](mailto:sales@he-water.co.uk)

**Scotland Office:**  
Unit 3A,  
Nonwood Industrial Estate,  
Longridge Road,  
Whitburn EH47 8HB  
Tel: +44 (0)1501 745666 Fax: +44 (0)1501 741234  
E-mail: [enquiries@he-water.co.uk](mailto:enquiries@he-water.co.uk)

Company Reg. No: 3734480

[www.he-water.co.uk](http://www.he-water.co.uk)

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A new location within the factory site was identified for the new plant, to allow it to be built whilst production and effluent treatment continued via the old plant. The new plant consists of the following main elements:

### 1. Effluent Collection and Transfer System

The effluent produced in the body painting line is segregated into three main streams; alkaline, acidic and paint-containing. Each of these streams is sub-divided into two; concentrated process solutions that are dumped occasionally and constantly flowing but dilute rinse water plus occasional complete dumps of rinse water tanks in the process line.

These six streams are received into six large lagoons, each provided with duty / standby transfer pumps and level controls. The use of the large lagoons permits the rapid emptying of tanks on the process line when necessary, independently of the capacity of the plant to treat the effluent.

### 2. Main treatment Plant

The effluent pumped from the transfer pumps is treated in a multi-stage system including the following main stages:

- a. Paint coagulation system
- b. Neutralisation and Flocculation systems
- c. Two lamella tube clarifiers
- d. Sludge collection and partial dewatering tank
- e. Fully automated sludge filter press system
- f. Discharge flow and pH monitoring & recording



Treatment and Settlement Tanks

### 3. Treatment Chemical Storage and Dosing

Facilities for storage of the treatment chemicals are also included:

- a. Ferric chloride liquor
- b. Hydrochloric acid, including vent scrubbing system
- c. Caustic soda liquor, including heating and insulation
- d. Polyelectrolyte storage, make-up and dosing system



**Bulk Chemical Storage Tanks**

#### 4. Fully automated control system

The integrated control system complies with Jaguar's own in-house specification and includes a SCADA system.

The plant is shown in outline in the outline Flow Diagram below:



Organo's scope of work included:

1. All building, civil and refurbishment works
2. Chemical resistant lining of chemical bunds, storage lagoons and floor spillage systems
3. Provision of permanent boreholes for sub-soil testing
4. Design, supply and installation of new treatment plant
5. Testing, commissioning and setting to work of the whole system



**Fully Automatic Filter Press for Sludge Dewatering**

Since commissioning and handover, the treatment plant has consistently produced a discharge quality well within the requirements of the Consent conditions from the Environment Agency which are shown in the table below:

Parameter	Value
pH	6-10
COD	<600kg/day
Separable Oil & grease	<100mg/l
Total hydrocarbons	<5mg/l
Total toxic metals	<10mg/l
Zinc	<2mg/l
Total chromium	<0.2mg/l
Hexavalent chromium	<2mg/l
Nickel	<2mg/l
Sulphide	<1mg/l
Sulphate	<1000mg/l

This is the latest in a significant number of wastewater treatment plants for car, van and lorry manufacturing companies that have been built by the team at Hager + Elsässer.

If you have a similar problem and would like to discuss possible solutions for effluent treatment and / or water recycling, please contact us.