

ECO-INNOVATION
WHEN BUSINESS MEETS THE ENVIRONMENT

**CIP Eco-innovation
First application and market replication projects
Call 2011**

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**Deliverable D 4.4b
Expert meeting minutes 2**



water reuse 3.0

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Project website: www.iwec-water-reuse.eu

EXPERT MEETING MINUTES

Meeting: Expert meeting 2 IWECE-water reuse
Meeting 2015-2
Egbert Dubbelink
May 4, 2015
Minutes
Draft
WP4 Operation and monitoring

Rapporteur:

Meeting

Document type:

Status:

Present:

Martijn Tas (Vitens)

Frits Dekker (Vitens)

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CC:

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Fokko Borre (RWB-Waterservices)

1.1 Introduction

The water reuse plant is commissioned after erection in December 2015. January 2015 the Operation and Monitoring activities started, during the first weeks tuning and optimizing of the plant was realized.

1.2 Optimization

Expert meeting 19-2-2015:

The feed of the reuse plant is stored in the former settling tank (BZT1) of the WTP. This settling tank is equipped with two submersible mixers to guarantee a homogeneous feed of the reuse plant. The minimum mixing level is 44 %, below this level mixing stops and the plant stays operating until the level of 10 % was reached. During week 5 and 6 the level of BZT1 was controlled between approx. 10 and approx. 50%, this relative low level resulted in a minimum mixing time and precipitation of suspended matter. This suspended solids concentration became too high in the feed of the reuse plant and disturbed the filtration process.

During week 7 the level of BZT1 was controlled at a level of > 44 % to keep the feed homogeneous. This resulted in a stable operation.

A consequence of the higher level in BZT1 is a higher mixing energy consumption.

Expert meeting 4-5-2015:



To prevent this high mixing energy a new concept of feeding the reuse plant is discussed. The feed connection to the reuse plant is located at the lowest settling part of the feed tank BZT1, so all the backwash water must be treated by the reuse plant. By treating only the supernatant of the back wash water the filtration cycle time of the reuse plant will increase, and no mixing will be necessary to keep a homogeneous feed. This concept has two advantages:

1. The recovery will increase less backwashes are expected, less energy use and a higher capacity
2. There is no mixing energy needed to guarantee a homogeneous feed tot the reuse plant.

Most of the sludge will then be separated in BZT1. A consequence is that the settled sludge in BZT1 needs to be emptied on a timely bases to the sludge tank directly, and by passes the treatment plant.

During the expert meeting it is proposed to research this possibility. This can easily been realized by making a connection between the skimmer line of BZT1 and the feed line of the reuse plant. See pictures below. And automation of the sludge outlet to the sludge tank directly.

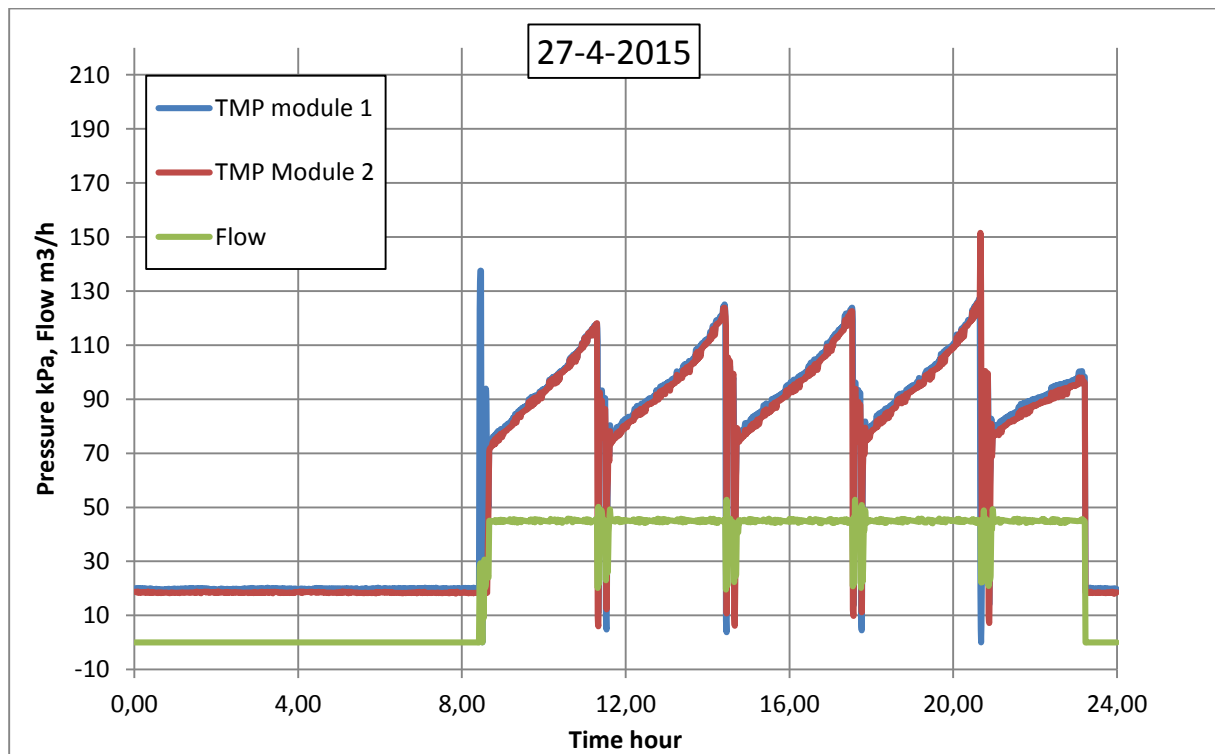
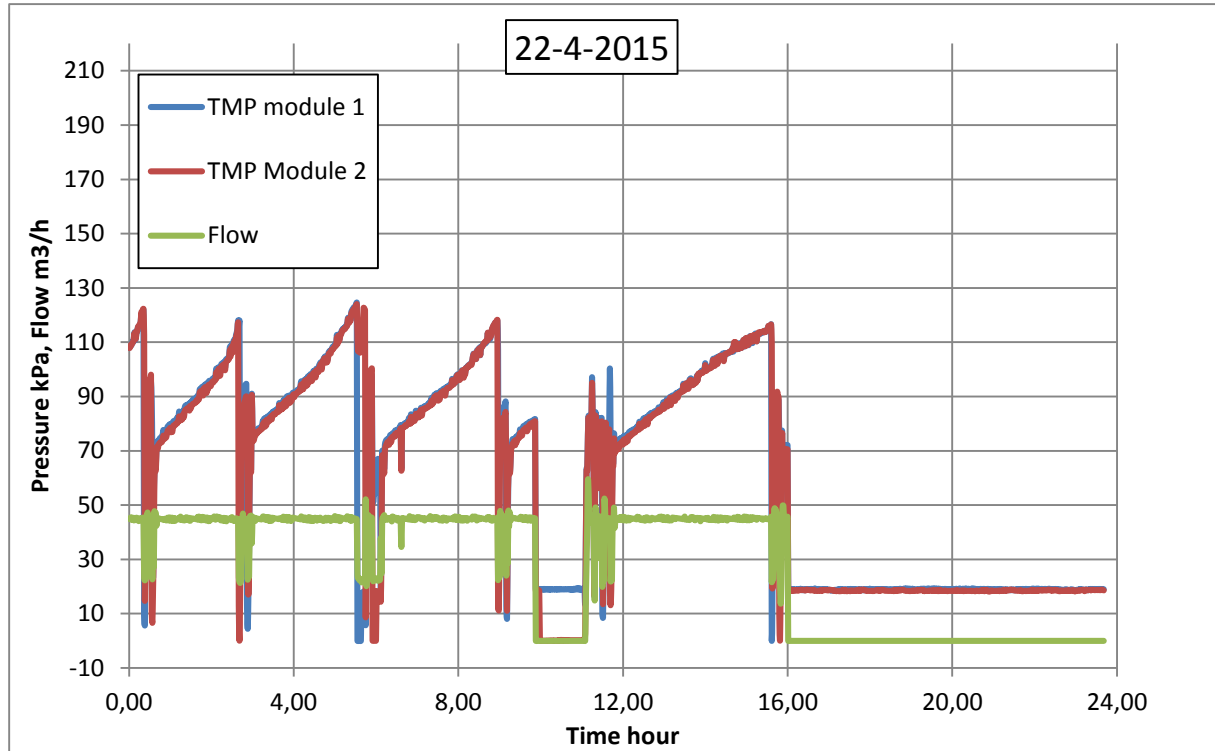
1.3 Water quality

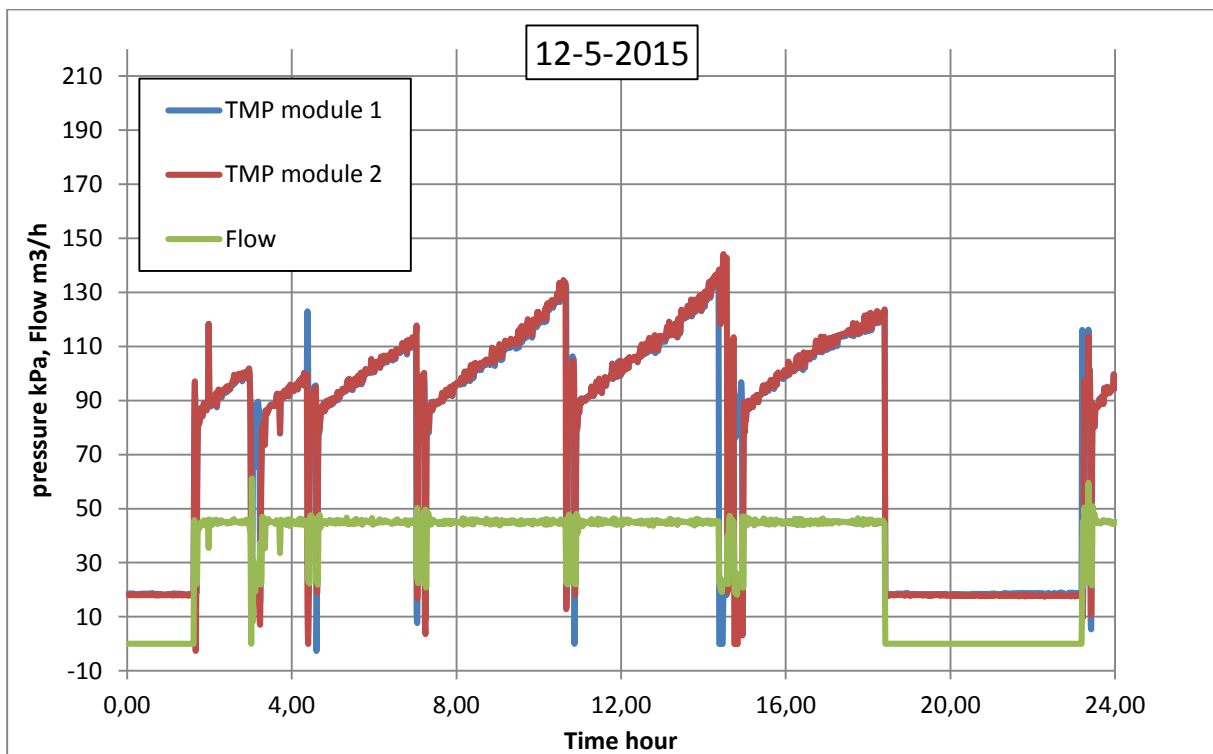
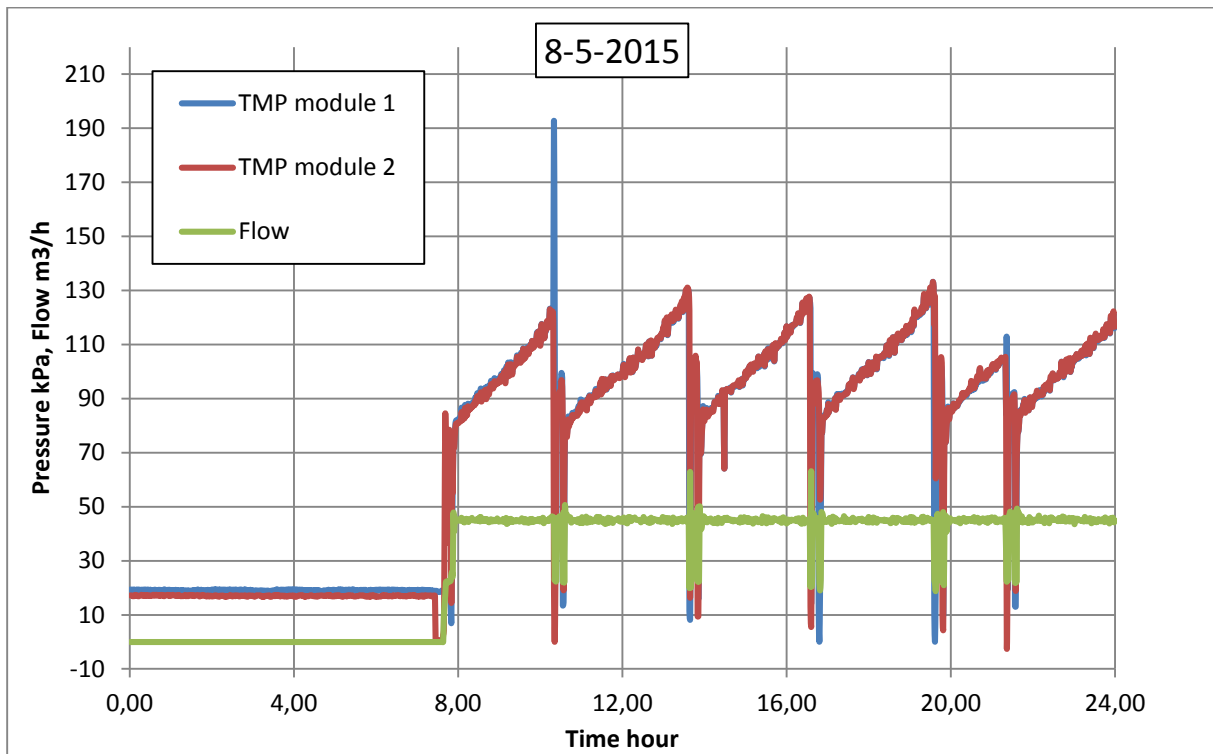
Chemical and bacterial analyses show that the reuse plant runs within specification. The installation is a good micro biological barrier. Except manganese, all metals are removed below the regulatory standard (drinkwaterbesluit). Removing of suspended solids is good and conform specification.

More detailed information about the water quality can be seen in the monitoring report (deliverable 4.3, monitoring report, 7th may 2015)

1.4 Hydraulic behaviour

From 21. April the flow is fixed at 45 m³/h to test the development of the TMP. During week 17 until 20 a small increase of initial TMP from 70 kPa to 90 kPa is observed during a filtration cycle. Important is the initial TMP a filtration cycle starts. See figures below. With respect to the time (5 months) the reuse plant is in operation a CIP can be necessary to clean the membranes. Next period this will be a point of attention.





1.5 Actions and discussions.

nr	date	Description	Action by	Status
1	19-2-2015	Research will be done to find an optimum between stable operation and energy consumption (see par. 1.2). 4-5-2015: See additional proposal to reduce energy consumption.	FDe,MTa, EDu	On going
2	19-2-2015	Analyses of necessity to provide open connections equipment with filters to provide bacteria contamination. Absolute filters will be installed to protect all incoming water and air from bacterial infection.	MTa	Finished
3	19-2-2015	To compare the amount and concentration of suspended solids in the waste stream before and after start-up of the re-use system. It is proposed to empty the waste buffer. Martijn will check the possibilities. 4-5-2015: Waste buffers are emptied on May ..., 2015.	MTa/FDe	Open
4	19-2-2015	Weekly data logs to Vitens	EDu	On going
5	19-2-2015	Test at max. capacity, after stable operation.	FDe,MTa EDu	On going
6	4-5-2015	Motivation for research to filter only supernatant. (See par 1.2)	MTa	Open