Impellers | GDS Series

Professional Mixing Technologies

Next-Generation Impeller Technology for Gas–Liquid Applications

The Mechanimix GDS impeller is developed using the proven performance principles of the proprietary GDM and HWM-B impellers. Its specialized blade geometry generates strong radial and axial flows that ensure excellent gas distribution and efficient liquid mixing. Gas pockets are prevented from forming behind the blades, allowing stable operation even under high gas-loading conditions. Designed specifically for gas–liquid reactors, the GDS provides optimal mass transfer, improved suspension capability, and reliable performance for a wide range of industrial processes.

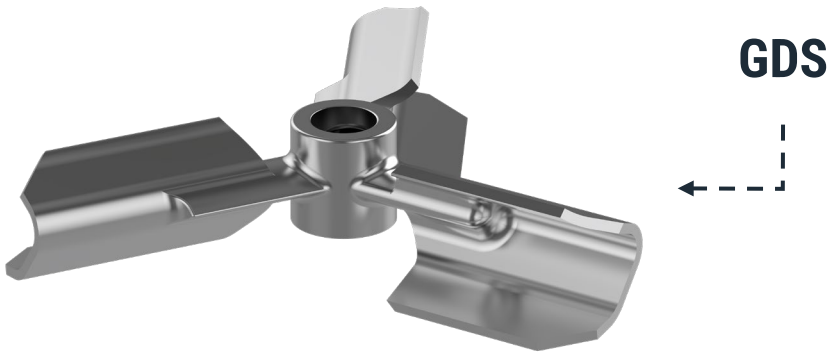
The development of GDS is based on extensive research using Mechanimix's existing impeller technologies. The result is an impeller capable of delivering powerful flow patterns, uniform gas dispersion, and high mixing efficiency. Thanks to its advanced design, power loss during gas operation is minimized, making the GDS a robust and energy-efficient choice for modern gas–liquid reaction systems.

INDUSTRIES

- Chemicals
- Polymers
- Biotechnology
- Hydrometallurgy

APPLICATIONS

- Gas–liquid reactions
- Hydrogenation
- Oxidation
- Bioleaching



ADVANTAGES

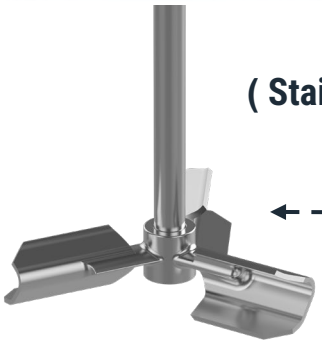
- Low torque requirement
- Improved homogeneous mixing under gas-loaded conditions
- Increased suspension efficiency during aeration

FEATURES

- Powerful combination of radial and axial flow
- Excellent gas distribution capability
- Fast mixing performance
- Low power consumption
- Fully compatible with Mechanimix GDM systems

Material Variants and Application Range

GDS (Stainless Steel)



Material

- High-grade stainless steel

Features

- Excellent corrosion resistance in aggressive gas–liquid environments
- Smooth hygienic surface suitable for biochemical applications
- Stable operation without gas pocket formation
- CIP-friendly and easy to maintain

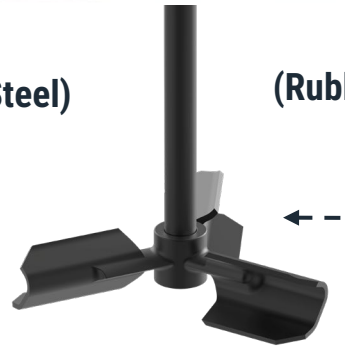
Typical Applications

- High-purity hydrogenation
- Oxidation and bio-oxidation
- Polymer reactor gas-liquid dispersion
- Biotechnology aeration systems

Advantages

- Reliable gas–liquid mixing
- Stable performance at varying gas rates
- Long service life
- Low maintenance requirements

GDS (Rubber Lining)



Material

- Carbon-steel impeller body with rubber lining

Features

- High abrasion resistance in particle-rich gas–liquid slurries
- Rubber layer eliminates blade wear caused by cavitation and gas bubbles
- Stable mixing under fluctuating gas-flow conditions
- Ideal for mineral and hydrometallurgical gas-reactor environments

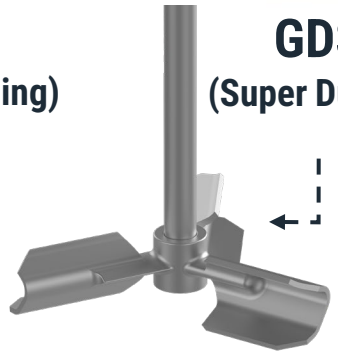
Typical Applications

- Bioleaching and bio-oxidation
- Abrasive oxidation reactors
- Gas-boosted slurry suspension
- Hydrometallurgical high-gas processes

Advantages

- Extended active service life
- Reduced wear on blades
- Lower operational costs
- Reliable performance under harsh gas–slurry conditions

GDS (Super Duplex)



Material

- Super Duplex Stainless Steel

Features

- Exceptional strength for high-pressure gas reactors
- Outstanding resistance to corrosion, pitting, and gas-induced erosion
- Stable operation in chloride-rich and oxidizing environments
- Designed for extreme-duty hydrogenation and oxidation

Typical Applications

- High-pressure gas–liquid reactions
- Offshore or corrosive chemical reactors
- Gas-intensive oxidation and hydrogenation

Advantages

- Maximum corrosion & erosion protection
- Reliable performance in extreme gas-loading conditions
- Long operational lifetime