Chemineer

Advanced Impeller Technology for Superior Performance

Advanced Designs

Chemineer impeller designs are the result of over six decades of research and applied application experience, resulting in the broadest range of durable and efficient impeller options. Proprietary technologies are applied to thoroughly analyze all process parameters, ensuring proper impeller selection for optimal performance in every application. Carbon steel, 316/316L stainless, high alloys and coatings are available for all impellers.

RL-3 Ragless™ Impeller

- Engineered to prevent fibrous material build up by eliminating edges and protrusions that would allow fibrous material to agglomerate
- High axial flow impeller for superior mixing performance in blending and solids suspension applications
- Strong central hub and sturdy blades designed to handle the loads related to material and flow impingement to ensure reliable operation and long service life

XE-3 Impeller

- Chemineer's most efficient axial flow impeller for heat transfer, blending and solids suspension applications
- Mechanical design reduces weight allowing longer shafts without the need for additional support
- Can replace less efficient impellers and reduce energy costs

HE-3 Impeller

- An established industry standard for axial flow impellers
- Extremely efficient: creates greater fluid motion with less energy
- Ideal for blending, heat transfer and solids suspension

Maxflo W

- Excellent performance in abrasive solids suspension, liquid-solid-gas and boiling or near-boiling applications
- 10% more pumping than the Maxflo T means retrofits with no decrease in performance
- High-solidity blade design translates into improved mass transfer over other high efficiency designs

SC-3 Impeller

- Engineered for deep tank applications utilizing rolled blade design
- Produces flow of larger impellers without added weight or loss of efficiency
- Longer shafts possible with lighter weight designs

Maxflo WSE

- Advanced side-entering hydrofoil design with high efficiency for maximum pumping action
- More cavitation resistant than other designs through effective hydrodynamic design
- Reduced wear through lower tip speeds

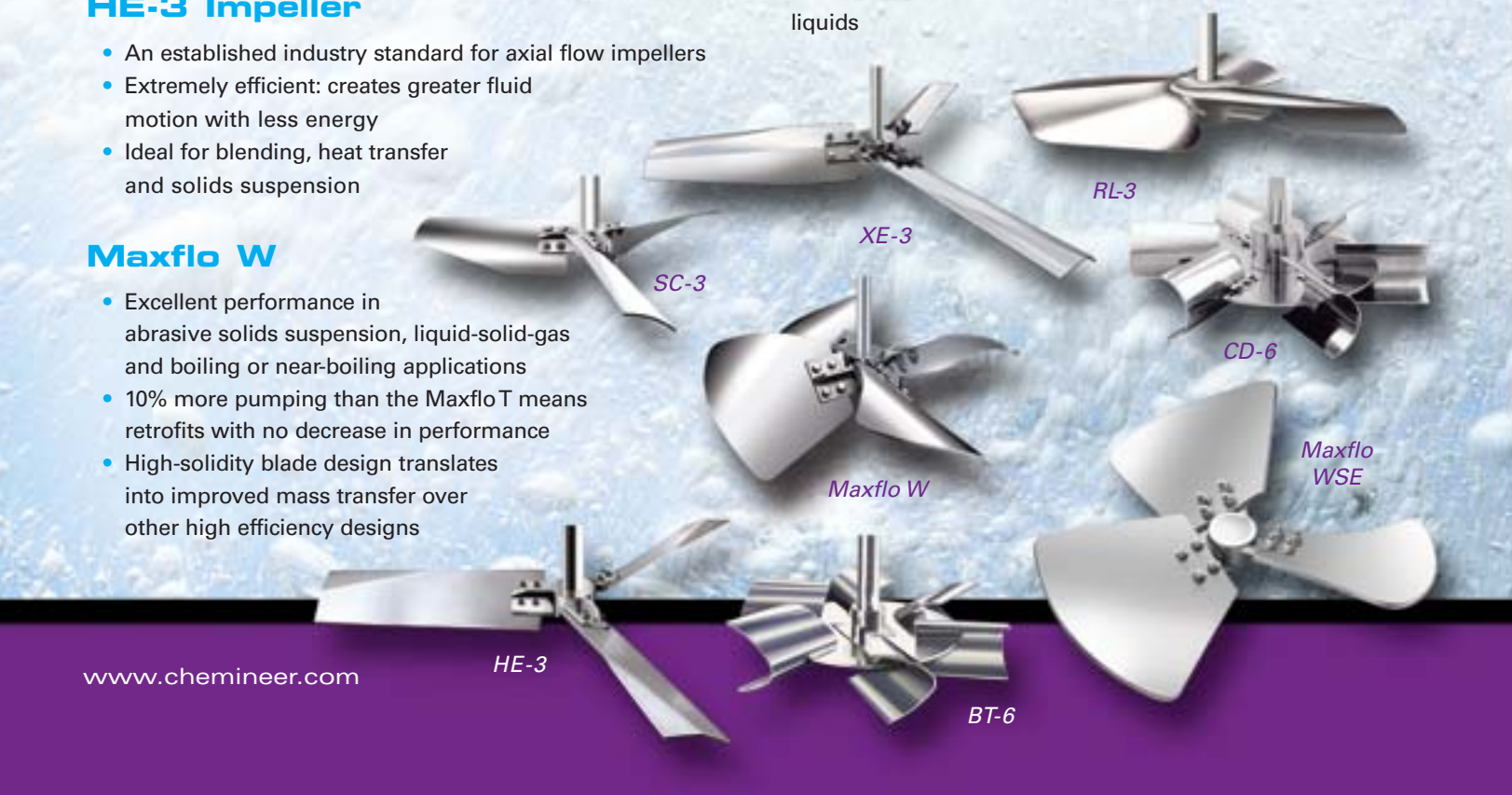
Gas Dispersion Impellers

BT-6

- Parabolic blade design engineered for maximum performance
- Highest gas dispersing capability at nearly six times the D-6 (Rushton) turbine
- Lower power drop in the gassed state improves mass transfer
- Relatively insensitive to viscosity

Other Designs

- CD-6: Curved blade design similar to the BT-6, the CD-6 has gas dispersing capability over two times that of the D-6
- D-6 (Rushton): A cost-effective design for low gas rates or concentrations of immiscible liquids



Time-Proven Technology

P-4 Impeller

- Axial flow design suitable for wide changes in process viscosity
- Efficient for immiscible blending applications where shear and pumping is required
- Excellent for solids incorporation from the liquid surface

P-4

S-4

S-4 Impeller

- Close clearance design for operation near the tank bottom
- Excellent for low-liquid-level solids suspension applications
- Designed for use in laminar regime (Reynolds number < 50) applications

JP-3 Impeller

- Marine style energy efficient design
- Ideal for small batches
- Handles higher viscosities than hydrofoil designs

JP-3

ChemShear

Dispersion Blade

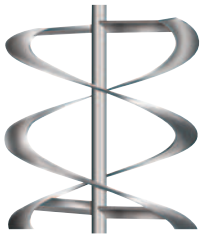
ChemShear Impeller

- Customize levels of shear to suit your process
- Proper fluid turnover minimizes the need for auxiliary pumping impellers
- Small particles possible: 2 microns achieved in processes such as micro-encapsulation
- Traditional dispersion blades — such as the BT-6, CD-6, and D-6 — can also be used in high shear applications

High-Viscosity Impellers

Double Helical Ribbon Impeller

- Proven the best high viscosity, laminar flow impeller
- Highly effective in heat transfer
- Efficiently incorporates surface liquids and solids
- For viscosities over 30,000 MPa



Double Helical Ribbon

Anchor

Screw (Auger)

Anchor Impeller

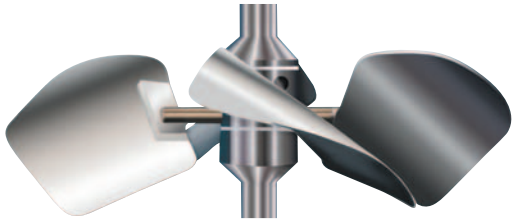
- Most economical laminar flow impeller available
- Horizontal flow well suited for low-liquid-level geometries
- Solve heat transfer fouling problems with optional wall scrapers

Screw (Auger) Impeller

- Ideal for shear sensitive, uniform blending applications (polymers)
- Excellent top-to-bottom turnover flow characteristics
- Use in mildly pseudoplastic applications with power law indexes as low as 0.5

High Cleanability: Smoothline® Impeller

- Innovative patented design
- Liquid-shedding surfaces and concealed hardware for enhanced CIP performance
- FDA/USP CL VI materials
- Removable components allow ease of installation through small openings
- Axial or radial flow, single or multiple impellers



Smoothline®

Impeller Selection Guide					
Application	Miscible Fluids Blending	Solids Suspension	Three Phase Process	Immiscible Fluids Blending	High Viscosity
Impeller Type(s)	High Efficiency (XE-3, HE-3, SC-3) Ragless (RL-3)	High Efficiency (XE-3, HE-3, SC-3, Maxflo W) Ragless (RL-3)	Gas Dispersion (BT-6, Maxflo W)	ChemShear, Dispersion, P-4	Helix, Anchor, Screw

ChemScale®—The Industry Standard Method for Effective Mixer Selection	
Blending	
ChemScale®	**Description**
1-2	Mild/minimum blending and motion. Produces a flat, but moving fluid surface.
3-5	Intermediate/moderate blending of miscible liquids when specific gravity differences are less than 0.6. Produces surface rippling at water-like viscosities.
6-8	Moderate to vigorous agitation for uniform blending of miscible liquids when specific gravity differences are less than 0.6. Produces surface rippling at lower viscosities.
9-10	Very vigorous agitation for uniform blending of miscible liquids when specific gravity differences are less than 1.0. Produces violent surface motion at lower viscosities.

Solids Suspension	
Intensity	**Definition**
Solids Motion	Solids are allowed to settle on the vessel bottom, but remain in motion.
Complete Suspension	None of the solids remain on the vessel base for a significant length of time.
Uniform Suspension	Homogeneous distribution of solids throughout the liquid volume.

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Prochem

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