FMT

FLUID MIXING TECHNOLOGIES

WHEN MIXING MATTERS

COMMERCIAL & INDUSTRIAL MIXERS MANUFACTURER

- Mixers and Agitators
- Mixing Systems
- Turnkey Plants and Projects
- Impellers

INDUSTRIES WE SERVE

CHEMICAL

PHARMA

FOOD

BIO-TECH

OIL & GAS

WATER

FERTILIZER

BIO-FUEL

POLYMER

ADHESIVE

PAINT

BATTERY & EV

MIXING AND AGITATORS

TOP ENTRY MIXER

Motor - 0.37 kW to 200 kW

Drive - Helical Inline, Bevel, Parallel

Seal - Lip seal, Gland packing, Single or double

MOC - Austenitic/Duplex/Alloy steel/
MS-Lined/Coated

Application

- Chemical
- Paint and Coating
- Pharmaceutical and Bio-Tech
- Adhesive and Resin
- Food and Beverage

SIDE ENTRY MIXER

Motor - 2.2 kW to 37 kW

Drive - Helical Inline, Bevel, Parallel

Seal - Special side entry seal with
shut-off device

MOC - Austenitic/Duplex/Alloy steel/
MS-Lined/Coated

Application

- Fermentation
- Flue gas desulphurisation
- Oil and gas
- Edible oil

BOTTOM ENTRY MIXER

Motor - 0.37 kW to 7.5 kW

Drive - Helical Inline, Bevel, Parallel

Seal - Lip seal, Gland packing, Single or double

MOC - Austenitic/Duplex/Alloy steel/MS Lined/Coated

Application

- Food Processing
- Pharmaceutical
- Bio-Tech

PORTABLE/CLAMP ON MIXER

Motor - 0.22 kW to 2.2 kW

Drive - Helical Inline or Direct Driven Seal - Lip seal, Gland packing

MOC - Austenitic/Duplex/Alloy steel

Application

Wide range of flow or shear demanding application

MIXING SYSTEMS

MULTI-PHASE REACTOR

Multi-phase Reactions are heterogeneous reactions and involves all three phases (Gas, Liquid and Solid) of the fluid.

As a multi phase reaction is taking place, process demands superior Mass and Heat transfer in the reactor for better conversion and productivity

Mixer plays a crucial role facilitating the mixing and dispersion of reactants within the reactor vessel.

FMT, has an expertise to provide excellent mixing solution for MULTI-PHASE REACTORS using the combination of Axial and Radial flow impellers to enhance the gas dispersion, catalyst suspension, mass transfer and entrainment of gas in vapor space into bulk reaction mixture.

FEATURES

- Combination of flow and shear Impellers to achieve different process requirements such as mass transfer, bubble size reduction, gas dispersion, solid suspension.
- IIC motors for Hydrogenators
- IIA/IIB motors for other applications
- Double Mechanical Seal with API Plan 54 (Forced Circulation System) for High Pressure applications
- On-Demand ATEX Motor

BENEFITS

- Thorough solid suspension throughout reactor.
- Enhanced gas dispersion
- Great gas-liquid Interfacial area
- Enhanced mass transfer
- Re-circulation of unused gas in bulk reaction mass

BENEFITS

1. Hydrogenation
2. Ethoxylation
3. Oxidation
4. Aminolysis
5. Carboxylation & more multi-phase reactions

BIO-REACTOR AND FERMENTER

Fermentation is a reaction where organic raw materials converted into products by the action of microbes or enzymes. Agitator plays an vital role to provide mixing and thus increase mass transfer rates

The mixing action evenly distributes oxygen and nutrients to cells for healthy growth, keeps them from settling to the bottom of the vessel, and helps to maintain a uniform culture temperature.

FMT, provides tailor made solutions of agitators for bio-processing industries to achieve better MTR/OTR with shear sensitive or insensitive microorganism.

FEATURES

- Impeller Systems designed to maximize fluid mixing and thereby uniform concentration of cell, nutrients, and temperature with taking care of shear sensitive participants
- Hygienic Design
- Ra<0.4, µm mechanical / electro*polished.
- Single/Double Mechanical seal

BENEFITS

- Enhanced gas dispersion.
- Better Oxygen Transfer Rate/MTR/ kLa-values.
- Enhanced mass transfer
- Utmost mechanical integrity.

BENEFITS

1. Fermentation
2. Green Chemistry
3. Bio based products
4. Bio-Pharmacueticals
5. Food and Beverage

CRYSTALLISER

Crystallization is one of the very important unit operation in processing industry and it is governed by thermodynamics, mass and heat transfer, reaction kinetics and fluid flow.

FMT, offers combination of Radial/Axial and close clearance impellers (Anchor/Ribbon) achieves higher pumping rates, a better degree of slurry homogeneity and an improved surface renewal, and heat transfer which finally leads to a more uniform crystal growth.

BENEFITS

- Uniform Solid Suspension In Mother Liquor
- Improved Surface Renewal
- Enhanced Mass Transfer
- Better Heat Transfer
- Low Shear Environment
- Minimum Crystal Attrition

DISPERSER

Primary function of a high-speed disperser is to mix and disperse solid particles, powders, or pigments into a liquid to create a uniform and homogeneous mixture.

FMT offers high speed and twin shaft disperser (Combination of High Shear Impeller + Anchor) and high speed disperser to cater breakdown of solid particles or agglomerates into liquid medium, by applying intense shear forces, resulting in efficient dispersion and anchor at low speed for heat transfer and mixing or can be used as a scrapper.

APPLICATION

1. Paint and surface coating
2. Pharmaceutical and cosmetics
3. Dyes and pigment
4. Ink, resin and adhesive

MIXING TANKS

Apart from critical requirements of mixing, process industry demands general mixing requirements such as blending of liquids, dissolution of solids in to liquids, suspension of solids, etc.

FMT, provide cost effective and efficient solution for general mixing application. In addition to that, we also offers Portable Clamp-On Mixers that can be used fitted quickly and simply to open top tanks, can turn storage tank into an efficient mixing vessel. Mixer design is flexible and are suitable for mixing fluids of light to medium viscosity

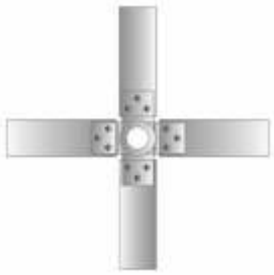
STATIC MIXER

Static mixer caters to various industries, from chemicals to food and beverage. With low shear mixing capabilities, delicate substances retain their integrity. Maintenance is a breeze with no moving parts to worry about. Its compact and durable design saves valuable space and guarantees long-lasting performance.

FMT, offer static mixers that meets customers requirement over wide range of application such as neutralization, chemical blending mixing of additive/catalyst

INPELLERS

AXIAL FLOW IMPELLERSS



AF1: PITCH BLADE TURBINE

Pitch Blade Turbine aka PBT, the impeller features flat, rectangular blades that are pitched to optimize fluid flow and mixing efficiency. The blade angle promotes fluid movement and circulation within the vessel, ensuring effective mixing. PBT is well- suited for a wide rangeof applications , including blending, solid suspension, heat transfer, etc. It can handle both low and moderate viscosity fluids, making it a versatile choice for various industries. It generates axial as well as radial flow, which facilitates the movement of fluid along the axis as well as outward from the impeller, resulting in effective blending and mixing.

AF2/AF3 : HYDROFOIL

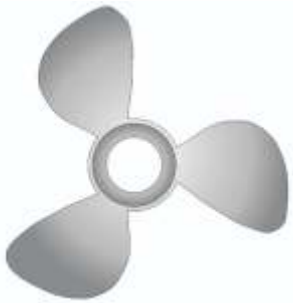
A high efficiency hydrofoil impeller designed for efficient fluid mixing with huge energy savings and minimum shear forces. It features blades with a streamlined, curved shape resembling the wings, which enables the enhanced fluid flow and mixing performance. The hydrofoil shape reduces resistance and pressure drop, generate strong axial fluid flow and effectively moving the fluid along the axis and promoting circulation throughout the vessel. This impeller require lesser energy requirements compared to other impeller types, resulting in lower power consumption and operational costs. Viscosity range - upto 4000 cP

AF4 : WIDE BLADE HYDROFOIL

A wide blade, high solidity hydrofoil impeller is specifically designed to handle and promote effective blending and mixing of high viscosity materials. The impeller features a high solidity ratio, increases the impeller's effectiveness in handling high viscosity fluids by providing more surface area for fluid interaction and mixing. It generates sufficient shear forces and ensures the efficient pumping and circulation of the high viscosity medium. Wide blade hydrofoil impellers can be used in a broad range of high viscosity applications across the industries such as chemicals, polymers, paints and coatings, adhesives, and food processing. Viscosity range - upto 150,000 cP

AF-5 : GAS-LIQUID IMPELLER

The gas handling impeller is designed for gas-liquid mixing, and mass transfer applications in various industrial processes. The impeller design promotes effective dispersion and intermixing of gas bubbles and solid suspension within the liquid medium. This ensures thorough contact and mass transfer between multiple phases The impeller is specifically designed to handle multi phase systems with high gas flow rates and high gas hold ups allowing for effective gas dispersion throughout the liquid medium. It is suitable for a wide range of multiphase applications such as hydrogenation, amination, carboxylation, ethoxylation, etc



AF-6 : MARINE PROPELLER

A marine propeller as the name suggests, is an impeller design that resembles a propeller commonly used in marine propulsion systems. However, in the context of agitation and mixing applications, the marine propeller impeller is adapted for fluid agitation within the tank. Marine propeller generates axial flow, propelling the fluid along the impeller's axis. This flow pattern promotes effective mixing and circulation within the vessel, ensuring thorough blending and suspension of solids . Marine pro peller impellers are known for their high shear capabilities, making them suitable for applications that require intense mixing or dispersion

RADIAL FLOW IMPELLERS

RF1: RUSHTON / FLAT BLADE TURBINE

Rushton turbine/flat bade turbine (FBT) is primarily known for its effectiveness in Gas liquid mixing applications, it is mainly used for gas dispersion and mass transfer processes. When used for gas dispersion and mass transfer, the Rushton turbine createsagitation and turbulence in the liquid, which aids in breaking up the gas bubbles and promoting their dispersion throughout the vessel. The interaction between the gas and liquid phasesin creases the inter facial area ad facilitates the transfer of gases into the liquid.

RF2: SMITHS / CURVED BLADE TURBINE

A Smiths/burved blade turbine (CBT) impeller can also be used for gas \ dispersion and mass transfer applications in addition to liquid mixing. The design of the impeller allows for efficient gas - liquid contact and promotes the transfer of mass When used for gas dispersion and mass transfer, the curved blade turbine impeller creates vigorous agitation in the liquid, breaking up the gas bubbles and dispersing them throughout the vessel. The curved blades generate turbulence and shear, facilitating the transfer of the gas into the liquid phase. The combination of agitation, shear, and increased interfacial area improves the efficiency of mass transfer, allowing for faster and more effective gas absorption or dissolution

COWLS DISK / SAW TOOTH

A cowl disk high shear impeller, also known as a saw tooth impeller, it is a specialized type of impeller used for high shear mixing applications. It is designed to generate intense shear forces and promote the breakdown of particles, dispersion of solids, and emulsification of liquids. The cowl disk consists of a central hub with radial blades that are curved in a concave shape, resembling a cowl or hood. The curved blades of the cowl disk impeller create high shear forces within the mixing vessel, resulting in the rapid breakdown and dispersion of particles or droplets. The intense shear generated by the impeller facilitates the fine suspensions or emulsions and promotes effective dispersion and wetting of solid particles in a liquid, ensuring thorough mixing and uniform distribution.

TURNKEY PLANT AND PROJECTS

TURNKEY SOLUTION

We possess the necessary experience and expertise to effectively execute turnkey projects. Count on us to deliver a seamless and efficient process, leveraging our industry knowledge and skills to ensure the success of your turnkey project. Following are the areas of our expertise.

- Blending Plant
- Tank Farms
- Hot Water Skids
- Batching Plant
- Pilot Skids
- Chemical Dosing / Injection Skids
- Skid Mounted Systems
- Bio-Reactor / Bio-Fermenter Skids
- CIP / SIP Systems

- Agitators & Mixers
- High Speed/Twin Shaft Dispersers
- IBC Mixers
- Mud Mixers
- Stator/Rotor Mixers
- Reactor/Hydrogenators
- Oilfield Chemical Blending Plants

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