

Shell Green Mersey Valley Processing Centre Extension

Sludge Treatment

The Client

United Utilities (UU) are the 2nd largest water company in England /Wales. They are responsible for an area in the north west of the UK, which includes major cities such as Manchester and Liverpool.

The Works

Shell Green situated in Widnes is a strategic digested sludge incineration scheme at the existing UU facility next to the Fiddler's Ferry Power Station. It is responsible for the safe disposal of wastewater from the Manchester and Liverpool regions.

Contract

D&B project is a joint venture between VWS and Costain titled S3JV undertaken on behalf of UU plc which uses the design and MEICA expertise of VWS and the construction capability of Costain for the site's infrastructure



An extension to an existing sludge incineration and treatment plant

Background

The Mersey Valley Processing Centre (Shell Green) Extension is the current 'Flag Ship' project for United Utilities. The project will improve the sludge incineration capability at Shell Green and to maximise the energy recovered from the heat generated increasing the efficiency of the plant. The contract is a Joint Venture with Veolia Water Solutions & Technologies and Costain called S3JV.

Services Provided

- Design management
- Construction management
- Risk management
- Fixed price, fast-track contract
- 3D interactive modelling
- Integration of all detailed design, procurement, construction, testing and commissioning of civil, mechanical and electrical works



Key Figures

Contract award - Sept 2007

Contract value - £91million

Dewatering plant capacity
volume 500m³/h; solids 9.9 tDS/h; feed sludge 2.0%-4.0% w/w, Off eight centrifuge units, each rate are circ 63 m³/h, with dedicated feed pump and polymer dosing.

Incineration Capacity

Stream 3 (new) 5.7 tDS/h, Stream 1&2 each 2.1 tDS/h. Pre-Dryers 2 off 3.33 t/h evaporation each, WHB capacity nominal 15.4 t/h max 20.7 t/h at ~40.0 bar(a) & 400° C.

Flue Gas Treatment Stream

3 (new) Max Gas Flow 55,000 Nm³/h, new 85.0 m Stack.

CSRP (DAF Units) 2 off each 250 m³/h.

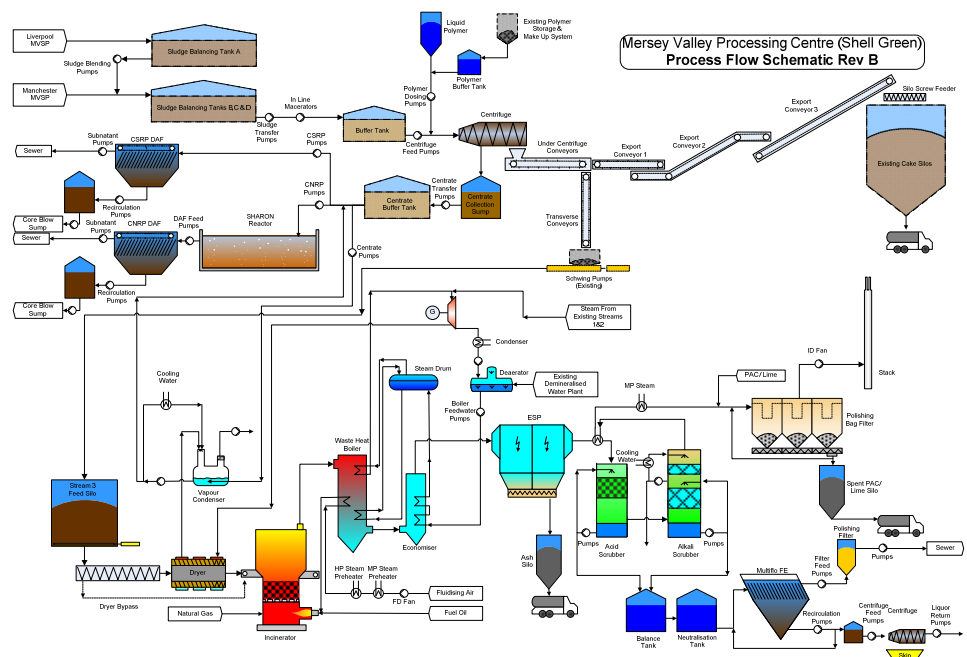
CNRP SHARON tank

volume 3150 m³, Capacity 1.4 MI/d, 1 DAF ~62.0 m³/h plus auxiliary plant pH correction, nutrient & carbon source (methanol) dosing.

Project Description

Expansion of existing facility for drying and incineration of sewage sludge, involving all design, procurement, civil and M&E works for:

- Modification to the sludge pumping station and reception tanks
- Phased removal of existing dewatering equipment and replacement with 8 centrifuges complete with supporting steelwork, associated pumps, pipework, instrumentation, control panels and temporary dewatering facility
- Construction of new centrate treatment facilities for solids and nitrogen removal and a new conveyor system to transport centrifuge sludge cake
- Provision of additional fluidised bed incinerator with associated systems, & provision of additional stream of gas cleaning with partial replacement of existing. Modify/Replace/Augment ash silo and transport systems
- Substantial modification of existing condensing turbine generator to maximise electricity generation
- Modification of the existing and the construction of new Scrubber Effluent Treatment Plant
- Modify existing and provide new: cooling, potable, process and fire main water systems; gas supply; odour control system; electrical infrastructure; communications and control equipment; standby generator



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