

## CASE HISTORY

SEMICONDUCTOR  
SOLAR  
PHARMA  
POWER GENERATION  
FOOD & BEVERAGE  
PULP AND PAPER  
CHEMICAL  
OIL AND GAS  
MINING  
**AEROSPACE AND TRANSPORT**



# Aero Engine Overhaul Facility Wastewater Treatment

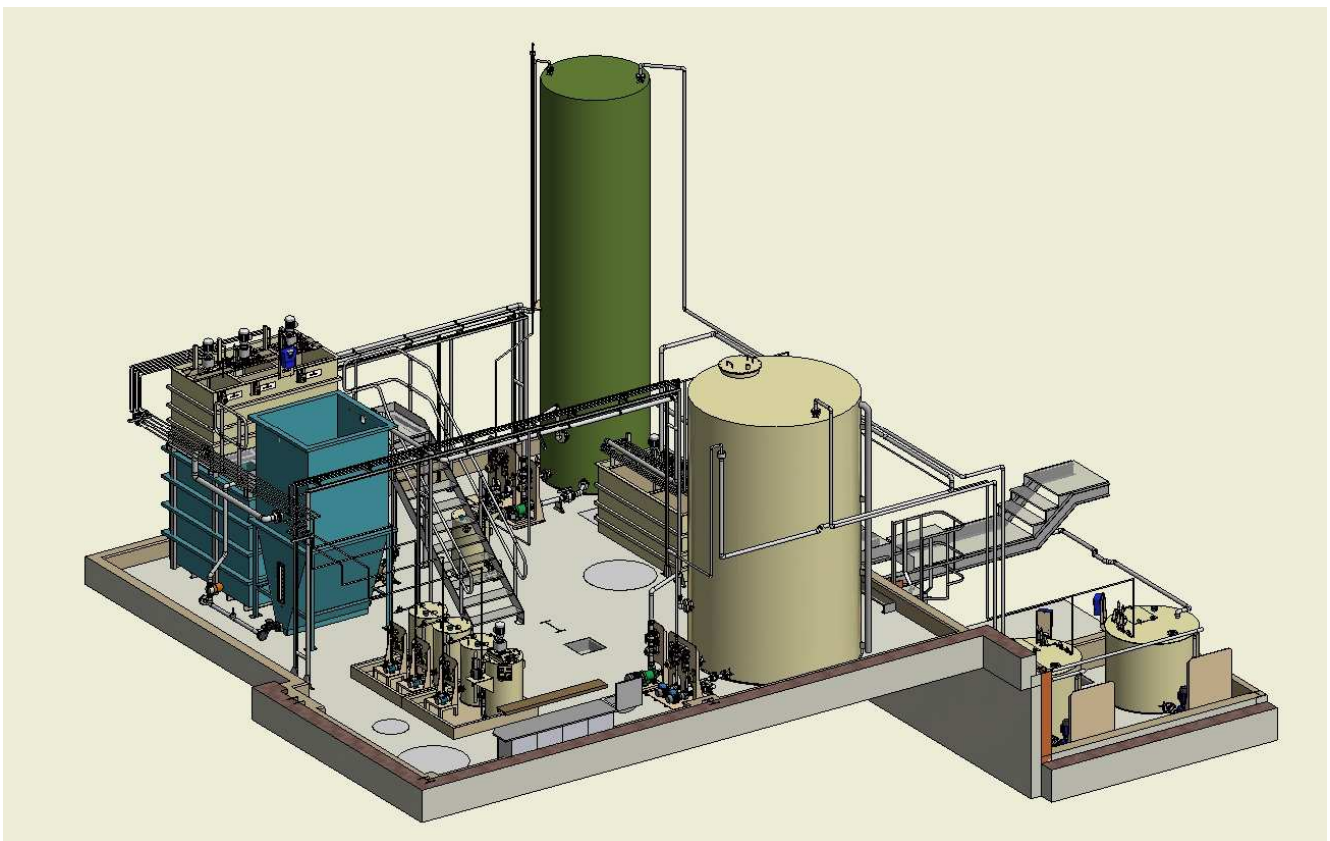


## The Project

Components for the aviation industry are necessarily manufactured and maintained to very high quality standards. This high quality includes ensuring that each part remains free from corrosion. It is perhaps not always appreciated that, since most aircraft fly low over the sea at some point, components are subjected to particularly corrosive environments and of course if those components were corroded, the consequences could be devastating! Protection from corrosion includes subjecting each part to a range of so-called finishing processes, which necessarily produce wastewater containing a wide range of chemicals and this must be properly treated before it is discharged from the factory.

This plant was designed, installed and commissioned by H+E for an existing client, who required a new treatment system. Typically, for industrial wastewater treatment, H+E designs and supplies provides plant on an EPC basis. H+E also provides on-going regular Service visits and Technical support throughout the life of the plant, thereby ensuring its long-term efficient operation.

Wastewater flowing to the plant is segregated into those streams that contain heavy metals and those that require only neutralisation of their pH.



Isometric view of the entire plant

The plant was installed and commissioned within a fully operational factory and therefore a great deal of co-ordination was required at many levels. Eventually, once the plant was commissioned, the flows were switched to the new plant.

## Process Steps

Metal-containing wastewater is pumped into a Storage tank that allows the peaks in both incoming flow and concentration of contaminants to be balanced so that a more-or-less constant quality & flow rate passes to the chemical treatment stages. Chemical treatment includes hexavalent chromium reduction, neutralisation and flocculation. Following flocculation, the effluent then passes by gravity to a Tube Settler where the solids are efficiently removed. The collected sludge is automatically transferred to a separate holding. It settles further in the quiescent conditions, clear supernatant liquor is decanted off, while the sludge is dewatered in a filter press before eventual off-site disposal.

The conductivity of both the incoming streams is monitored to advise the operators of any unusual occurrences. For example, should there ever be a major tank failure, the incoming conductivity would rise enormously and immediately generate an alarm. This is merely an example of this client being cautious on behalf of our environment.

The other wastewater that does not contain any metals is again pumped to a Balance Tank, performing a similar function to that for the metal-containing stream, before being transferred to the final 2-stage Neutralisation system, where it is joined by the metal stream after treatment and either acid or alkali is added on demand to ensure a neutral pH prior to discharge.

Before final discharge to foul sewer, the treated wastewater has its pH, temperature and flow rate monitored and recorded.

In such plants as this, the accurate addition of chemicals is absolutely critical and, with the exception of sodium bisulphite, is controlled by its pH. Therefore, if the pH reading is not accurate, chemical dosing will be incorrect, with the result that poor quality effluent will be discharged. In order to assist in maximising accuracy, automatic in-place cleaning of the pH probes is included. This takes place without interrupting flow.

The effluent quality is monitored regularly, before, during and after the treatment process.

### Discharge Consent requirements:

Parameter	Value
COD	<2,000mg/l
Zinc	<2mg/l
Cadmium	<0.1mg/l
Copper	<2mg/l
Lead	<1mg/l
Chromium	<2mg/l
Nickel	<2mg/l
Suspended Solids	<1,000mg/l



Chemical Treatment Stage



Chemical Reagent Dosing

### On-going Service & Technical Support

H+E offers service and technical support to every client. We want to ensure that you remain satisfied with the operation of the system we provide for the duration of its life which, with reasonable care and attention, will be at least 25 years. Generally a regular service visit and the occasional spare part is all that is required.



H+E ranks among the world's leading suppliers in the fields of: water & wastewater treatment, and energy efficiency. Based on its global presence, the **H+E GROUP** has completed projects in over 50 countries.



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