

Case Study

Mattersey Thorpe (STW) Chemical Dosing



Client:

Severn Trent Water

Principal Contractor:

NMCM

M&E sub-contractor:

Colloide

Location:

Mattersey Thorpe,
Doncaster

Project:

Chemical Dosing

On this project Colloide acted as Mechanical and Electrical sub-contractor, working under principle contractor, North Midland Construction PLC (NMCM) for Severn Trent Water as part of overall upgrade works at Mattersey Thorpe Sewage Treatment Works.

Scope of work included:

A 5m³ Tank 1 Pump Chemical Dosing System was installed by Colloide to satisfy the phosphorus removal requirements of this project.

The chemical dosing system consisted of a chemical storage tank, chemical fill point and dosing kiosk.

The dosing kiosk contained a chemical dosing LCP and all associated pump and instrumentation.

Technical information

The main components of the system

Fill Point Kiosk

The fill point kiosk is the point for chemical delivery into the storage tank. For delivery to be permitted, the green “delivery permitted” lamp in the fill point kiosk must be lit. If the green light is not lit, no chemical delivery is permitted, regardless of the indicated tank level.

Inside the fill point kiosk there is a beacon and sounder, which warn:

- that the storage tank has reached its FULL level, or
- that the ultrasonic level transmitter has failed or is out of range, or
- that there has been a rapid drop in level in the storage tank, or
- that the leak detection probe in the storage tank bund has been activated. No chemical delivery is permitted if the red beacon is lit, nor if the sounder is sounding.

Chemical Storage Tank

The chemical storage tank is situated inside a bund, which is equipped with a float switch that is activated if liquid enters the bund (level around 1 inch). This can indicate that there is a leak on the storage tank or on the pipework exiting the storage tank, but the liquid can also come from the dosing skid bund.

The storage tank itself is equipped with:

- fill pipework
- outlet pipework with isolation valve
- overflow pipe (leading into the bund)
- drain valve
- vent
- ultrasonic level transmitter (with displays in fill point kiosk and on control panel)
- pressure gauge tube (gauge dial in fill point kiosk)

Dosing Kiosk

The dosing kiosk contains: dosing skid, control panel, heater, distribution board. Each pump draws chemical from the storage tank through the common suction pipework. A flow switch installed on the outlet pipework in each pump compartment indicates if there is any flow from the pump. There is a pressure relief valve (set to 3.5 bar) on the pipework of each pump compartment.

Each pump compartment in the dosing skid is equipped with its own leak detection float switch, where a pump is physically installed. In addition, any leaks inside the pump compartments will eventually overflow into a raised hole in the bottom of the pump compartment. It then flows to the common bund of the dosing kiosk, and then through the dual containment of the suction pipework, ending up in the storage tank bund. The storage tank bund is also equipped with a float switch.

