



Credit: Photo courtesy of Dougar Wastewater

# Benefitting from biological filter media

Expo-Net Danmark's Bio-Blok is a versatile biological water treatment filter media with cost and performance benefits.

Since the early 1980s, Bio-Blok has been proven as a versatile, highly efficient biological wastewater treatment filter media, used for nitrate ion, ammonia, ammonium ion and biochemical oxygen demand (BOD) removal, aeration and degassing and sludge treatment. Water treatment processes that Bio-Blok is ideally suited for include trickle filtering; submerged aeration filtration (SAF); contact filtration; and lamella settler.

Key customers using Bio-Blok for their water treatment needs include sewage/wastewater processing plants, abattoirs, breweries, farms and rural small holdings, and fish and shellfish farm aquaculture.

## BIOLOGICAL FILTER MEDIA

Bio-Blok was developed by extrusion experts Expo-Net Danmark A/S as a more effective open mesh filter media than conventional 60° cross flow media with vertical corrugated fill plates. The innovative, modular, Bio-Blok fixed film filter media cube design is made up of rigid, 100% recyclable, non-degradable, polyethylene plastic, cylindrical net tubes. Each net tube has a specially extruded helical internal design and 'rough' (high asperity) surface, providing a much greater surface area for more effective biofilm formation and superior filter media performance.

The Bio-Blok filter units are constructed offsite as 'ready to install' cubes from 8x8 or 10x10 net tubes, welded top and bottom. Standard module cubes, with customized net tube lengths are

**Above:** Wastewater treatment plant distributor system nitrifying filter bio tower specified with Bio-Blok.

**Above inset:** Bio-Blok net tubes filter media cube.

made to order in size options from 45cm up to 120cm long. Individual extruded net tubes are welded together to produce self-supporting Bio-Blok cubes in a range of sizes, which are UV resistant, lightweight, but strong enough to walk on, making them easy to handle and install by hand. Unlike crossflow plate media, Bio-Blok is self-cleaning and does not need flushing as the speed at which the filter runs keeps it continually clean; plant operational and maintenance costs are much lower, with a longer uptime.

## FIXED FILM HELICAL DESIGN

The unique open mesh 'helical' design of a Bio-Blok net tube provides an efficient, high surface area biological filter media. Bio-Blok has a void percentage of 72–90% depending on the grade, a vertical load bearing capability of ~4000kg/m<sup>2</sup> and a net weight of ~69kg/m<sup>3</sup>. The cylindrical, open net, helical configuration provides complete accessibility to the filter media. Superior filtration performance is achieved because the high asperity active surface area increases as the biofilm grows.

## BENEFITS

Bio-Blok has been specified in major projects all over the world. An excellent example of the installation cost savings and process benefits achievable was for a UK wastewater

treatment plant capacity expansion project, where specifying Bio-Blok in the nitrifying filter bio tower in preference to a cross flow media significantly reduced the installation costs, as around 50% less asset footprint (land area) was required, while also providing a 40% higher plant treatment performance.

## FILTRATION PRODUCT RANGE

Expo-Net produces a vast range of extruded plastic net and mesh products for many sectors. Manufacturers of cartridge filters, for air, gases and liquids, are key customers. The cartridge filter products developed by Expo-Net to support and protect paper, plastic and fabric filter media are produced from FDA approved polymers. Filter cartridge products supplied include flexible, flat nets, pleat support meshes and sleeves, rigid inner cores and outer cartridge cages. All Expo-Net products have full traceability and are manufactured and quality checked according to ISO 9001:2015 and ISO 1400: 2015 accredited processes and systems.

## ABOUT THE AUTHOR

This article was provided by Expo-Net Danmark A/S.  
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