Sluice Control System

Newmans Sluice

February 2011

Background:

Newmans Sluice is situated on the River Lee flood relief channel within the Lee Valley Park area.

The site is part of the control system for the River Lee, controlling flows in the flood relief channel between the reach upstream (Rammey March Flood Relief Channel) and the reach downstream (Cattlegate Flood relief channel). It also maintains the water level in the link canal that feeds the intake to the king George Reservoir. Newmans sluice has the dual purpose of retaining water levels during periods of low and normal flow and minimising the risk of flooding during periods of high flow.

Overview:

The M&E elements were undertaken by 'Tema Engineering' who subcontracted the electrical, control and instrumentation works to PowerPoint.

PowerPoint carried out the design, manufacture, installation and commissioning of all of the electrical/electronic, automation, telemetry, floodlighting and CCTV equipment for the project.

Due to our extensive knowledge of producing comprehensive systems such as this, we were able to provide a complete turnkey package for our client.

Design:

As Newmans sluice was a critical water level control site, design factors overcome whilst developing the system included:

- Production of a comprehensive design risk assessments utilising information provided by the client & consulting engineers.
- Smooth / uninterrupted transition from the existing basic sluice gate controls to the upgraded PLC controlled system.
- Complete refit of domestic electrical equipment whilst still providing a fully functional control building during the upgrade works.
- CCTV to provide remote monitoring of the site and water level conditions.

Rushock Trading Estate
Droitwich Road
Worcestershire
WR9 0NR
Tel: +44-1299 251762 Fax: +44-1299 251689
mail@powerpoint-ltd.co.uk
www.powerpoint-ltd.co.uk

- Designing a site floodlighting arrangement to not only comply with HSE requirements but to also ensure that lighting conditions were suitable for the critical CCTV system.
- Replacement of original overhead conductor bars that powered the electrical rail hoist system.
- Various anti vandal / theft systems were incorporated to minimise asset damage and equipment downtime.

As part of the project, the following mechanical, electrical and instrumentation equipment was manufactured and installed by PowerPoint:

- A purpose built control panel, fabricated from stainless steel and incorporating a 'Mitsubishi' PLC, touch screen type HMI, telemetry system utilising Modbus communications, UPS Power backup equipment, along with a high resolution CCTV recording system complete with remote transmission/access facilities.
- 3 Phase power distribution system including cable trunking, socket outlets, heaters, thermostats, lighting, generator changeover facility, all fitted inside the existing sluice control building.
- Tilt down lighting columns c/w floodlighting and CCTV cameras.
- Walkway and surrounding area lighting for safe operation at night.
- Level electrode and water level control & monitoring instrumentation including stilling tubes with vandal resistant top boxes.
- Underfloor cable tray / cable transit systems.
- Supply and installation of in excess of 500mtrs of power supply cabling between the feeder pillar and sluice gate control building. This cabling incorporated unique anti-theft facilities designed by PowerPoint, to help prevent this critical element from being stolen.




Conclusion:

PowerPoint successfully orchestrated the upgrade of Newman's automated sluice site, which was and had to be maintained as a fully operational site throughout the redevelopment process. This task was made even more challenging by the need to complete the works through a winter period when periods of heavy rainfall were not uncommon.

Rushock Trading Estate
Droitwich Road
Worcestershire
WR9 0NR
Tel: +44-1299 251762 Fax: +44-1299 251689
mail@powerpoint-ltd.co.uk
www.powerpoint-ltd.co.uk