AnoxKaldnes™ Expertise
Rocky Mountain Region

MBBR and Hybas™

With over 600 full-scale installations worldwide, the AnoxKaldnes technology is backed by unparalleled experience and expertise.

The AnoxKaldnes™ MBBR (Moving Bed Biofilm Reactor) process is a biological wastewater treatment process that utilizes specialized plastic carriers to create a surface on which a biofilm can attach. The carriers are mixed in the reactor, and their large surface provides capacity for a large biomass inventory, reducing the volume required for treatment. In the AnoxKaldnes MBBR process, most of the biomass resides in the biofilm on the carriers.

The AnoxKaldnes™ Hybas™ technology is an application of the IFAS process – Integrated Fixed-Film Activated Sludge. The same AnoxKaldnes MBBR media are used in the Hybas process, the difference being the carriers are used in an activated sludge environment. The suspended-growth biomass of the activated sludge and the biofilm on the carriers work together to provide higher treatment capacity in a smaller volume than that required for activated sludge alone.

Erie, CO - Hybas™

Started in 2011 with a design flow of 1.75 MGD and a peak flow of 4.2 MGD, this plant meets effluent criteria for ammonia <1 mg/L, NOx <9 mg/L and TP <1 mg/L. It is designed with biological phosphorous removal and pre-anoxic zones ahead of two aerobic Hybas zones with K3 media. In addition, a Kruger Discfilter provides tertiary filtration for water reuse.

Broomfield, CO - Hybas™

This system was installed in 2002 and is the first full-scale Hybas in the World. This plant is designed with biological phosphorous removal and pre-anoxic zones to achieve a TP of <1 mg/L, TN of 8 mg/L, and ammonia <1 mg/L. The Hybas process enabled expansion from 4 MGD to 8 MGD without additional aerobic reactor volume. The City has subsequently added an additional 4 MGD train to the plant.

Cheyenne, WY - Hybas™

The Dry Creek Hybas system was installed in 2005 and designed for 8 MGD, with effluent ammonia <2 mg/l and TN <12 mg/l. This plant was a partial retrofit of an existing circular aeration basin along with one new rectangular train to complete the upgrade.

Cheyenne, WY - MBBR

The Crow Creek MBBR was installed in 2005. The plant previously used a trickling filter. The city chose MBBR because it is also a biofilm process that would be compatible with the existing clarifiers. The MBBR has two trains of 4 aerobic reactors in series to treat 5 MGD and achieve BOD <10 mg/L and ammonia <2 mg/L. In 2010 the plant added two pre-anoxic MBBR reactors to target a TN of 10 mg/l.

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Johnstown, CO - MBBR After Lagoons

The original plant consisted of 3 lagoons. The City required an upgrade in order to increase treatment capacity and meet lower ammonia limits. The MBBR system has a design flow of 0.75 MGD with a media fill of 26%. A future, construction-free expansion to 1.5 MGD can be achieved by simply adding media to the MBBR reactors.

Fairplay, CO - Hybas™

This plant formerly consisted of a lagoon system. The Fairplay Sanitation District was challenged in meeting their ammonia permit limits and wanted a process that would produce a stable effluent in a small footprint. The District replaced the lagoons with a new Hybas system in 2008. The plant design temperature is 4.5°C at 10,000 ft of elevation and a flow of 0.3 MGD. The effluent limits are 1 mg/L ammonia, 10 mg/L BOD and 10 mg/L TN. In order to achieve these limits, the plant was designed with pre-anoxic reactors and aerobic Hybas reactors.

South Adams County, CO - MBBR

This MBBR system was completed in 2003 and was designed with pre-anoxic and aerobic zones to achieve TN <11 mg/L. The MBBR was selected due to the City's desire to operate a fixed film system and reuse the existing clarifiers.

Crested Butte, CO - Hybas™

Crested Butte is designed for 0.125 MGD with a peak of 0.5 MGD. The plant includes pre-anoxic and aerobic Hybas reactors containing K3 media to achieve BOD <10 mg/L, ammonia <1 mg/L and TN< 12 mg/L. By choosing Hybas, the City was able to add one new train of treatment capacity while planning for future retrofit of the existing activated sludge plant to Hybas.

Georgetown, CO - Hybas™

This plant is designed for 0.4 MGD with a peak of 0.8 MGD. It has pre-anoxic reactors, one Hybas zone with K3 media, and one aerobic zone with MLSS (no media) to achieve BOD <10 mg/L, ammonia <2 mg/L and TIN <10 mg/L. The MLSS zone is designed to be retrofitted with media for future growth.

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