



BioMag™

The Next Generation of Biological Treatment

Applications

- Enhanced Nutrient Removal
- Increase Capacity of Existing Clarifier Loading Rates by Four to Five Times
- Reduce SBR Settling Cycle Times; Add More Reaction Time or Increase Number of Cycles Per Day
- Control Filamentous Sludge Bulking Problems
- Applicable to New or Existing Processes with No New Aeration Tankage or Clarifiers Required
- Control wet weather flow washout problems

Technology

BioMag™ is proven technology that can achieve low effluent suspended solids, BOD, nitrogen, and phosphorus concentrations in a compact footprint. Employing BioMag™

Demonstrated Performance

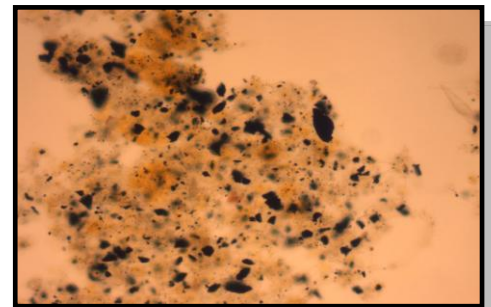
BOD ₅	<5 mg/l
TSS	<5 mg/l
NH ₃ -N	<0.5 mg/l
Total Nitrogen	<5 mg/l
Total Phosphorus	<0.1 mg/l
Turbidity	<1.0 NTU
Clarifier Solids Loading	>90 lb/day-ft ²
SVI	< 40 ml/g

will substantially reduce biological treatment reactor volume requirements and dramatically decrease the footprint needed for BOD and enhanced nutrient removal. The key to BioMag's effectiveness is its marked ability to increase secondary settling rates and thicken the sludge blanket.

BioMag™ enhances biological wastewater treatment processes by using magnetite to ballast

biological floc. With a specific gravity of 5.2 and a strong affinity for biological solids, magnetite substantially increases the settling rate of the biomass. Increasing settling rates of the biological floc provides the opportunity to increase mixed liquor suspended solids (MLSS) concentration. A higher MLSS concentration enables the treatment of increased hydraulic flows or surges and loadings, all within the same tankage.

BioMag™ is a perfect application for activated sludge plants needing more treatment capacity or enhanced nutrient removal capability, at a cost far less than MBR technology.



Magnetite Ballast Impregnates Biological Floc

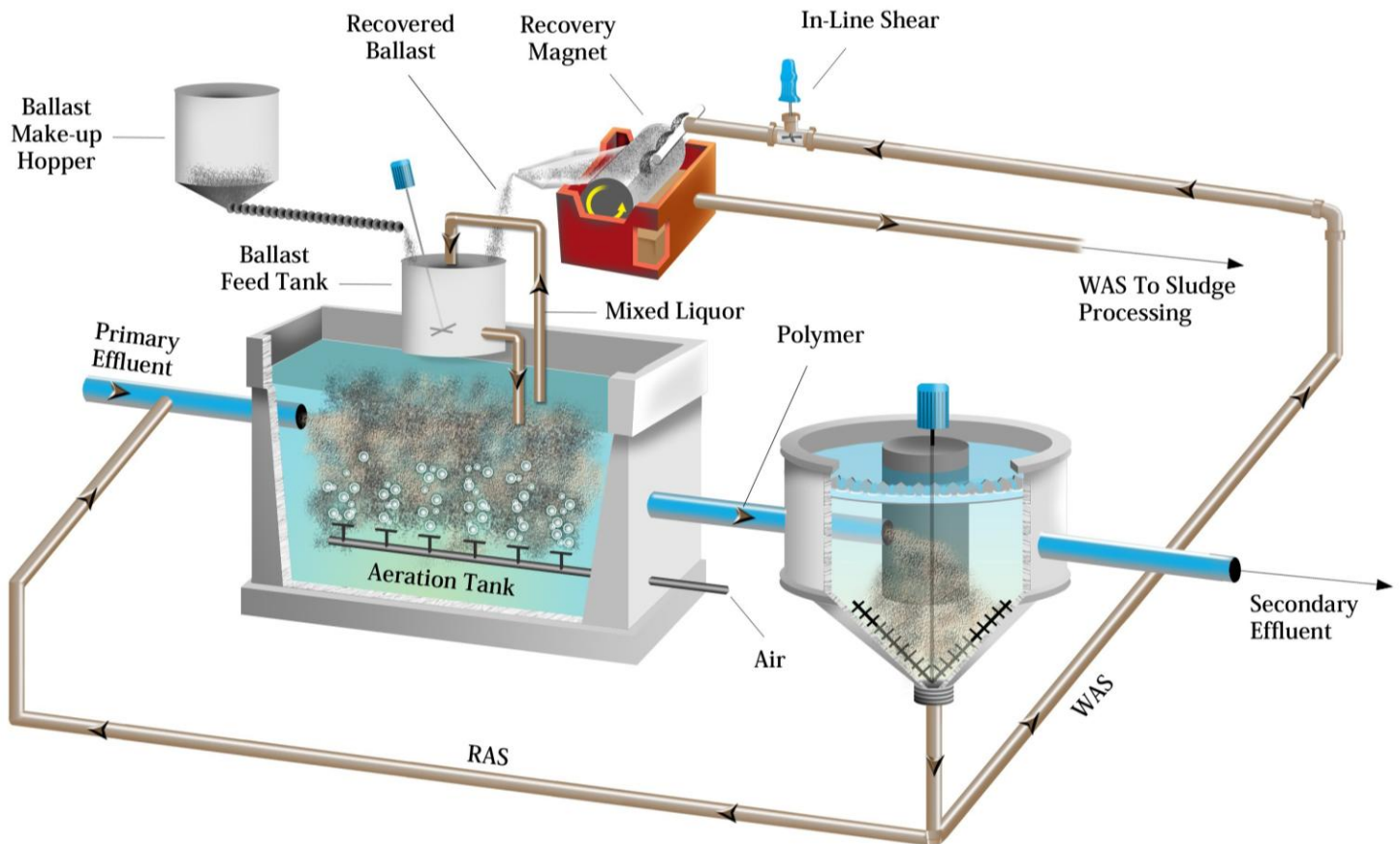
BioMag™ Process Overview

BioMag™ blends virgin and recovered magnetite with mixed liquor or Return Sludge (RAS) in the Ballast Feed Tank. The ballasted mixed liquor then flows to the aeration tank, and then on to the secondary clarifier, where the solids settle out and thicken.

The majority of the resultant “sludge” (with ballast) is returned to the Aeration Tank via a RAS line. The system pumps Waste Sludge (WAS) through an In-Line Shear Mixer and then to the Recovery Magnet, where the ballast is recovered and re-blended with the mixed liquor in the Ballast Feed Tank. The excess biological solids (minus the magnetite) are wasted and handled by traditional methods.

Five Reasons Why You Should Consider BioMag™

- **MBR performance at lower capital and operating expenditures**
- **Two to three times treatment capacity with no additional tankage**
- **Reliable settling under all flow conditions**
- **No filamentous bulking problems up to 12,000 mg/l MLSS**
- **Plus 4% waste solids through gravity thickening**



To learn more about CWT and how BioMag™ can help solve your wastewater treatment challenges contact Bob Backman in our Cambridge office at 617-871-1353 x 114 or email Bob at rbackman@cambridgewatertech.com.