CASE STUDIES

AQUA HD
Separation & Filtration Systems

INNOVATIVE SEPARATION SOLUTION FOR HIGH TURBIDITY AND SUSPENDED SOLIDS IN SURFACE WATER

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BACKGROUND

Many surface water treatment facilities all over the world face fluctuating turbidity and suspended solids (TSS) conditions caused by rain events and extreme weather. Conventional filtration plants, commonly used to treat surface water with high turbidity, often fail to handle such fluctuations in turbidity levels.

Mekorot is the national water company of Israel, as defined in the Water Law, and is under the auspices of the Ministry of Energy and Water, and the Ministry of Finance.

Mekorot has always considered the development of the State, the blooming of the desert and painting Israel green to be a national imperative. In the spirit of the vision, the company has succeeded in developing knowledge and unique capabilities based on careful and accurate planning processes.

LOCATION

Country: Israel

Application: Surface Water for Municipal Drinking water Treatment Plant

Water source: Surface Water

Separation solution: To install a system, consisting of a single AQUA-HD separation unit, that pumps water from the riverbank.

THE CHALLENGE

Suspended solids are removed in conventional filtration plants by means of media filter beds, or membranes. These usually use pre-treatment stages that include coagulation flocculation a sedimentation clarifier, and several filtration stages with different filtration degrees (higher to lower microns, etc.). The weakness of these systems lies in the need for them to be designed for specific, predefined and narrow ranges of turbidity levels. Most of the filtration systems designed for water quality average 0-40 NTU. However, when the turbidity level significantly exceeds the design level, the system has difficulty functioning. The operation envelope of the sedimentation basins, the filtration media, the flocculent injection rate and other components of the system reach its upper operation level.

With the raising of the turbidity level of the raw water the filtration system may become clogged, with the consequence that the back-flush process is not able to clean the filtration media from the suspended solids. In order to avoid such malfunctions, the system designers are forced to install backup systems in advance. This raises the installation and operation costs of the system.

4 Hamada st., PO Box 355, Yokneam Illit 2069205, Israel | Tel: +972 6262660 | info@aquahd.net | www.aquahd.net

THE SOLUTION

AQUA HD installed a coagulation and flocculation process, followed by a single AQU 500 unit. The multimedia filters consisted of one pressure filter.

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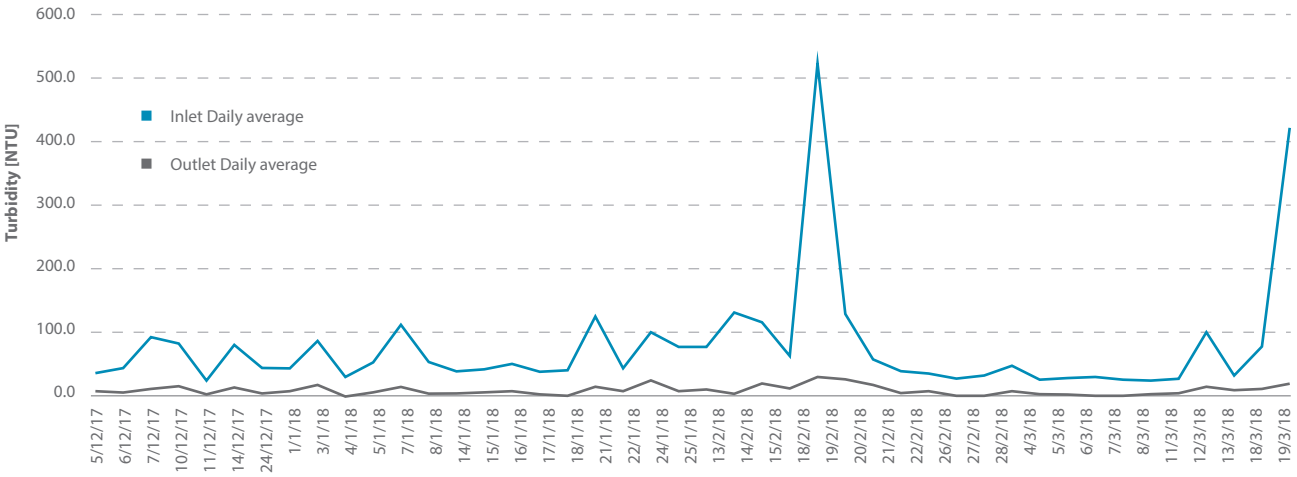
THE RESULTS

Average turbidity removal performance of the Aqua HD Separator (84.2%) and the average TSS removal (78.1%) both met and exceeded the success criteria described in the project's goals. It found that the higher the TSS, the greater the increase in the removal percentage. For example, from 100 mg/l TSS and up, the removal percentage was 95%.

The results were achieved without any changes in the pretreatment process and operation conditions.



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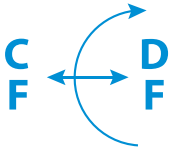
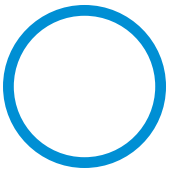
NO MOVING PARTS



CONTROLLING DRAG AND CENTRIFUGAL FORCES

NO FILTER ELEMENTS (SCREEN OR DISK)



VERY SMALL FOOTPRINT

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