

ROBUST, HEAVY DUTY RAKEMAX UNITS FOR DUBLIN STP

CASE STUDY



OVERVIEW

Huber was chosen as supplier of seven bar screens and seven screenings wash-presses for the Dublin Bay Inlet Works at Ringsend. The order also included supply of all control panels for all our machines. The plant's management selected our multi-rake bar screens RakeMax® because of their low head loss during peak flow, in spite of their small bar spacing. Another selection criterion was their great screenings removal capacity. It also helped that our super-laundry screenings presses WAP/SL provide superior washing intensity and compaction capability, resulting in a reduction of screenings disposal costs that are well beyond the reach of our competition.



We supplied seven units of our multi-rake bar screens RakeMax® with a nominal length of 6,300 mm and a bar spacing of 6 mm together with seven units of our super-laundry wash press WAP/SL size 12. Each RakeMax® screen feeds screenings through launder chutes to a dedicated WAP/SL. The RakeMax® screens replaced existing escalator type perforated plate screens (also called perforated band screens) with 6mm diameter perforations. These prior screens were no longer capable to handle the increased peak flows and peak solids loads to the plant. Our equipment was installed in a rolling program, one unit after the other, with the treatment plant remaining in continuous operation.

THE DESIGN

The RakeMax® units have a 6mm bar spacing and the bars do not have a rectangular or trapezoidal shape, but cross section with the shape of a tear drop. A tear drop shape causes little flow restriction and thus low head loss, or the other way round, the tear drop shape guarantees high flow capacities.

The supplied screens handle a peak flow of 4.7 m³/s (75,000 GPM). Several rakes per screen are mounted between a pair of chains. The chains are driven by a variable frequency drive (VFD) and are moved at a faster speed when the hydraulic head rises beyond a certain set point. This head is monitored in each of the seven channels with a Pulsar Ultra 5 differential ultrasonic

ROBUST, HEAVY DUTY RAKEMAX UNITS FOR DUBLIN STP

CASE STUDY

level sensor. This means: if the screens become blinded, the raking process is automatically accelerated and the degree of blinding and the head loss are thus reduced again.

The WAP/SL units are designed for high-intensity washing of the screenings. Well washed screenings can be better compressed and compacted. The washed-out BOD is returned into the treatment plant and remains available for the denitrification process that operates more effectively the higher the BOD/N ratio is

The regular wet screenings processing capacity per WAP/SL unit is 8 m³/h. At peak times, when all screens are operating fast, the WAP unit's operating cycle is automatically modified to allow each unit to process 12 m³/h.

This operating cycle is even further accelerated as the conveyor sections of the machines are also driven with variable frequency drives to permit even more feeding of the WAP/SL units in case that the screenings load should rise further to 15 m³/h. This unique throughput versatility is only available with HUBER wash-presses.

INSTALLATION

Installation of our entire equipment was supervised and supported by Huber engineers to ensure that progress of this large and important project was smooth.

All Huber machines were supplied with control panels designed, built and programmed by Huber engineers. Each contains an Allen Bradley PLC & HMI system with variable speed drives. Compact Block I/O units are used to communicate with the customers DeviceNet site network for the transmission of telemetry status signals and remote enable signals.

OUTCOME

The successful completion of this project has demonstrated our ability to provide the right solution for our customers' needs and requirements thanks to our wide product range. And it has also demonstrated the ability of our Huber UK engineering team to develop intelligent control solutions in compliance with customers' specifications.