

# From Canal Water to Bentonite, Netherlands

## Other | Case Study

### The Client

**MNO Vervat B.V. (MNO)** is part of Boskalis. From their head office in Nieuw-Vennep, the Netherlands, MNO operates a group of companies active in the field of civil and marine works including utility construction.

The MNO group has completed numerous multi-disciplinary projects in cooperation with local organisations and authorities in the Netherlands, and also globally.

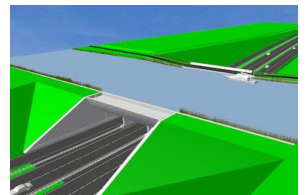


### Key Figures

- Construction of aquaduct RW31 near Leeuwarden
- 40m<sup>3</sup>/h purified water needed on site for Bentonite production
- Hardness <100 ppm pH between 8.5 and 9.5  
Conductivity of <1000 µS/cm

### The Client's Needs

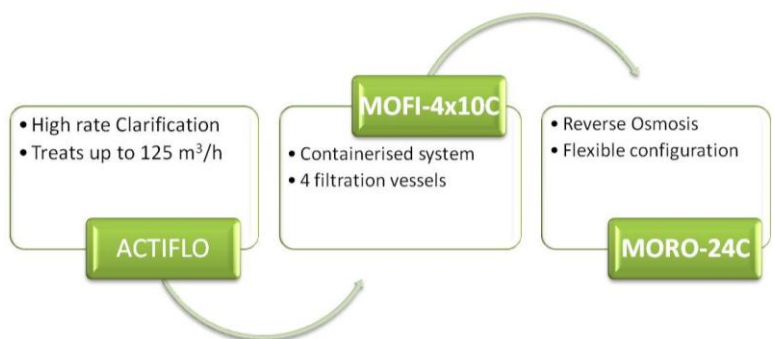
Part of an infrastructure building project south-west of Leeuwarden, the Netherlands, is the construction of aquaduct RW31. Water is needed for making Bentonite, which is injected into the ground for water tide foundation and walls.



To make Bentonite, the desired water quality is: Hardness <100 ppm, pH between 8.5 and 9.5, and conductivity of <1000 µS/cm. However, only canal water is available which is not of sufficient quality. MNO would have to either tanker in water, or install a temporary water treatment solution. In order to establish the best solution, they turned to Veolia Water Solutions & Technologies.

### The Solution

Veolia supplied an **AQUAMOVE™** mobile solution comprising of a 3 stage system including Clarification, Filtration and Reverse Osmosis technologies. This would provide the water quality and quantity needed on site to make Bentonite.



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## Process Description

Canal water is first fed into an **ACTIFLO®** unit, a high rate compact water clarification process in which water is flocculated with micro sand and polymer, with Turbomix® technology to maximise efficiency. The micro sand enhances the formation of robust flocs and acts as ballast, significantly increasing their settling velocity.

The second stage is the **MOFI-4x10C** unit, with 4 sand filters. This unit is used for extra protection of the third and final stage, the **MORO-24C** a reverse osmosis unit. Water quality achieved: **hardness <1 ppm** and **conductivity <36 µS/cm**.

Inlet canal water	52 m <sup>3</sup> /h
Production water	40 m <sup>3</sup> /h
Waste water	12 m <sup>3</sup> /h
Inlet Water:	
Suspended solids	>33 mg/l
pH	7.3
Conductivity	1500.7
Calcium	110 mg/l
Sodium	150 mg/l

## The Benefits

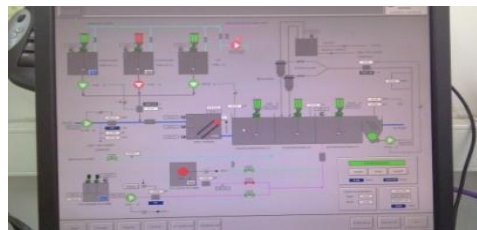
- Water production on site
- Lower cost solution than tankers
- Reduced carbon impact due to fewer road journeys



## Results

The **AQUAMOVE™** installation is remotely monitored and controlled, to provide full support without the additional expense of an engineer being present on site. The system can be easily started and stopped remotely, as needed, to save energy and water. If plant failure does occur, an alert via SMS message is sent to both the client and the **AQUAMOVE™** team. Immediate actions can then be taken to minimise any downtime.

This solution enables the client to avoid the need to tanker in water, with a requirement of 40m<sup>3</sup>/h this would equate to one tanker per hour. The **AQUAMOVE™** solution also helps them to reduce their impact on the environment, and save both time and money.



## Veolia Water Technologies

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