
Treatment of waste water from car wash facility in Singapore using simple De.mem UF (Ultrafiltration)-NF (Nanofiltration) hollow fiber membrane process

Date

2018

Membrane Details

Membranes modules deployed:

0.5m 4" De.mem UF module (5m²)

1m 4" De.mem NF module (10m²)

Objective

- To recycle / reuse the waste water from a car wash facility using De.mem UF and NF membranes

Overview

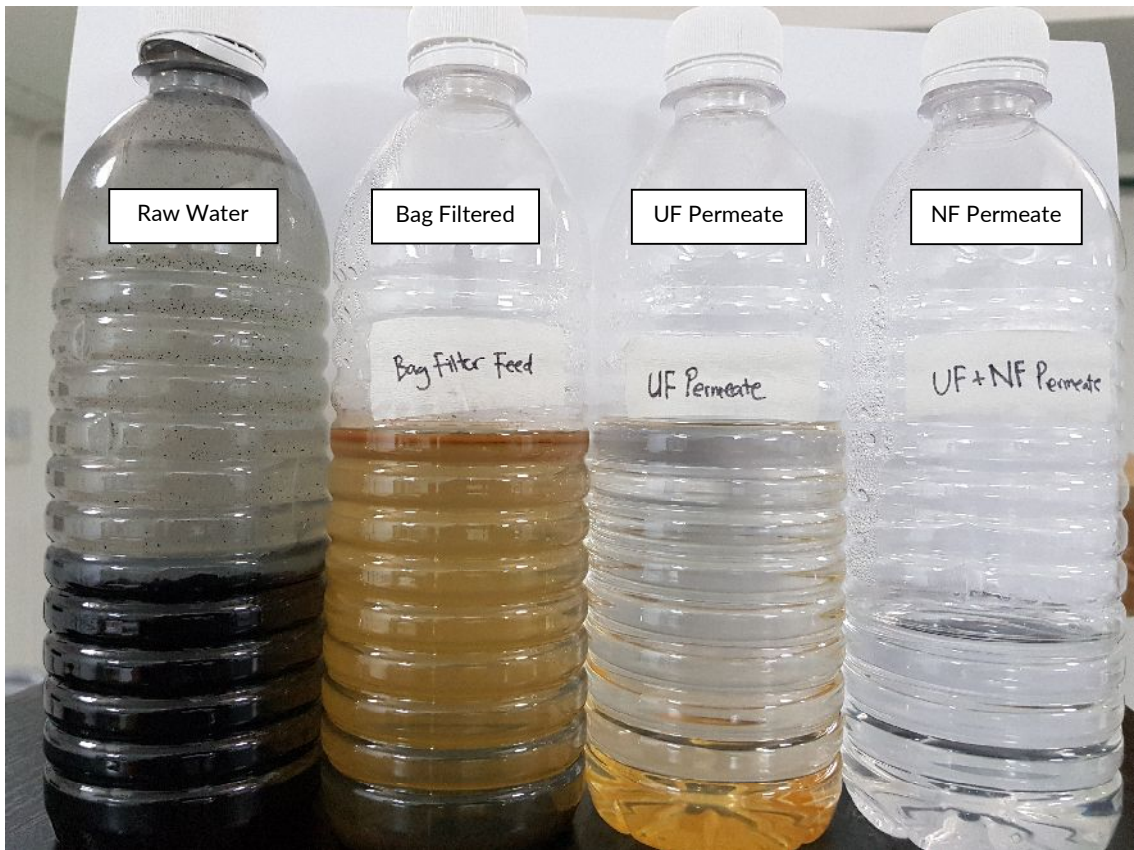
- A skid mounted waste water treatment system using De.mem UF and NF membrane modules was installed at a car wash facility in Singapore
- The waste water (feed water) contained significant levels of Turbidity (380 NTU), TDS (259 mg/L) and COD (6,161 mg/L).
- The system was run continuously over a period of two weeks
- The treated water was analyzed in the lab. Results were presented to the client and the client has deemed the treated water suitable for reuse in their facility

Treatment Results and Sample Test Data

The treatment process is simple and effective adopting De.mem's UF and NF technology as shown below.

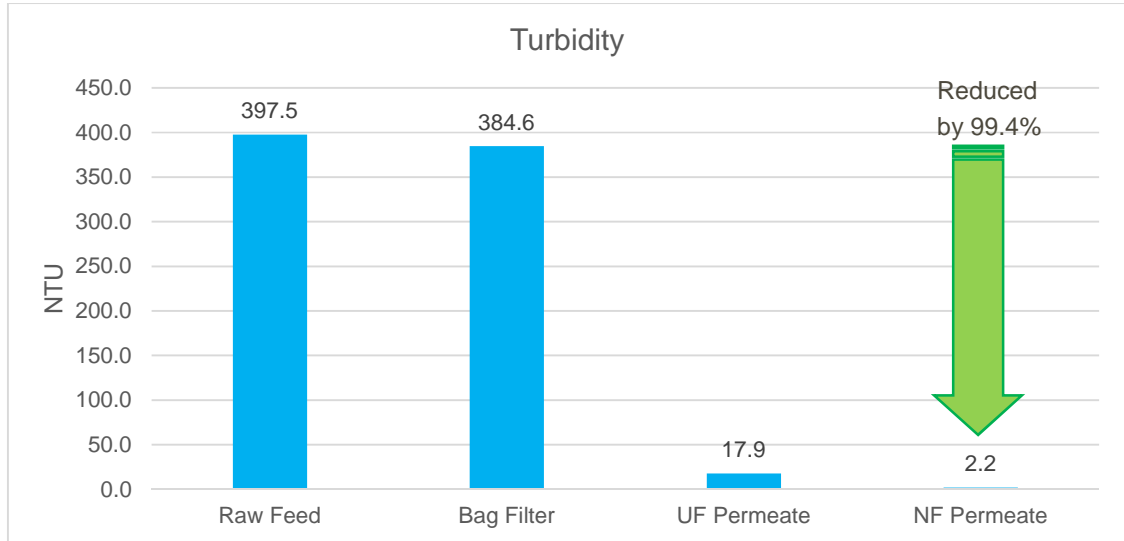


Below picture shows the water samples collected at various stages of the treatment process and clearly demonstrate the clarity of the water obtained before and after filtration. Both the UF and NF module shows a significant reduction in the turbidity of the water versus that of the feed samples.

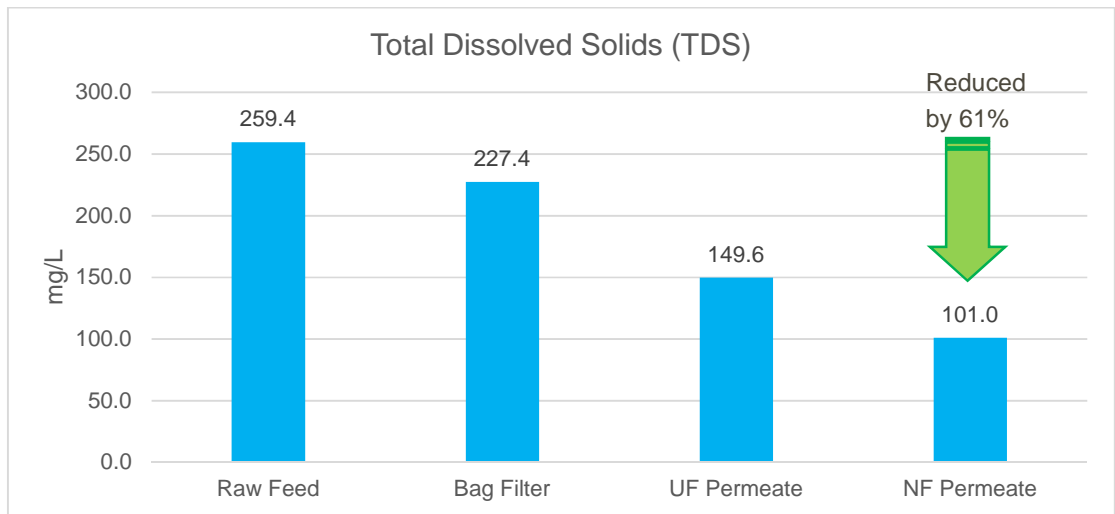


Data collected is summarized as follows:

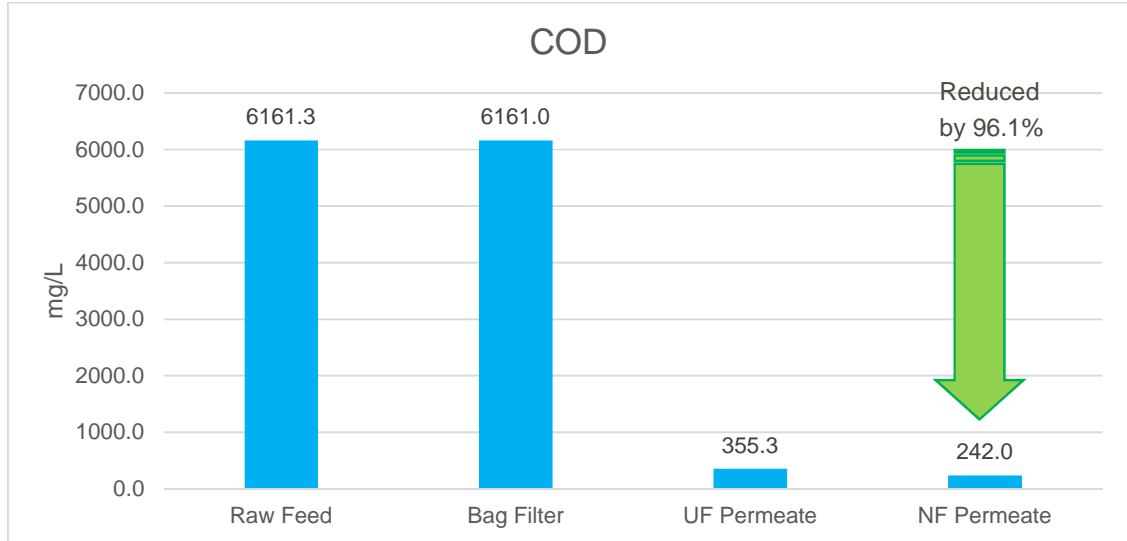
1. The UF module is able to perform significant reduction of the turbidity of the feed water, with the NF further reducing the turbidity as well. On average, turbidity reduction is 95.4% for the UF and 99.4% for the NF.



2. As expected, the UF can only provide some reduction to the TDS due to its relatively large pore size. However, the NF is able to further reduce the TDS resulting in an overall average reduction by 61% over the sample period.



- Generally, the UF and NF membranes are able to reduce COD of the waste water stream. In this case for the car wash waste water, the COD is very high. The total COD reduction through the UF-NF processes using De.mem UF-NF membranes is 96.1% on average over the sample period.



- In the waste water stream from car wash, there is a significant amount of oil and grease detected. De.mem UF and NF membrane modules have been able to remove the oil and grease from 58 mg/l to below 5 mg/l.

Oil & Grease (mg/L)		
Raw Feed	UF Permeate	NF Permeate
58.0	<5	<5

Summary and Conclusion

- With De.mem's UF-NF membrane filtration process, TDS can be reduced by up to 61% from the feed levels.
- The turbidity can be reduced by up to 99.4% from the feed levels.
- The COD can be reduced by up to 96.1% from the feed levels.
- Treated water meets discharge standards the customer's requirements for reuse into their car wash facility.