



Environmental technology



BRUSSELS AIRPORT COMPANY - Zaventem

Expansion of the biological water treatment plant

Since 2010, **Brussels Airport** has its own on-site biological wastewater treatment plant with a processing capacity of 2.400 m³/d, which is designed, built and operated by Trevi nv. Two waste water flows are processed in this plant:

- sanitary waste water from terminal buildings, office buildings etc.;
- contaminated rainwater related to the de-icing of aircraft.

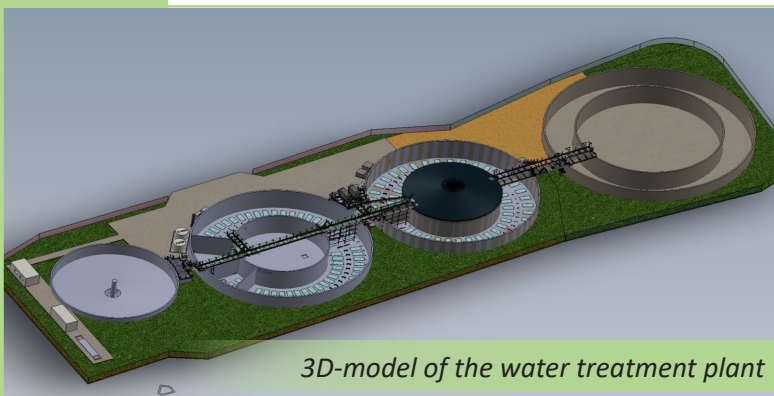
A major increase in the number of flight movements is expected in the coming years (cf. 'Strategic Vision 2040'). An additional increase in de-icing locations have already been taken into operation. As a result, some changes to the wastewater treatment plant were established prior to winter 2019-2020.

In this project, Trevi was assigned for the electro-mechanical design of new sumps at two additional de-icing platforms, equipped with pumps (450 m³/h and 650 m³/h) and corresponding TOC measurements.

Also the design, construction and equipment of a double buffer tank for de-icing waste water (2 x 3,000m³), the conversion of an existing buffer tank into a covered buffer for sanitary waste water (1,500m³) and the expansion of the pumping capacity for sanitary waste water was part of the project.

By means of dedicated online TOC measurements, the contamination present in the rainwater run-off from various de-icing locations is monitored during the winter period. Depending on the measured values, the rainwater is either discharged directly or pumped to the waste water buffer tanks. In the latter case, a further automatic separation is made between moderately and heavily contaminated rainwater. Moderately contaminated rainwater is processed directly and simultaneously with sanitary waste wastewater in the biological water treatment plant. On the other hand, heavily contaminated rainwater serves as an alternative carbon source for the denitrification process. By this, the use of an external carbon source (eg. acetic acid) can be kept to an absolute minimum.

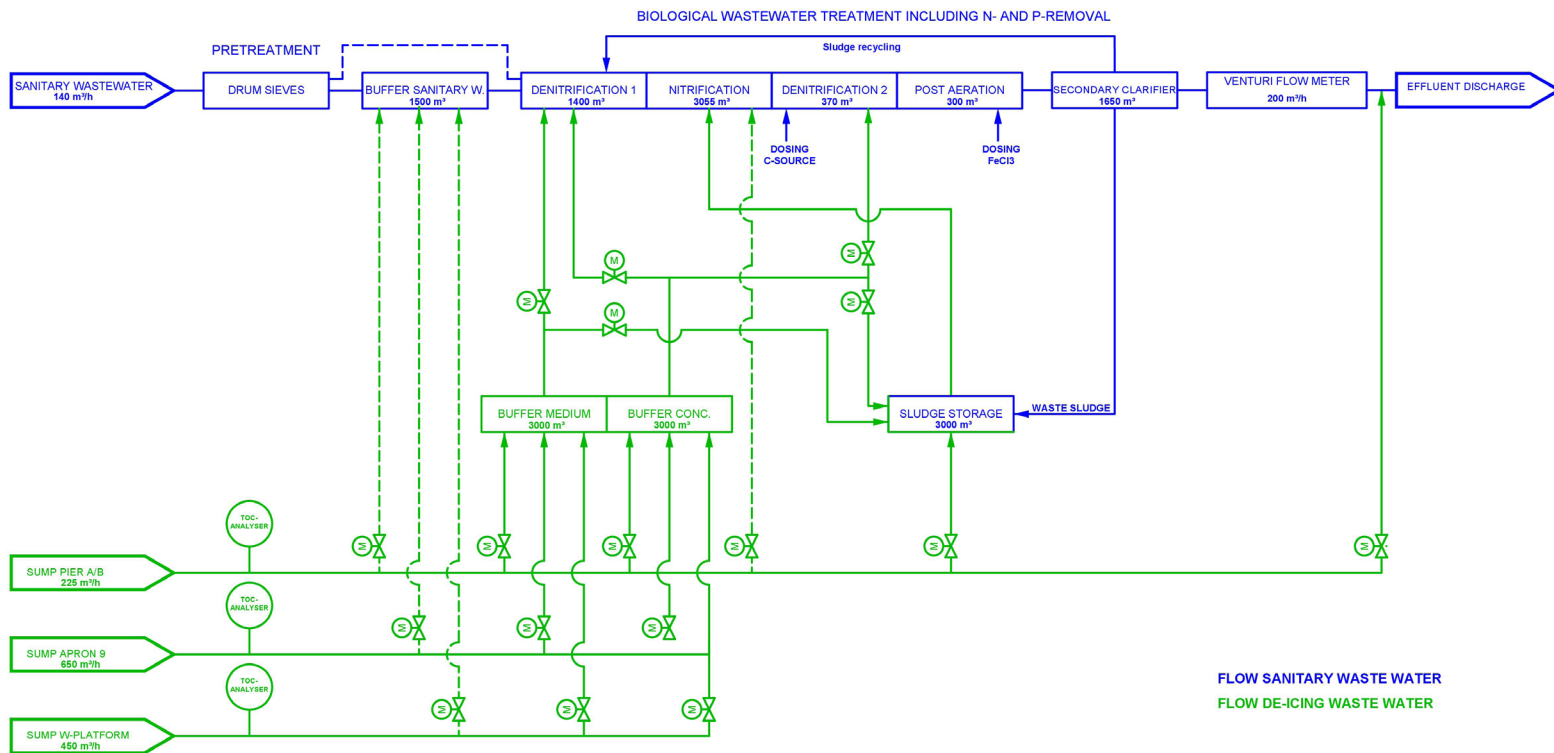
By installing an additional transfer pipe and drum screen, the flow capacity from the sanitary waste water sump can be doubled in the long term. An auger bagging system was installed to collect the sieve waste from both drum screens.



3D-model of the water treatment plant

The former de-icing waste water buffer tank was converted into a buffer tank for sanitary waste water, and provided by a tarpaulin cover to prevent odour nuisance. Thus, hydraulic peaks linked to the traffic at the airport are first leveled, which benefits the capacity of the biological water treatment plant.

Flow diagram of the water treatment plant at Brussels Airport



Sump for the de-icing W-platform



Double buffertank for de-icing waste water



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