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Bringing water to life®

Cleartec® System

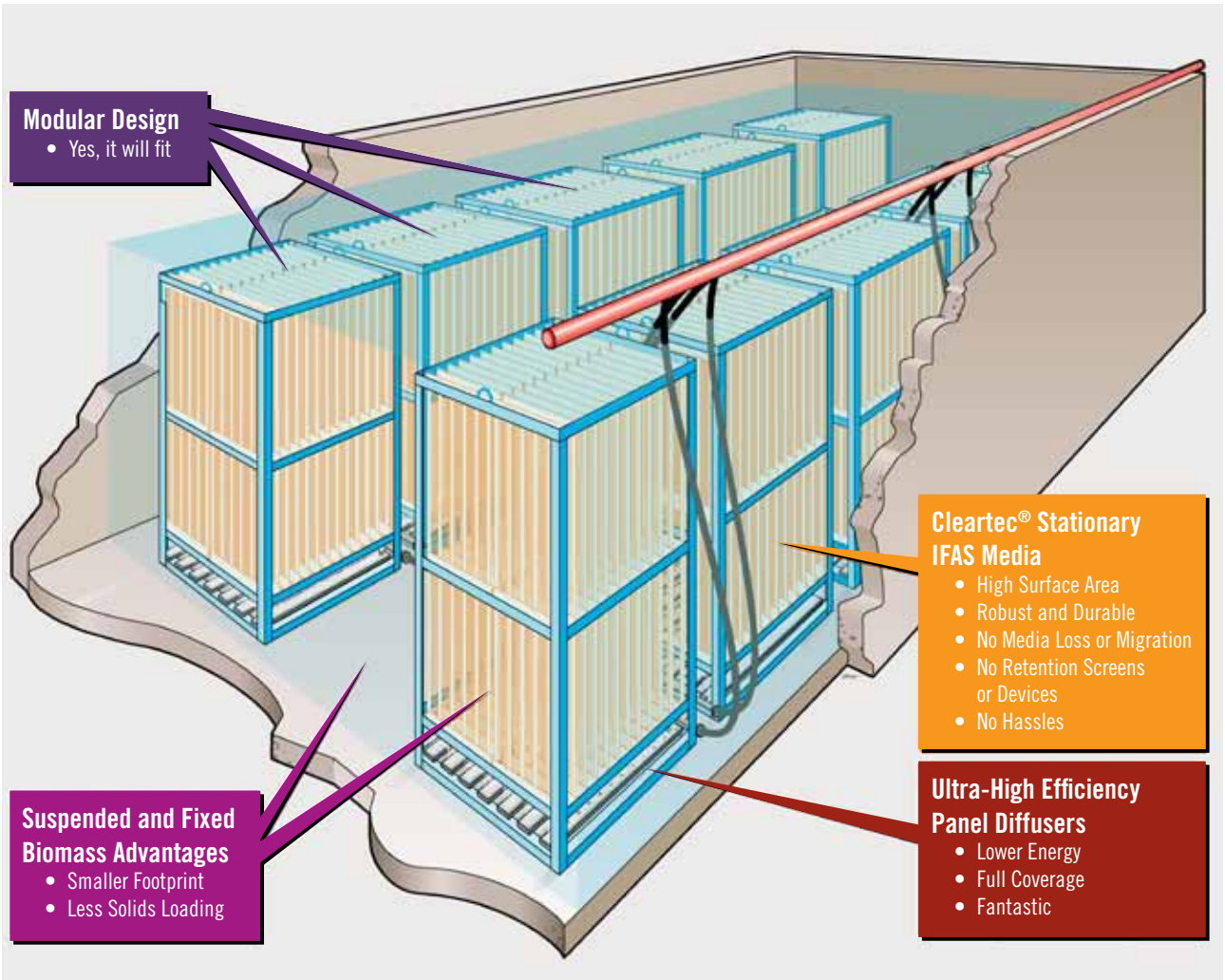
Fixed media IFAS (Integrated Film Activated Sludge)

Key features & benefits

- Increased BNR (Biological Nutrient Removal)
- Improved SRT (Solids Retention Time) with reduced solids flow to clarifiers
- Modular design for simple installation, expansion and upgrades
- No media loss or migration
- Aerated using ultra fine bubble diffusers

How we create value

- Maximizes basin capacity and improves system performance
- Do more with less - retrofit with a Cleartec® System to increase capacity, treatment, or both
- Ultra fine bubble panel diffusers control biofilm thickness and reduce operational costs



Cleartec® System

IFAS
IFAS (Integrated Film Activated Sludge) is an economical solution for the upgrade and expansion of existing activated sludge systems. IFAS is particularly suitable to plants where additional aerations basins cannot be accommodated.

IFAS is a hybrid treatment approach that combines attached biological growth with suspended biological growth. A high surface area, solid support media is immersed into a basin with suspended biological growth. The media then provides a surface for the growth of additional attached biomass. This combination of attached and suspended biological growth efficiently increases the biomass in a given system.

Benefits of an IFAS upgrade:
- Allows for significant expansion with little or no additional aerobic volume
- Increased Biological Nutrient Removal (BNR)
- Improved solids settling
- Greater resistance to hydraulic solids washout
- Increased resilience to shock loading
- Reduced solids flow to clarifiers, increasing clarifier capacity

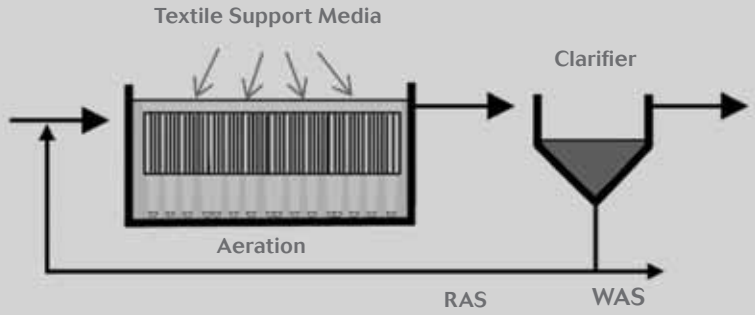
IFAS is a well-established technology, and has been applied as an effective wastewater treatment process for over sixty years.

Cleartec® System
The Cleartec® system is the latest innovation in fixed media IFAS systems, improving system viability and performance.

The Cleartec textile media is a textile material supported in a ridge frame assembly for submersion in the activated sludge basin. These sheets have several advantages over mobile media in an ordinary IFAS system:

- No risk of media migration
- No media loss into the environment
- No need for media retention devices (such as screens or air knives)
- Modular design minimizes capital expenditure
- Eliminates the need to dewater basins for maintenance of aeration equipment
- Operates at lower D.O. levels - saving energy
- Aeration turn-down is not mixing limited

The Cleartec textile media encourage efficient biomass growth to deliver significant performance enhancements. The discrete vertical sheet arrangement of the media also ensures uniform air flux across the biofilm, preventing the accumulation of decaying biomass which can result in predator infestation.



IFAS flowsheet with fixed media

The Cleartec® system will make your treatment plant more efficient.

The textile support media is immersed in an aeration basin containing suspended biomass. The media provides a surface area for increased active biomass growth.

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System Upgrades
A facility's capacity can be increased with little or no increase in tankage, and the level of treatment of an existing facility is easily improved by applying a Cleartec IFAS system upgrade. Cold weather applications can, for example, be easily upgraded to perform ammonia removal throughout the year. The Cleartec module can also increase the overall Solids Retention Time (SRT) of the facility.

A treatment plant can be upgraded to provide biological nutrient removal using the Cleartec system. Cleartec modules at the aeration stage can be used to reduce the required aerobic volume: this then allows a portion of the aerobic volume to be freed up to accommodate an anoxic or anaerobic environment.

Additionally, the ultra high efficiency diffusers can be operated intermittently or at very low turndown, creating conditions that promote simultaneous nitrification/denitrification.

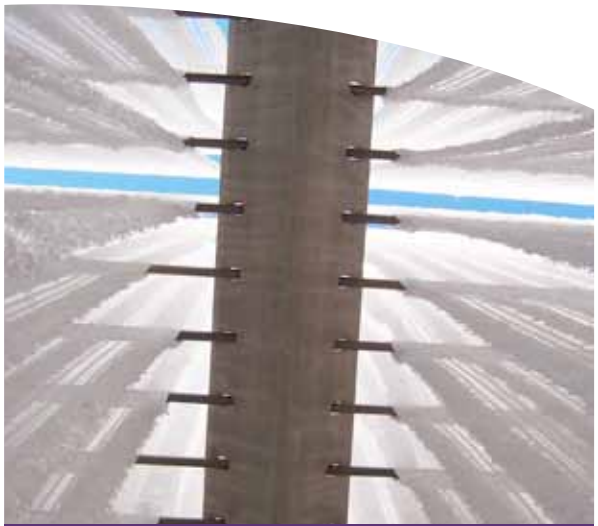
Cleartec retrofits will also increase the capacity of the existing clarifiers. The combination of stationary biomass and inherently faster settling sludge increases the effective capacity of any existing units.

Cleartec IFAS upgrades are a highly economical alternative for wastewater treatment system upgrades.

Cleartec® IFAS modules

Patented Cleartec® media

Cleartec® media showing fixed biomass when pulled out the water



Cleartec® media in the support cage (from below)

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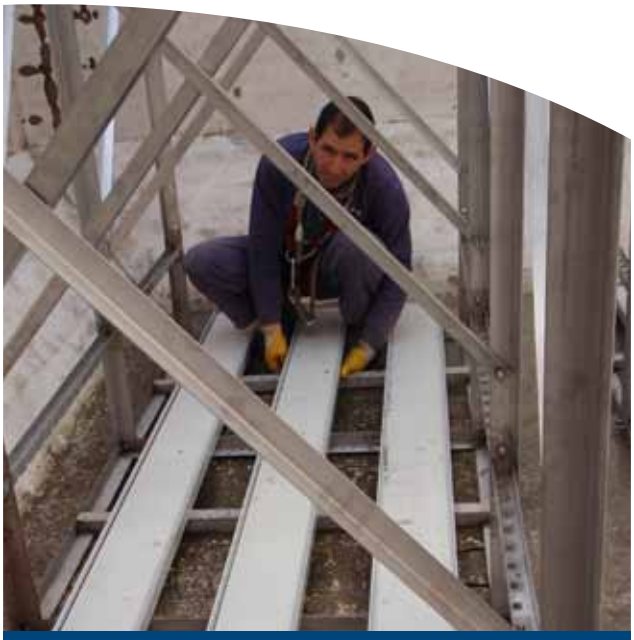
Maintenance

The patented construction of Cleartec textile media is extremely robust, coupling support strips with an open mesh. The support strips eliminate problems associated with elongation and breaking which have plagued other fixed media systems. There is no need for retensioning: facilities using Cleartec textile media have operated successfully for fifteen years without any need for media replacement or adjustment.

The Cleartec IFAS technology minimizes maintenance concerns. By having the diffused air system built into the support cages, tank draining is no longer required for diffuser inspection and maintenance. Additionally, the discrete vertical sheet arrangement allows for simple media replacement only where it is necessary.



Diffusers integrated into the Cleartec cage

Systems Approach

For the effective implementation of IFAS technology, fixed media must be properly sized, placed and integrated with the aeration equipment, mixing equipment and basin geometry. This requires a systems approach.

Ovivo has a wealth of knowledge around the selection and design of process equipment, bioreactors, and Biological Nutrient Removal (BNR) systems. We apply this expertise to our IFAS systems, combining a systems approach with strong aftermarket support, including training and operational consulting.

IFAS system in operation

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