

DE NORA TETRA™ Modular DeepBed™ Filter

Modular Packaged Tertiary Wastewater Filter Plants for Small to Medium Size Works

The DE NORA TETRA™ Modular DeepBed™ Filter Plant is designed as a competitive filtration plant for tertiary effluent from small to medium size sewage works. The Modular DeepBed™ Filter utilizes the technology of DeepBed™ filtration that has made the DE NORA TETRA™ filter such a successful tertiary treatment process over many years in Europe and the United States.

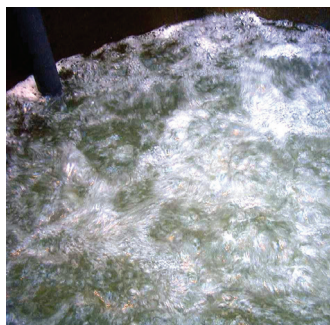
Available with a variable number of 1m or 1.45m diameter cells, the modular approach allows the Engineer and

Operator to install a standard design for a tertiary plant and to select the number of units to meet the performance standards required.

The DE NORA TETRA™ tertiary technology is retained in the modular filter and consists of the nozzle-less underdrain using the DE NORA TETRA™ SNAP T® Block and reverse gradation of gravel layers with stainless steel air distribution for backwashing, plus a deep bed of DE NORA TETRA™ media to provide very effective filtration performance and long run times between backwashes, leading to lower operating costs.



M1000/8 DE NORA TETRA™
Modular DeepBed™ Filter



DE NORA TETRA™ Backwash



DE NORA TETRA™ Media

DE NORA TETRA™ tertiary wastewater filters are proven in hundreds of installations globally to offer advantages for operators and owners including reliable and robust performance, lower operating costs and ease of operation.

Features and Benefits

- Minimum of 1.2m deep-bed of coarse 2-3mm DE NORA TETRA™ media.
- The DE NORA TETRA™ media is spherical and has a high uniformity coefficient to promote deep bed filtration.
- The filter is therefore capable of running for long periods between backwashes, which minimizes the amount of backwash water produced.
- The powerful DE NORA TETRA™ backwash is achieved without fluidizing the media and so virtually eliminates media loss.

Filter Configuration Examples

The standard range DE NORA TETRA™ Modular DeepBed™ Filter is available in various configurations from 6 no. 1m diameter cells, up to 12 no. 1.45m diameter cells, which are designed to meet with your specific process requirements. Example filter configurations are given in the table below.

For smaller applications the DE NORA TETRA™ 'Amoeba' range of 1 or 2 cell MDBFs is available - see brochure 650-0025EU.



DE NORA TETRA™ Modular DeepBed™ Filter Delivery

MODEL NO.	Cell Diameter (mm)	No. of Cells	Filtration Area (m ²)	Typical Footprint (m)	Max Flow to Filter (m ³ /d)
M1000/6	1000	6	4.71	9 x 4	1,600
M1000/8	1000	8	6.28	9 x 4	2,200
M1000/10	1000	10	7.86	12.5 x 4	2,800
M1450/6	1450	6	9.91	14 x 4	3,500
M1450/8	1450	8	13.21	17.6 x 4	4,450
M1450/10	1450	10	16.52	21.5 x 4	5,750
M1450/12	1450	12	19.82	24.5 x 4	7,000

Typical Performance

The DE NORA TETRA™ Modular DeepBed™ Filter is designed with as many skids installed to treat the effluent flow to the required standard.

Typical performance details are shown below.

	Performance
Suspended Solids Removal	Up to 90%
Backwash Water Produced	< 5%
Rate of Backwash Water	2.7 l/s to 6.9 l/s
Duration of Backwash	20 to 30 mins/cell
No. of Backwashes/day/cell	1 (typically)

Process Flexibility

DE NORA TETRA™ Modular DeepBed™ Filters (MDBF) offer process advantages:

- Treats infinitely variable flows up to the peak hydraulic flow of the filter plant. No requirement for recirculation at low flows.
- Filter is always able to meet performance criteria regardless of backwashing cycle.
- Very high solids loading capacity and the ability to accommodate upstream works upsets in an emergency.
- No works downtime while the filter plant is maintained.
- Built in redundancy e.g. standby backwash pumps & blowers/multiple filter cells.
- Upgrade to DE NORA TETRA™ Denite® for denitrification applications.
- No effluent strainer/screen required on the input to the filter.
- Standard modular build on steel skids can easily be connected when on site.
- MDBF units are wired, piped and commissioned prior to delivery, thereby only requiring connections to power and site pipework thus minimizing on-site requirements.

2 no. x M1450/8 DE NORA TETRA™ Modular DeepBed™ Filters





WATER MADE EASY

MARINE

ENERGY

MUNICIPAL

INDUSTRIAL



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