Advanced Wastewater Treatment Solutions

Exceptional Performance. Proven Reliability.

Options for:
+ High Strength Wastewater
+ Nitrogen Removal
+ Phosphorus Reduction
+ Wastewater Reuse
Every RH2O® system is uniquely designed and tailored to the needs of each project, from new construction to retrofit or replacement of existing installations. Our systems are flexible and can be constructed from concrete, fiberglass, or polyethylene reducing capital investment using locally manufactured tanks.

The core of the process is the specially designed biofilm carrier media made from High-Density Polyethylene (HDPE). The media provides a high surface area for optimal biofilm growth to treat the wastewater. The aeration system completely mixes the media inside the biological reactor providing access to oxygen. The media design and mixing process ensures that the media is self-cleaning, will not clog, and does not require replacement.

The Moving Bed Biofilm Reactor (MBBR), originally invented at the Norwegian University of Science and Technology, incorporates the combined benefits of Activated Sludge and Attached Growth wastewater treatment processes. RH2O® North America adopted and professionally tailored MBBR technology to guarantee performance in the unique Canadian climate and meet specific regulatory and project requirements.

**Applications for RH2O®**

**Examples of Applications:**
- Campgrounds, RV, and Mobile Home Communities
- Commercial Plazas and Malls
- Communal Subdivisions/Rural Communities
- Resorts and Marinas
- Restaurants, Rest Areas, and Truck Stops
- Schools Institutional Facilities
- Wineries, Breweries, and Industrial Wastewaters
The benefits of our MBBR system can be used for upgrading or expanding existing wastewater treatment plants. From ammonia removal (nitrification) to assistance with high strength wastewater BOD removal, our system can be easily retrofitted in an economical package to help meet increasing regulatory standards.
Biological Treatment (MBBR Nitrification):
Removes ammonia from the wastewater.

Primary Clarification (Sludge Holding/Pretreatment):
Retention and storage of primary and secondary sludge along with separation of fine particles.

Biological Treatment (MBBR BOD Removal):
Removes organic compounds from wastewater.

Final Clarification:
Separation of secondary sludge which is returned to the sludge holding/pretreatment stage.

System Discharge:
Gravity or pumped discharge of the treated wastewater into a subsurface discharge system or surface water outlet.

Control Unit:
PLC Control system with remote monitoring provides operational control of mechanical components including pump(s), and blower(s), etc.
**Modular Process**

RH2O® provides a range of flexible treatment modules and process concepts as effluent discharge standards become more stringent, especially for nitrogen and phosphorus removal, as well as disinfection of the wastewater. These modules can be easily retrofitted to an existing installation or expanded for tertiary wastewater treatment in new projects. RH2O® also specializes in high strength wastewater applications with installations across the Canada.

**Innovative Hybrid Flow Design**

RH2O® has never settled down when it comes to innovation. We have developed a hybrid flow regime to combine the advantages of both plug and mixed flows in our bioreactors. The use of partitioned walls in our bioreactors protects from short circuiting and skyrockets the reliability and performance of our treatment systems.

**Effluent Discharge Quality:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Standard</th>
<th>Optimal</th>
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<tbody>
<tr>
<td>CBOD</td>
<td>≤ 10 mg/l</td>
<td>≤ 5 mg/l</td>
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<tr>
<td>TSS</td>
<td>≤ 10 mg/l</td>
<td>≤ 2 mg/l</td>
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<tr>
<td>Total Ammonia Nitrogen (NH4-N)</td>
<td>≤ 1 mg/l</td>
<td>≤ 0.5 mg/l</td>
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<tr>
<td>Total Inorganic Nitrogen (Ntot):</td>
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<tr>
<td>Standard Process 30 – 50% Reduction</td>
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<tr>
<td>Standard Process with Recirculation ≤ 80%</td>
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<tr>
<td>Enhanced Denitrification (Pre-DN and Post-DN) up to ≤ 2.5 mg/l</td>
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<tr>
<td>E.Coli / Fecal Coliform:</td>
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<td></td>
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<tr>
<td>≤ 200 CFU/100 mL (with UV)</td>
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<td></td>
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<tr>
<td>≤ 2.2 CFU/100 mL (with filter and UV)</td>
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<tr>
<td>Phosphorus (Ptot):</td>
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<td></td>
</tr>
<tr>
<td>Upstream of Final Clarification ≤ 1 mg/l</td>
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<td></td>
</tr>
<tr>
<td>Separate Flocculation Reactor ≤ 0.5 mg/l</td>
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</tbody>
</table>

**Off-line Sludge Storage**

Off-line Sludge Storage is an optional add-on that further protects the system from various hydraulic, pH and toxic chemical shocks.

**Standard Configuration with Nitrogen Removal**

**Standard Configuration with Enhanced Nitrogen Removal**

**High Strength Wastewater**
Remote management = peace of mind

Our control system uses a Program Logic Controller (PLC) with touch display screen (HMI) for reliable onsite operation.

The PLC controls and communicates with the local devices connected to the control system (i.e. blowers, pumps, DO sensor, etc).

Our Industrial Internet of Things (IIoT) gateway connects to the PLC to securely transmit data to our cloud server. The cloud server provides full operational surveillance of each system with alarm notification via email and SMS along with full data storage and analytics.

Operators can remote monitor and control the PLC through the cloud server.
RH2O® is a leading manufacturer of onsite wastewater treatment systems for commercial applications across Canada.

With decades of expertise as our foundation, we are looking to the future and developing better, more effective solutions while maintaining our excellence in world-class service.

Visit our website for case studies and for more information. Our professional engineering team is ready to help size and design a system to meet your requirements.