SUPERIOR FILTRATION

CASE STUDY

GRAVIFILTER: SELF-CLEANING GRAVITY SCREEN FILTER

GLODINA TOWEL MANUFACTURING

Client: Glodina
Industry: Textile
Region: Hammarsdale, Kwazulu Natal, South Africa
Product: GraviFilter – 1 x VA04 , 80 m^3/hr
Installation: 2020

Challenge

- Glodina is a world-class towelling textile manufacturer located in Durban, South Africa
- In 2020, Glodina decided to conserve water on site, and they considered water reuse and other options such as groundwater utilisation
- As part of the water-reuse option, Glodina developed a wastewater treatment that consists of storage, pre-filtration and filtration, membrane separation (NF), Ozone Treatment and pH correction stage
- Glodina wastewater is a combination of water from the dyeing and sizing operations on site; this includes bleaching, reactive and vat dyeing, and softening waste streams
- Wastewater comes at a high temperature and high salt percentage, resulting in a challenging operating condition
- Towel cut-outs and lint are significant constituents of suspended solids in wastewater. These problematic solids can get in the way of desired treatment efficiency if not removed
- These problematic solids cannot be easily removed with filters such as pressurised or media filters, as the fibrous solids will instantly clog these filters
- However, these solids can be efficiently removed by a non-pressurised screen filter
- The client wanted a filter capable of removing lint and towel cut-outs, and they desired a self-cleaning (non-pressurised) and effective filter. The GraviFilter is the best technology for removing soft and fibrous solids and is simple to operate.

Application

- Pre-filtration/ To remove towel cut-outs and lint from wastewater stream before going to the downstream treatment processes such as membrane separation and disinfection for further treatment.

Solution

- The effectiveness of GraviFilter in the removal of solids that are soft and fibrous piqued Glodina's interest
- The harsh operation conditions, such as high temperatures (80°C) and salt percentage (8%), are handled by carefully selecting the construction material. The GraviFilter was constructed from mainly Duplex Stainless Steel and SS316
- Glodina installed a GraviFilter model VA4 with an integral, self-cleaning mechanism, handling 80 m^3/hr wastewater at 200 µm
- Wastewater from the factory is stored and then passed through a GraviFilter for prefiltration
- Suspended Solids (mainly lint and towel cut-outs) in wastewater are captured and removed by the GraviFilter. Other filtration technologies cannot effectively remove towel cut-outs and lint because these solids will blind them instantly. The non-pressurised continuous cleaning mechanism of the GraviFilter is best at handling soft fibrous matter/lint/organic matter without interruption of function
- Filtered water from the GraviFilter is then pumped to other process units for further treatment.

Results

- GraviFilter managed to remove the towel cut-outs and lint from the water stream and delivered the expected filtered water
- The filter can operate well under harsh operating conditions thanks to its high-quality construction material.

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