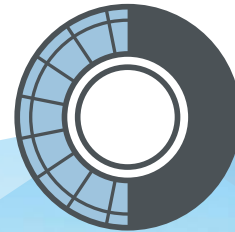
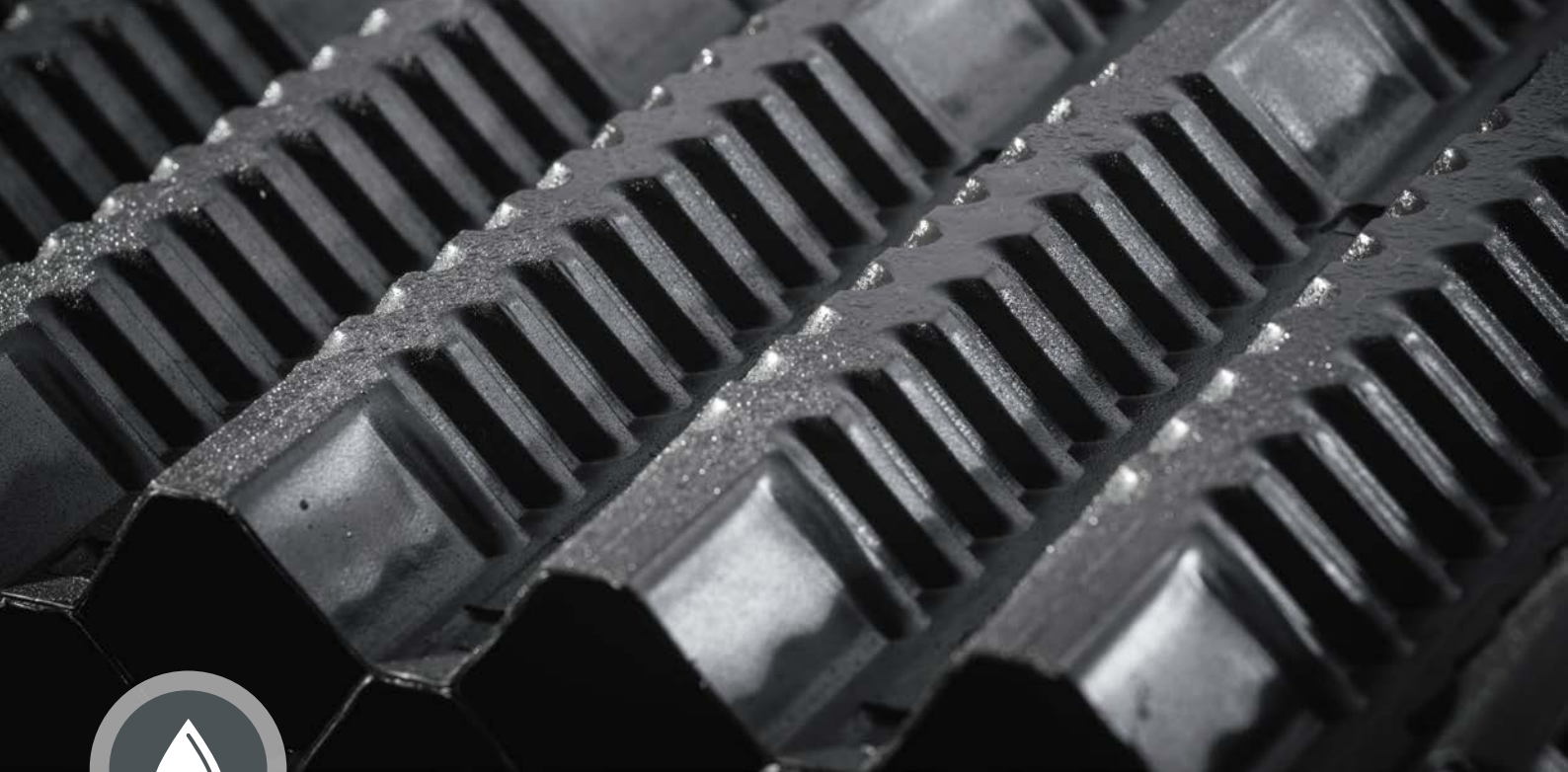


2H COMPONENTS & SOLUTIONS

**ENEXIO - the pioneer and global
provider of trickling filter technology**





2H BIOdek[®]

TRICKLING FILTERS SOLUTIONS FOR THE TWENTY FIRST CENTURY

Trickling filters have provided valuable service in treating waste water for many years. They have proven to be simple to run, reliable, energy efficient and have met the treatment levels currently required with sufficient upward potential.

Today trickling filters are a modern and highly attractive process due to the development of various kinds of structured plastic media, specialized for different applications:

- Full carbonaceous treatment
- Nitrification to very low concentrations
- Denitrification
- High rate applications

Know-How

Although many equations and design rules for the trickling filter process have been published – it needs a lot of know-

how and experience to find the most suitable design for each project. This know-how has been acquired by our specialists during 25 years of filter design and operational experience. We make it available for you and ensure your project provides:

- reliable compliance with effluent standards
- maximum economic benefit for customers
- optimum operation reliability
- accurate hydraulic parameters for rotary distributors and nozzles



Nitrification Filters, Gothenburg, Sweden



Municipal WWTP
Ernesettle, Great Britain



Trickling filter in industry with 16 m media depth
Region Basel, Switzerland

Process Engineering – Different Requirements

Secondary Treatment Filters

This treatment process reduces BOD and ammonia within the waste water to levels that can be discharged into watercourses without compromising the condition of the receiving waters.

The loading rates applied to 2H BIOdek® secondary filters are typically between 0.2 and 1.0 kgBOD/m³/d depending on the required effluent quality and chosen process configuration. With appropriate topographic layout 2H BIOdek® filters can operate in gravity feed mode without the supply of additional energy. No other aerobic water treatment process offers this advantage.

Tertiary Nitrification Filters

This type of filter is typically installed to upgrade an existing treatment process to enable the plant to meet tighter ammonia discharge consents. The nature and type of biomass that establishes itself within tertiary nitrification filters produces negligible amounts of solids. Provided the plant is within its suspended solids consent, no additional capital expenditure is required for post filter settlement. 2H BIOdek® is particularly effective for this application due to its long retention times, crossflow structure and high specific surface area which all combine to produce a very high specific nitrification rate producing very low ammonia concentrations in the effluent.

High Rate Filters

Extremely high treatment rates can be achieved by using high rate filters thus minimizing the site footprint. High rate filters are loaded at rates of 1.0 to 5.0 kg BOD/m³/d. They are normally designed to reduce the BOD loads by between 50% and 70%. The energy input is less than 0.2 Kwh per kg reduction in BOD. Particularly when dealing with an easily treatable wastewater, a strong biomass growth will be created. 2H BIOdek® vertical flow media structure has the optimal design to steadily expel the excess sludge.

Denitrification

Research through the past decade has proven that anoxic trickling filters are a reliable process for denitrification. Based on our research, we have patented a process solution, which enables even shallow filters to efficiently denitrify. By a simple method the filter media is sealed against atmospheric oxygen, forcing the biomass to use nitrate within the effluent stream for the supply of oxygen.

Individual solutions for many applications

Municipal

Trickling filters with our media can be designed to meet stringent standards of new treatment plants. Therefore, they are the ideal process for full secondary treatment. They are also utilized as a cost effective add on stage either to decrease the load as pre-treatment where the capacity of an existing plant has to be increased or as a special treatment stage to meet new standards dictated by legislation. The versatility of our media range enables existing assets and treatment systems to be upgraded to meet future needs with minimum costs and disruptions to the treatment capacity.

Industrial

Industrial waste water is characterized by special features like increased salinity or temperature or unbalanced organic loads and differing pH levels. 2H BIOdek® filters are able to treat such waste with little sludge production and high energy efficiency utilizing small plant footprint and little supervision. The fixed biofilm process has a high protection against inhibiting compounds and other varying influences, which gives a better treatment stability compared to other treatment methods, such as Activated Sludge. Temperature reduction of the waste water through the filter is often welcome as an additional effect. The 2H BIOdek® filters are particularly efficient in applications requiring partial treatment to meet consents for discharge into municipal sewers.

Upgrading Existing Filters

One cost effective solution to increase the treatment capacity of an existing trickling filter plant is to replace an existing rock or random media with our modern, structured polypropylene media. Due to the more open structure and higher effective surface area, around 3 times the organic load and up to 10 times the hydraulic flow can be applied to our media compared to rock media.



More information can be found here:
www.enexio.com

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