InFact

Biological Nutrient Removal Pilot Plant – Facility Update

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BNR Plant Ideal for Researchers

Parallel process units a boon to researchers.

The Biological Nutrient Removal (BNR) pilot plant at the Wastewater Research & Training Centre is an outstanding resource for researchers and industry users alike.

Unique in Western Canada – and one of the leading facilities of its type in North America – the plant features two parallel sets of process units for testing, comparing and refining technologies. This feature offers a significant competitive advantage in the worldwide search to improve the quality of treated wastewater.

BNR is a wholly biological tertiary treatment that reduces phosphorus and ammonia-nitrogen from wastewater. These pollutants, when released into lakes and rivers, can result in oxygen deprivation in aquatic life. Environmental regulations are becoming more stringent, and are driving a concerted effort to achieve cost-efficiencies and refinements that will make BNR more accessible and effective for wastewater treatment plants around the world.

The geographic location of the pilot plant could not be better suited to applied research in this area. The plant is located at the EPCOR's Gold Bar Wastewater Treatment Plant, 10977 – 50 Street, right beside the North Saskatchewan River. Gold Bar is one of North America's most advanced wastewater treatment facilities, and one of the few that use BNR, an entirely natural treatment process.

The BNR pilot area includes a 70-square-metre laboratory, fully serviced to accommodate mobile pilot plants. Users also have access to facilities in the administrative support area, which include a meeting room, offices and office equipment.

Researchers find the BNR plant offers a dream environment. If a researcher or industry user is testing ammonia-reduction technologies, for example, the parallel give a real-time picture of the impact of various refinements in that fluctuating environment.

So far, the BNR pilot plant has been used for various technologies, including micro-bubble aeration units, ozone disinfection and nutrients removal process.

Edmonton Waste Management Centre of Excellence

The Edmonton Waste Management Centre of Excellence is a not-for-profit joint venture between public, private and academic members. The Centre promotes research, development and training to enhance scientific and applied knowledge in all areas of waste management. The Centre facilitates transfer of knowledge to contribute to the protection of public health, the sustainable use of environmental resources and the quality of life locally and globally.

The Centre's members are: the City of Edmonton, the University of Alberta, Alberta Innovates - Technology Futures, AMEC Earth and Environmental Ltd., Northern Alberta Institute of Technology and EPCOR Water Services Inc.

BNR Plant Can Benefit Many Technologies

The BNR plant can be used to research, develop and optimize numerous technologies, including:

Membrane Bioreactor (MBR) – Membrane technology is a very promising field in which membranes are used to filter out even the smallest of organisms.

Submerged Attached Growth – Due to the facility's bioreactor module, research can be carried out to optimize operating conditions of this emerging process.

Integrated Attached Growth Fermentation and Primary Treatment Research – This potential technology uses fermentation and primary settling in one process unit.

Enhanced BioMass Flocculation – Chemical and physical processes can be researched to enhance the settling of biomass within final clarifiers, with the goal of improving treatwater wastewater quality.

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