AnoxKaldnes™ MBBR
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**Description**

The patented MBBR process is based on the biofilm principle and utilizes the advantages of activated sludges and other biofilm systems without being restrained by their disadvantages. The core of the process is the biofilm carrier elements that are made from polyethylene with a density slightly below that of water.

The elements are designed to provide a large protected surface area for the biofilm and optimal conditions for the bacteria culture when the elements are suspended in water. AnoxKaldnes developed carriers of different shapes and sizes which gives us the flexibility to use the best suitable carrier depending on wastewater characteristics, pre-treatment, discharge standards and available volumes.

**Features**

The MBBR Process is feasible for both industrial and municipal wastewater and is used for organic removal, nitrification and denitrification. The flexibility of AnoxKaldnes Moving Bed™ process makes it an ideal solution for new plants or the upgrade of old plants. The process can be delivered as a pure biofilm treatment system or combined with activated sludge to meet nitrification requirements.

- Compact
- Robust Biofilm
- Flexible Reactor Design
- Easy Upgrade for Existing Plants
- Easy to Operate and Control
- No Clogging of Biofilm Carriers
- No Sludge Return
- Low Load on Particle Separation

**AnoxKaldnes Stand Alone MBBR Solutions**

This process set-up will ensure a compact plant with all the biofilm features and is typically used for:

- New BOD/COD removal plants
- New nitrogen removal plant
- Upgrade of existing plants

**AnoxKaldnes Moving Bed™ followed by Activated Sludge (BAS™)**

In this combination the biofilm process will work as a pre-treatment “roughing reactor” to reduce the load on the activated sludge reactor. It is typically used for:

- New plants where the biofilm process works as pre-treatment
- Upgrading of existing activated sludge to achieve higher BOD/COD capacity or nitrification

**AnoxKaldnes Moving Bed™ and Activated Sludge in the same reactor (HYBAS™)**

This solution combines the benefits of a conventional activated sludge process with biofilm process in the same reactor. This process set-up can be suitable for:

- Upgrading of existing activated sludge to achieve nitrification or higher BOD/COD capacity
- Upgrading of existing activated sludge to achieve nitrogen removal and phosphorus removal

**Lagoon Guard (Carbon)**

This biofilm solution installed before an aerated lagoon, will handle more additional BOD/COD removal. This upgrade is easy, economical and compact.

**Lagoon Guard (Nitrification)**

This biofilm solution installed after an aerated lagoon, will handle the ammonium and even some more additional BOD/COD removal. This upgrade is easy, economical and compact.
Ste. Julie, Quebec: Our first Canadian reference

In the case of Ste. Julie, a full-scale MBBR™ was installed and commissioned in 2007. Even with temperatures as low as 3°C, the removal efficiency of the MBBR was in accordance with the results of the pilot study done 2 years before.

The main objective of the pilot study was to demonstrate the capability of the MBBR process to eliminate organic matter in a separate stage and to reach a level of BOD required during coldest months of winter. The study determined that the MBBR™ solution not only eliminated COD and BOD, but also nitrified the water coming in at low temperature. The average ammonia effluent concentration was 3.9 mg/L, down from an average influent concentration of 16.2 mg/L.

Flexibility: the key to success!

The flexibility of the AnoxKaldnes Moving Bed™ process has given us more than 500 satisfied customers in over 50 countries. The process is excellent for BOD/COD removal nitrification/denitrification in all types of wastewater. Our reference list includes but is not limited to:

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<thead>
<tr>
<th>Municipal wastewater</th>
<th>Industrial wastewater</th>
<th>Fish farming</th>
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<tr>
<td>• BOD/COD removal</td>
<td>• Food &amp; Dairy</td>
<td>• Water treatment</td>
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<td>• Nitrification/denitrification</td>
<td>• Pulp &amp; Paper</td>
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Why Choose AnoxKaldnes Moving Bed™ Biofilm Reactor Process (MBBR)?

- Increase solids inventory of existing activated sludge system using the AnoxKaldnes “carrier” in a “hybrid plant” to meet ammonia limits
- Excellent for new plants, especially those requiring a small footprint and easy operation, for BOD/COD and nitrogen removal
- Perfect as a high loaded system in front of existing biological treatment - “roughing reactor”
- Utilization of almost any available existing volumes
- Easy implementation of pre- and post treatment to existing plants for process improvements
- Up to 500% increase in capacity of the organic load treated within existing biological volumes
- Ability to use diffused air or pure oxygen for BOD/COD and nitrification applications

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Resourcing the world