INFILCO METEOR®

IFAS/MBBR Process

WASTEWATER

METEOR® IFAS/MBBR technology is based on proprietary polyethylene biofilm carriers, which, when added to a treatment basin, provide a large internal surface area for the growth of micro-organisms.

APPLICATIONS

» The METEOR® process can be used for a wide range of biological treatment applications:

- Increased Flow Capacity
- BOD Removal Enhancement
- Nitrification for Ammonia Removal
- Total Nitrogen Removal
- Total Nitrogen and Phosphorus Removal

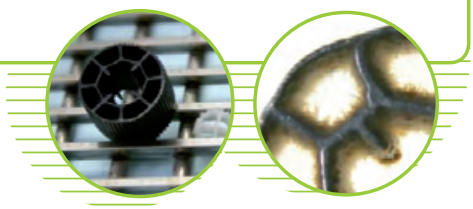
MAIN FEATURES

» IFAS/MBBR systems were designed to optimize mass transfer, biomass density and contaminant removal rates through intensive research.

» The combination of large aperture area, high specific biomass and UV resistance makes Meteor® well suited for IFAS/MBBR applications.

» A 22mm diameter carrier offers the ability to utilize a larger screen mesh size, thereby minimizing headloss across the screen and the tendency to foul.

» Highly resilient process for flow and contaminant loading variations.



METEOR® SPECIFIC TECHNOLOGY

The Meteor® IFAS/MBBR technology offers flexible solutions to a multitude of biological process upgrade applications such as nitrogen removal, treatment capacity increase and wastewater reuse.

Carrier size, geometry and specific internal surface area are critical features. Our unique carriers have been designed with optimal performance in mind.

The upgrade to IFAS or MBBR often consists of simply adding carriers and screens to existing basins and can therefore be completed in a cost-effective and timely manner without major civil engineering requirements and no requirement for additional land. PLC based control system optimize IFAS/MBBR process performance by minimizing energy and chemical costs.

suez environnement

Degrémont

HOW IT WORKS

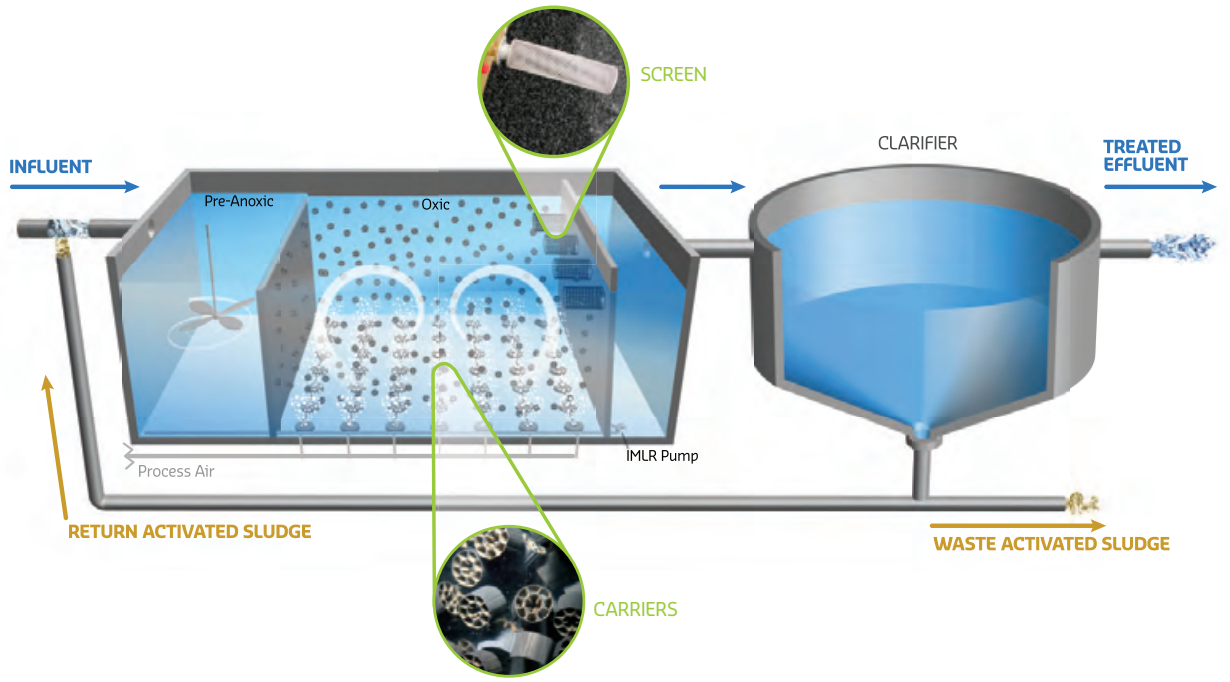
IFAS, the integrated fixed film activated sludge (Meteor®) process incorporates the positive traits of two fundamental biological treatment processes, namely fixed-film technology and suspended growth technology (conventional activated sludge), together into one hybrid system.

By combining high biomass quantities typical of IFAS fixed-film technologies with fluidization typical of a conventional activated sludge (CAS), the Meteor® technology achieves high removal rates in a small volume.

Conventional activated sludge bioreactors are generally retrofitted with the addition of IFAS carrier retaining screens and modifications to the aeration grid to accommodate the addition of IFAS biofilm carriers. The media facilitates the growth of attached biomass and due to its size, is fluidized throughout the bioreactor.

In MBBR systems all the biomass is supported on the biofilm carrier with no recycled activated sludge.

METEOR® : An easy-to-implement and cost effective way to upgrade WWTPs



This attached growth significantly increases the microbial population within the tank, thereby increasing the SRT of the system without increasing the suspended growth population.

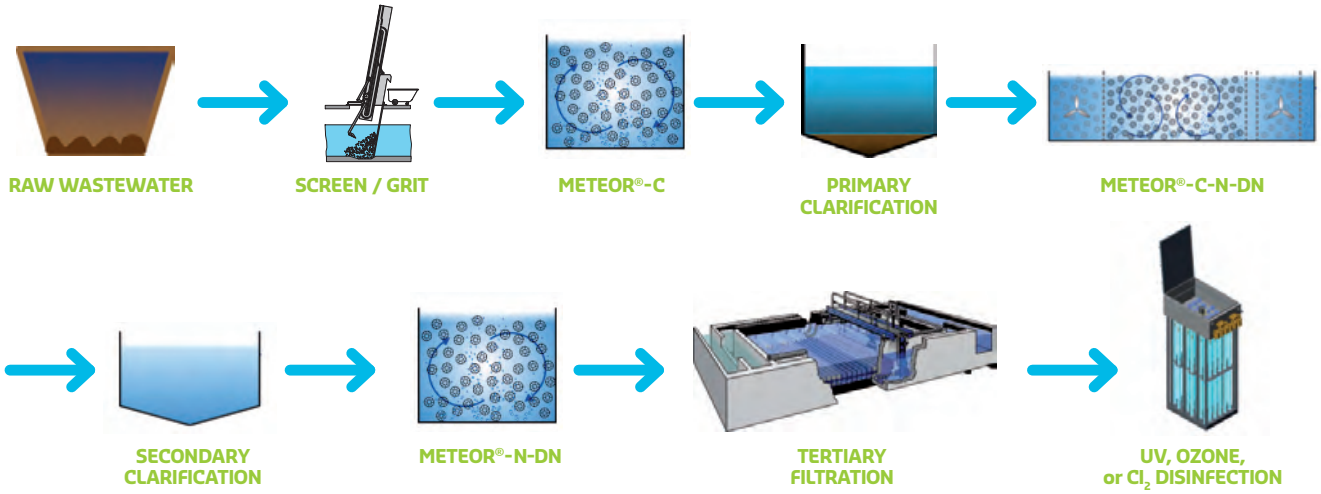
Such conditions are conducive to the proliferation of nitrifying autotrophic bacteria and can be designed to ensure that a sufficient population exists to maintain nitrification through cold water conditions when process kinetics slow down. The biofilm carriers can also be added to anoxic tanks to improve denitrification, if necessary.

These characteristics make Meteor® technology an attractive option for upgrading existing BOD removal facilities for nitrogen removal in response to new regulatory requirements without costly physical expansion. Since addition of biofilm carriers reduces/eliminates dependence on the suspended growth phase, this technology is also advantageous after secondary treatment where virtually no mixed liquor suspended solids (MLSS) are available.

PRODUCT HIGHLIGHTS

- Easy installation
- Nitrification and denitrification in cold water conditions
- Minimal plant downtime for process implementation
- Non-invasive basin retrofit
- Adaptable to many basin geometries, process designs and configurations
- Quick system start-up
- Requires no additional land
- Operating procedures are unchanged

METEOR® IN THE TREATMENT LINE



TECHNICAL ADVANTAGES

BIOFILM CARRIER ADVANTAGES

Multiple basin configurations are possible depending on existing installations and effluent objectives (i.e. roughing reactor before CAS for enhanced BOD removal, separate stage nitrification and/or denitrification following CAS, MLE process or 4-stage process for total nitrogen removal, or a 5-stage process for TN and TP removal).

- Unique biofilm carriers were developed specifically for IFAS®/MBBR operation with high MLSS values – other media were designed for operation with no return sludge. The geometry of the carrier prevents overgrowth and provides excellent mass transfer.
- The biofilm carriers have larger apertures (internal openings) to prevent and resist clogging tendencies. The large apertures are designed to allow high mass transfer rates to promote active treatment productivity.
- The biofilm carriers are significantly larger than other free-floating media types. The larger media size allows installation of screens that have much larger openings. This mitigates the impact of overall plant headloss that can be a problem for processes employing smaller media.

BIOFILM CARRIER OPTIONS

- Surface area - 450 m^2/m^3
- Surface area - 515 m^2/m^3

MECHANICAL ADVANTAGES

- The biofilm carriers are made from high quality High Density Polyethylene (HDPE), and unlike other media, are formulated with UV inhibitors for a long service life (twenty years or more) even in open basins exposed to constant sunlight.
- Meteor® process is compatible with both coarse and fine bubble aeration. Some competing media are not compatible with fine bubble due to reduced scour of small apertures in the media.

TECHNICAL FEATURES

» Increased capacity of activated sludge basins by 100% to 200% with an in-basin retrofit

» Upgrade of existing BOD removal facilities to full nitrification and total nitrogen removal in response to new regulatory requirements:
- Ammonia removal to < 1 mg/L NH3-N
- Nitrate removal to < 1 mg/L NO3-N
- Total Nitrogen removal to < 3 mg/L TN

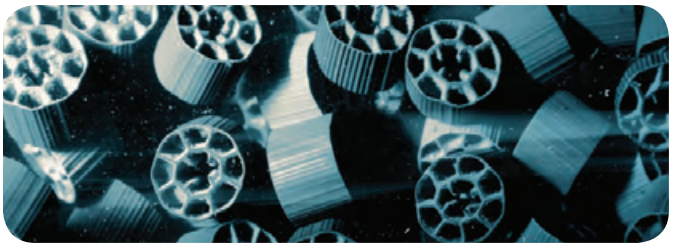
» Suspended solids with better settling characteristics than that from conventional activated sludge

» Reduced suspended growth MLSS after a retrofit, resulting in reduced solids loading on the clarifiers

» Increase in oxygen transfer efficiency due to the presence of the media

COMPLETE TREATMENT SOLUTIONS

Infilco Degremont offers an array of water, wastewater and industrial treatment solutions for any size client. Headworks, clarification, filtration, biological and disinfection systems are several of the product disciplines in our portfolio. With a variety of product disciplines in our BIOLOGICAL department, our engineers carefully evaluate each application to provide the most cost-effective and efficient treatment solution.



If interested in this product, check out some of the complementary products:

- Biofor®
- Ferazur®/Mangazur®
- METEOR®
- Climber Screen®
- Helico®
- Vortex
- ABW®
- Cannon Mixer®
- 2PAD
- Thermylis
- DensaDeg®
- AquaDAF®

PILOTING SERVICES

Infilco Degremont offers pilot systems and services for this and many other of our product offerings. Pilot studies are a practical means of optimizing physical-chemical and biological process designs and offer the client several benefits, such as:

- Proof of system reliability
- Optimal design conditions for the full-scale system
- Free raw water lab analysis
- Regulatory approval

If interested in a pilot study for this system, please contact us for a proposal and more information.

SERVICES - INFILCARE™

PART SALES

Infilco Degremont sells parts and components for most INFILCO brand equipment as well as parts for demineralizers, thickeners, nozzles, pressure filters, and valves. We offer reliable spare parts at competitive prices. We maintain records of previous installations to quickly identify your requirements. Many items are shipped directly from stock for quick delivery.

REBUILDS, RETROFITS AND UPGRADES

Infilco Degremont offers cost-effective rebuilds and upgrades for INFILCO provided systems, no matter what year they were built. If you are interested in an economical alternative to installing a whole new system, contact us for a proposal.

CONTACTS

WWW.DEGREMONT-TECHNOLOGIES.COM

INFILCO DEGREMONT INC.
8007 Discovery Drive
Richmond, VA 23229-8605, USA
Tel: +1 804 756 7600
Fax: +1 804 756 7643
info-infilco@degtec.com

DEGRÉMONT LIMITÉE
1375, route Transcanadienne,
Bureau 400
Dorval (Qc) H9P 2W8, Canada
Tel: +1 514 683 1200
Fax: +1 514 683 1203
info-canada@degtec.com