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HUBER super-laundry wash-press excels at Penrith WWTP



The HUBER super-laundry wash-press WAP/SL is fed through a launder channel

Originally, the two existing perforated plate (escalator-type) screens at the Penrith wastewater treatment plant discharged their screenings into a launder trough wherefrom they were flushed to a tank incorporating macerator pumps. These pumps grinded the solids and returned them back to the works. Besides the fact that the entire system did only comminute the screenings, but did not remove any solids, the system did not operate reliably. The main problems encountered by the operators were that the macerator pumps required constant maintenance and that, under certain circumstances, the macerator tank overflowed and raw sewage littered the site.

In order to clean up the process and avoid the problems associated with the existing set-up, United Utilities contacted HUBER to come up with a solution. We submitted a proposal that incorporated the HUBER super-laundry wash-press WAP/SL. The customer approved our solution because the WAP/SL removes the screenings in a well-washed and highly compacted form, and because of its high screenings processing capacity.

As a certain amount of civil engineering work was required to accommodate the WAP/SL unit, United Utilities enlisted the help of Mackereth Engineering as a local contractor. Because this contractor has been familiar with HUBER products for a number of years, they were also ordered to provide the required mechanical installation. Supply of the control panel and associated cabling and electrical installations were undertaken by Bainbridge Electrical, another local contractor. In cooperation with United Utilities and the local contractors, we were able to address the issues of skip/lorry and personnel access as well as optimising maintenance and operation procedures.

The new system operates as follows:

1. Operation of the existing screens remains unchanged,
2. The screens discharge their screenings into a launder channel and the screens' wash water is used to flush the screenings through the channel into the launder tank of a WAP/SL unit,
3. Under normal circumstances, a drain valve located at the bottom of the launder tank remains closed to allow the water level in the tank to rise,
4. The level in the tank is monitored with a pressure sensor until it reaches a pre-set limit,
5. Upon reaching the limit, an impeller that is mounted on the tank's wall is switched on and turning for a pre-set duration. The impeller generates high turbulence and launders the screenings,
6. When the impeller is switched off, the drain valve opens and wash water drains through perforations in the bottom, while the washed screenings are retained on the bottom,
7. Simultaneously a motor driving an auger above the tank's bottom is switched on. The auger screw drives the washed screenings into a compaction zone,
8. All filtrate from the WAP/SL unit is discharged into a small sump and, in this instance, pumped back to the head of the works,
9. The screenings are compressed, dewatered and compacted while they are forced by the auger through an inclined pressure pipe. At the end of the pipe they drop into a skip,
10. Under these conditions and up to a feeding rate of 2.5 m³/h, the WAP/SL produces a very clean, dry and virtually odourless screenings product,
11. Should the screenings load exceed this value, the WAP/SL changes automatically to a different mode of operation, allowing a maximum of 4 m³/h of screenings to be processed with only a slight deterioration of the end product's quality.

The operational versatility, as described in item 11 above, enables HUBER to offer a unit with a very small footprint for a relatively high solids throughput.

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