Hubert
Water Screening Solutions

Hubert

Micro Screen

Total Cost of Ownership (TCO)

Hubert micro screens are used in applications where high standards are required. It can be used for surface water, industrial water, and wastewater treatment.

Total Cost of Ownership (TCO) – 330 m³/h

One major advantage of the micro screen compared to other filtration technologies (Sand and Cloth/Disc filters) is its Total Cost of Ownership (TCO). A parameter that can be further enhanced with the use of Ultrasound, as it reduces the pressurised water use, which end up reducing even further its water and energy consumption.

This ultrasound cleaning is considered in our automation system, which promotes a more continuous operation even during endurance tests such as an sludge washout:

Depreciation yearly cost (€)

First, it is analysed the equipment's purchase cost (€) lifespan (years) and their depreciation cost (€):

Table 1 Purchase cost (€), back-wash use (%), lifespan (years), energy cost per treated m3 (€) and yearly depreciation (€)

Parameter	Sand	Cloth/disc	Micro screen	Micro screen and automation
Purchase (€)	748.473	214.500	264.300	320.220
Lifespan (years)	15	15	20	20
Depreciation/year (€)	**49.898**	**14.300**	**13.215**	**16.011**

For the sand filter, the purchase cost (€) is calculated from an STOWA report (STOWA, 2006) and the lifespan is obtained by literature review (Vidal, Hedström, & Herrmann, 2018). On the other hand, for the cloth/disc filter, the purchase cost (€) is also calculated from an STOWA report (STOWA, 2011), while the lifespan is determined from literature review (Enviromental experts, 2024). Lastly, for the micro screen, these parameters have been established based on internal references from our case studies.

Energy yearly cost (€)

Second, it is considered the pressurize water (%) and energy use (kWh/m3):

Table 2 Energy cost (€)

Parameter	Sand	Cloth/disc	Micro screen	Micro screen and automation
Pressurize Water Use (%)	5-10	2	2	1
Energy Use kWh/m3 (€)	0.1	0.043	0.024	0.017
Energy Cost/Year (€)	**95.396**	**41.020**	**22.895**	**15.740**

Regarding the sand filter, the pressurized water use (%) is obtained from an STOWA report (STOWA, 2006) and the energy use (kWh/m3) from another STOWA report (STOWA, 2011). On the other hand, for the cloth/disc filter, the pressurize water use (%) is defined from literature review (Reid, 2001) and the energy use (kWh/m3) from an STOWA report (STOWA, 2011). Lastly, these same parameters were established for the micro screen by our multiple case studies.

Operatioan yearly cost (€)

Third, the operational cost (€) of the sand filter is obtained from the University of New Hampshire (University of New Hampshire, 2000). While the operational cost (€) of the cloth/disc filter, from an additional STOWA report (STOWA, 2020). As usual, the same parameter was established for the micro screen by our case studies:

Table 3 Maintenance cost (Year)

Parameter	Sand	Cloth/disc	Micro screen	Micro screen and automation
Operation/year (€)	**4.856**	**1.716**	**1.213**	**1.274**

Total yearly cost ($)

It is calculated the yearly cost, based on their depreciation, energy and operational costs. Additionally, it is defined the cost per treated (m3). Lastly, it is compared the Total Cost of Ownership (TCO) of the micro screen, with automation, with the other filters:

Table 4 Total Cost (Depreciation + Maintenance)

Parameter	Sand	Cloth/disc	Micro screen	Micro screen and automation
Total/year (€)	150.150	57.036	37.324	33.026
Cost (m³)	0.05	0.02	0.01	0.01
Total Cost of Ownership (VS)	**4.55**	**1.73**	**1.13**	**1.00**

In the analysis, the micro screen has the best TCO, especially when compared with the sand filter, which is 4.55 higher. This is mostly attributed to its superior lifespan of 20 years and with the addition of ultrasound on its automation.

References:

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Hubert is part of Noardling

PO Box 199, 8600 AD Sneek, The Netherlands
T. +31 (0)515 48 68 88
E. info@noardling.com
W. www.noardling.com
A. Pieter Zeemanstraat 6, Sneek

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