

EFFICIENT SUPERVISION AND CONTROL OF DREDGING AND DEWATERING

Erik Andersson

Reglertekniska Ingenjörbyrå AB, Sweden

Abstract

In the LifeSure project we mainly use standard industrial components and systems in the control and supervision of the dredging and dewatering. The reason is that we want an efficient, stable, autonomous solution with many possibilities for follow up and research.

In the project we continuously measure flows, TSS, pH, DO and temperatures. The values are stored in a database with timestamps and can be viewed in different trend graphs. The data is also automatically transferred to Excel sheets and stored in the cloud. Here manually sampled values can be added for further studies.

One of the most important issues in the dewatering system is the polymer that is added to the slurry after the equalization tank. We use a ratio control that ensures the ratio between slurry and polymer. The wanted ratio depends on the TSS value in the equalization tank. The main slurry flow to the geo-tubes is controlled with a PID controller and a speed-controlled pump the speed depends on the measured pressure in the pipe to the geo tubes. We use the pressure to determine the filling height of the geo-tubes. The maximum filling height is stated by the manufacturer.

In the small-scale version the flow from the geo-tubes was pumped to a filter unit using a speed-controlled pump. A PID controller controlled the speed of the pump using the measured water level in the sand filter. The water flowed from the sand filter to the active carbon filter and to the polynite filter using gravity. The levels in those filters was monitored and shut-off valves was activated if there was a risk of overflowing.

Keywords: Process control, Instrumentation, Low flow dredging, Dewatering, Supervision