

BOSKALIS ENVIRONMENTAL

Boskalis Environmental is a global leader in the field of large-scale processing of contaminated soils and dredged sediments. Boskalis Environmental provides in-house design, installation and operation of soil and sediment processing equipment and facilities. This equipment includes units for gravel and debris screening, sand separation and mechanical dewatering. The company has over 30 years of directly relevant experience. Over these years, the company has processed more than 17 million tonnes of sediments and soils while beneficially reusing more than 12 million tonnes. Boskalis Environmental currently owns multiple transportable and fixed soil and sediment processing plants. Operating in the dredging industry, Boskalis Environmental is well known with the interaction and integration of dredging and dewatering processes.

GRENSMAAS PROJECT

The Grensmaas project is the largest river project in progress in the Netherlands. The work extends over 43 kilometers stretch between Maastricht and Echt-Susteren. The implementation of the project is run by the Joint Venture (JV) Grensmaas. In November 2017, the JV achieved the main social objective as per the contract; Prevent towns and cities in South Limburg for flooding. Tens of thousands of families along the Maas are now protected and the risk for flooding is significantly reduced.

At this point, the Joint Venture has widened the Maas channel and floodplains by some 300 hectares, lowered its banks and reinforced and raised dikes on a stretch of twelve kilometers.



FEATURES

Client	Joint Venture (JV) Grensmaas
Location	Limburg, The Netherlands
Period	November 2017 - 2020
Contractor	Boskalis Environmental



- A Top view polymer dosing system
- B Overview project site and settling basins
- C Side view settling basins

The Grensmaas project also gives South Limburg a roughly thousand hectares new nature preserved land along the river which together with nature preserves on the 'Vlaamse Maasoever' is called the 'RivierPark Maasvallei'.

The flood protection and the new nature preserves is funded by the mining and marketing of 54 million tonnes of gravel and not through taxes or the communities. The Grensmaas project total costs is about 700 million euros.



Two large sized gravel washing plants produces approx. 100,000 tonnes of gravel per week. During the washing process, fine sand and sludge particles are washed from the separated gravel. Wash water, fine sand and sludge particles are pumped through a pipeline to one of the settlement basins. Here the sludge settles and subsequently is excavated and reused on site. The surplus of water is discharged, using an overflow weir. We provide the consortium with a solution for the accelerated sedimentation of fines. In that way the process can continue, without waiting for the sludge to settle and the suspended solids content to be below the maximum allowable value for discharge. The value may not exceed the background value at the sampling point at the mouth of the port/river plus 50 ppm at that specific time.

POLYMER DOSING UNIT

In 2017, Boskalis Environmental (BKE) was enabled to install a polymer station to treat the sludge water flow from the Gravel Washers. BKE has excessive experience with using polymers in their soil treatment centers and sediment dewatering facilities. BKE took on this responsibility and installed a system with sufficient flexibility and



automation so that it can be operated/controlled remotely. Due to the inline measurements and the ongoing registration of the density of the flow the polymer dosing is controlled and adjusted accordingly. With that, overdosing is avoided and the use of polymer is cost efficient. At any given time, data can be pulled up onsite or remotely showing real-time information, as well as different reports that show progress and totals. BKE is using similar system throughout their facilities.

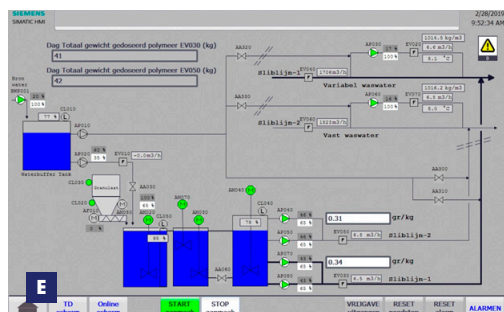
Removal of fine sludge and suspended particles from the wash water is done by adding a polymer injected to the pipeline. The polymer reacts with the sludge particles and ensures that they settle faster. The clean water returns to the port via a dredge box/weir. When the basin is full of settled sludge, the dredge box is opened to drain the remaining water. The free water runs out and the sludge continues to dry. After a few days, the sludge is excavated and transported by truck to be reused on site.

NUMBERS

Annually, approximately 4 to 5 million tons of gravel are refined at the project location. The gravel scrubbers pump about 4.000 m³/h sand and sludge water through the pipes to the basins. The solid content in this stream is about 2% to 4%. Depending on sludge concentration an amount of polymer is automatically added to and mixed in the pipeline. About 750 tons of dry matter is pumped to the basins per day. The project runs 12 hours a day 6 days a week.



- D** Density measuring unit for optimized polymer dosing
- E** Screenshot (remotely accessible) PLC controls
- F** Polymer dosing unit



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