TECHNICAL BRIEF

Revolutionizing Biological Wastewater Treatment with DGI®

99+% Oxygen Transfer Efficiency

Dissolved Gas Infusion

Biological wastewater treatment systems rely on the effective diffusion of oxygen into the water to support the metabolic activities of microorganisms that break down organic pollutants. Achieving high transfer efficiency of oxygen has always been a key target, as it significantly impacts operational costs and overall system performance. Our DGI® Dissolved Gas Infusion technology stands out by achieving near 100% oxygen transfer efficiency, which not only boosts performance but also lowers operating costs.

Fundamentals of DGI® Technology

DGI technology utilizes a proprietary method to infuse gases directly into liquids with unparalleled efficiency. The core strength of the technology lies in its ability to create high gas-liquid surface areas which are subjected to pressure to maximize the concentration of oxygen via Henry's Law.

Once dissolved into the carrier stream, the highly concentrated dissolved oxygen (DO) is delivered back to the treatment basin via specialized channel injectors which ensure the oxygen remains in solution until utilized by the process.

Advantages in Biological Wastewater Treatment

> Enhanced Biological Processes

The near 100% transfer efficiency of oxygen significantly enhances aerobic treatment processes within wastewater treatment plants. Metabolic oxygen uptake rates are higher for plants using pure oxygen compared to air..

By achieving near full dissolution of oxygen, the microorganisms are not limited by the transference of oxygen out of air bubble and do not have to work to get the required oxygen. This allows them to ultimately break down organic matter more effectively, resulting in higher treatment efficiency and better effluent quality.

> Lower Operational Costs

High oxygen transfer efficiency means that less oxygen is needed to meet the demands of the biological process, leading to considerable savings in operational costs. The enhanced efficiency also reduces the energy required for gas transfer and minimizes the electrical requirements significantly when compared to conventional aeration processes, further driving down operating expenses.

> Simplified Maintenance & Installation

Unlike traditional aeration systems, our DGI technology is designed with all moving parts and maintenance components located outside the treatment basin. This unique configuration ensures that installation and maintenance operations are straightforward, without the need for divers or draining the basin. The external placement of components also results in less wear and tear, extending the lifespan of the equipment and reducing downtime.

Groundbreaking Solution for Biological Wastewater Treatment

Our patented DGI Dissolved Gas Infusion technology offers a groundbreaking solution for biological wastewater treatment by delivering near 100% oxygen transfer efficiency. This not only amplifies biological processing efficiency but also slashes operational costs and simplifies maintenance procedures. By placing all moving parts and most maintenance items outside the treatment basin, DGI technology ensures ease of installation and longevity.

Fuel Tech's channel injectors minimize in basin equipment.

Contact Fuel Tech today to discuss how DGI technology can benefit your wastewater treatment process.

FUEL TECH
Technologies for clean air & pure water

Fuel Tech develops and commercializes state-of-the-art proprietary technologies for air pollution control, process optimization, water treatment, and advanced engineering services. These technologies enable customers to operate in a cost-effective and environmentally sustainable manner.

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