

REDUCED COST OF SLUDGE REMOVAL

CONVEYED PRODUCT

- Dewatered digested sludge – ds content 25%
- Polymer for boundary layer injection

KEY SPECIFICATIONS

- Open hopper pumps to handle non-flowable, viscous sludge
- Pressure reduction from boundary layer injection
- Turnkey solution to improve process operation and reduce costs

COST SAVINGS

**ENERGY USE
REDUCED BY 50%**

**INCREASE IN DS
CONTENT REDUCES
SLUDGE VOLUME AND
DISPOSAL COSTS**

**MAINTENANCE
INTERVALS EXTENDED**

PUMP TYPE

BTHE range

Product group T: open hopper pumps

BACKGROUND

Thames Water Sewage Treatment Works at Reading generates energy from heated sludge. A by-product of this energy generation is digested sludge, subsequently dewatered to 20-22% ds before being transferred to storage silos by large piston pumps.

TASK

Thames Water engineers identified process improvements to increase the ds content of the sludge to 25%, reducing the volume and therefore the transport and disposal costs of the final product. They also wanted to reduce the operating costs of the large piston pumps which had power requirements of 31 KW and required pipework and valves rated to handle 64 bar discharge pressure. Maintenance intervals of 6 months added to the high cost of ownership for these pumps.

SOLUTION

SEEPEX stepped in to offer Thames Water a turnkey system. Open hopper pumps, fitted with a unique design of auger feed screw, pump the 25% ds dewatered sludge to storage silos – a distance of 80 m with a lift of 30 m to the top of the silo. The discharge pressure generated is less than 13 bar, well within the desired maximum specified, enabling de-rating of pipes and valves. This reduction was achieved in 2 ways:

- Progressive cavity pumps have a very minimal pulsation flow which generates lower in-pipe pressure than piston pumps
- A boundary layer injection system reduces the friction losses in the pipework. This comprises dilute polymer delivered to the discharge pipework by a SEEPEX pump and control system to adjust the injection rate to the discharge pressure.

The SEEPEX pumps have lower operating costs than the piston pumps and absorb 15 KW compared to 31 KW power. The system has been in operation for over a year with no maintenance interventions, offering significant savings in operating costs for Thames Water.

BENEFITS

- Lower energy costs
- Higher solids content reduces sludge volume and disposal costs
- Fewer vehicle movements improve health and safety

