

Tata Steel Main Pumphouse Clarification Plant 'Arnallt' system upgrades

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Summary

Introduction

Essential upgrades carried out to the 'Arnallt' wastewater sump system – Consisting of 6 small and 2 large pumps, to aid with movement of effluent water containing sludge, scale and oil, derived from processes in the Hot Mill.

Upgrades involve addition of PLC-driven technology to replace basic float switches, level sensors for comms with PLC, and remote monitoring/control to pumphouse operating control room.

Materials and Basics

List of materials used for this project include PLC unit, cable, panels, terminal rails, din rail, finger trunking, level sensors etc.

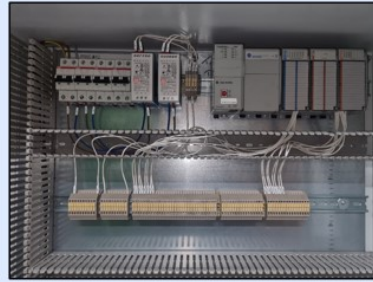
Installation of panels, wiring and networking cables carried out on site at the Arnallt contactor room.

Software and programming of PLC carried out using Studio5000 on work's dedicated PLC laptop in office.



Method

Results



Electrical installation work consisted of mounting PLC panel, network panel, installing fibreoptic network cable, supply cables and control cables to pumps.

Component installation – MCBs for incoming supply, PSUs for 24v/0v control, Allen Bradley PLC (Standard across site within Energy Dept.), terminal blocks and relays.

PLC logic includes Start/Stop for each of the 6 pumps, E-Stops, Auto/Manual, low-level & high-level alarms.

Scaling blocks are also included to convert various raw data, such as water temperature, pH, humidity and conductivity.



Result

Conclusions

Some results from the project are currently still unfolding, such as energy consumption reduction, due to the project still being in the early stages.

The main outcome of the project currently is that the pumphouse operators who run the plant can now monitor and control the Arnallt system from their control room. This has freed up time for the operators and can help them catch any issues with the system earlier than they would should they need to walk to the area for inspections.



Further work will include a local HMI in the contactor room, automation of the 2 larger pumps and replacement of all 8 pumps when the budget allows.

Literature cited

Tata Steel Main Pumphouse Clarification Plant Training Manual (2015)

Further information

See full report for full, detailed account of project.