MPTeq’s Agitation & Mixing Systems can supply almost any type of agitator utilised in the chemical and mineral processing industry.

We supply proven, robust and high efficient agitation equipment. Our chemical mixer and agitators are custom designed to suit your needs.

MPTeq Agitators/ Mixers can be used in any industry requiring agitation/mixing and typical applications are:

- Slurry Mixing
- Leach, Conditioning tanks for the mineral processing industries
- Maintaining solids in suspension in holding or storage tanks.
- Reaction tank systems such as Phosphoric Acid or Zinc Refining
- Reagent and flocculent mixing systems.
- Blending, precipitation, dissolution, digestion, crystallization,
- ETP/WTP Applications etc.

MPTEQ has a wide range of proven impellers that incorporate the latest impeller designs and technology ensuring the best process results. All of the mixers are custom engineered designed to provide the optimum process outcome based on your specific applications, ensuring the desired process results, meeting the needs of customer’s process accurately and optimal efficiency.

Our advanced Hydrofoil Impeller technology is extremely efficient to ensure required liquid flows with minimal energy consumption, while mechanical and operational integrity is never compromised.

Our range of mixers includes sizes from lab scale models to Plant/ Production vessels from 0.12 kW portable agitators to 350 kW heavy duty applications

MPTeq is dedicated to designing, manufacturing & supply of mixing equipment based on a thorough understanding of the process requirements. Our Experience, expertise, and cutting edge technology allow MPTeq to provide the optimal mixing system to suit any need.
The design of every Mixing /Agitator application is approached from the point-of-view of the end-user.

- Robust and efficient mixers, agitators for all industries
- The most advanced impeller designs for the effective process results
- Innovative research and design to tailor our mixers to your requirements
- Technical expertise, application experience and market knowledge to select the proper drive for your mixing needs.
- Custom-designed systems available for special applications.
- Complete range of seal options through double mechanical seals at pressures exceeding 100 bar.
- Simplicity in mechanical designs.
- Unmatched customer service, from initial design, to installation and start up and aftermarket parts and service.

MPTeq provides technical services including:

- Site surveys
- Diagnosing on-site technical issues.
- Implementing new solutions

**MPTeq range of Impellers:**

◆ **Marine Propeller Type – VXP-3:**

Marine propeller is an axial flow impeller. Standard propellers have three blades; They are axial thrust giving elements. These elements give very high degree of swirling in the vessel. The flow pattern generated in the fluid resembles helix.

Marine type is often used as a side-entering mixer in large tanks and as a top-entering mixer in small tanks. It can be designed with a different pitch to change the combination of pumping rate and thrust.

**Technical features:**
They are used at relatively high speeds (up to 3000rpm) with low viscosity fluids, up to about 4000cP.

**Typical Applications:**
Blending, dissolving, Solid Suspension, Dispersion, solids incorporation or draw down.

◆ **Pitched Blade Turbine Type - VXT-4:**

The Pitched Blade Turbine is more flow efficient than the radial style impellers and produces more fluid shear than the hydrofoil impellers. The impeller of choice when both flow velocity and fluid shear is required and/or when very high mixing intensity is required when the use of a hydrofoil would result in too high a tip speed or operating speed.

- Most common configuration is 4 blades pitched at 45° with the most common types being either 3 or 4 blades pitched at 45° & 32°.
- The 32° variety can handle slightly higher viscosity and is useful in low level mixing operations. This style of impeller is the least expensive axial flow impeller.

**Typical Application:**
Blending, Solid Suspension, Dispersion, Heat Transfer.
◆ **Saw Tooth Cutter – VXHS-5**

Uniform teeth accelerate pigment particles and breakup agglomerates. High shear is quickly achieved with turbulent flow. Superior for dissolving resins, high vehicle viscosities and/or solids loadings. Produces shear but with more turbulence than other designs.

**Typical Applications:**
Homogenizing, Dispersion, Hi-Shear Mixing, paint dispersion, clay processing, paper coatings and ink manufacturing and also suitable for Immiscible liquid-liquid.

◆ **Curved Blade Turbine – VXCT-6**

The curved blade or retreat curve turbine is the most flow efficient radial flow impeller. Used in flow sensitive (maximum pumping desired) applications when pumping in the radial direction is required.

**Typical applications:**
Blending, Off Bottom Suspension, Heat transfer.
◆ Flat Blade Disc Turbine - VXFT-7:

This vertical flat blade, radial flow, disc-type turbine is available as both a 4 and 6 blade design, with the 6 blade version being the most common.

This high shear device is normally employed on gas dispersion applications.

The style is commonly referred to as the Rushton Turbine impeller.

Typical Applications:
Aeration, Gas dispersion, Hi Shear Mixing.

◆ Concave Blade Disc Turbine-VXDT-8:

This impeller is similar to the Rushton turbine except curved blades are substituted for the vertical flat blades resulting in a lower power number.

It is able to handle more gas before flooding and does not experience as great a power drop-off due to gas loading than the Rushton turbine.

However, at elevated power levels it produces similar mass transfer as the Rushton design.

Typical Applications:
Blending, Aeration, Gas dispersion, Intermediate and high Gas flow.
◆ **Straight Blade Turbine- VXST-9:**

The Radial Blade Turbine is ideal when very high torque is required for blending applications at the expense of flow efficiency.

Other uses for this impeller include high shear applications other than gas dispersion (i.e., liquid-liquid emulsions, solids scrubbing or where low level mixing requirements need an impeller located close to the tank bottom).

**Typical Applications:**

Blending, Dispersions, Heat Transfer, Off Bottom Suspension.

◆ **Hi –Efficiency Axial Flow –VXHE-10:**

The most widely used impeller for low to medium viscosity (up to 3500 cps) blending and solids in suspension applications.

High efficiency design reduces power losses through shear and maximises flow generated. Strong axial flow also allows for sufficient off bottom spacing to ensure the impeller does not become bogged in settled solids should the mixer be shut off.

**More efficient design means lower power consumption**

Power and torque requirements for Hi- efficiency impellers are generally 40% to 50% lower than for comparable axial flow turbines. Significant savings can be obtained when the Hi-Efficiency impeller is appropriately applied. Not only are smaller drive sizes required, reducing capital cost, but also the 40%-50% average power cost savings resulting from use of Hi-Efficiency impellers will significantly reduce operating costs.
Slight modifications to this impeller also customised it to be used in applications using air injection. Up pumping variations are also used in combination with other type of impellers to maintain uniform mixing throughout the vessel at lower power inputs.

**Typical Applications:**

Homogenizing/Blending, Solid Suspension, Uniform Mixing, leaching, heat transfer and crystallization, and many extraction and chemical reaction processes.

**Hydrofoil Type Impeller- VXHF-11:**

The most flow efficient impeller for low viscosity (up to 2500 cps) blending applications.

Also used on solid suspension mixing problems where a relatively low percent solids will be encountered (free settling applications).

This design is the narrowest blade hydrofoil and therefore is sometimes referred to as a "low solidity" hydrofoil.

**Typical Applications:**

Homogenizing/Blending, Solid Suspension, Uniform Mixing, leaching

**Anchor Type Impeller- VXAN-12:**

Recommended for higher-viscosity applications and for use in blending and heat transfer, with viscosities from 10,000 to 100,000 centipoise
**Typical Applications:**

Heat Transfer, Blending

◆ **Inline Static Mixer:**

MPTeq Inline Static Mixers are designed to deliver predictable, repeatable and rapid mixing results within a pipeline. A mixer will blend, disperse, react or shear two or more fluids within a short flow distance. To achieve these results, the mixer utilizes the principal of eddy mixing, flow division, and low-shear reversal. These phenomena combine to eliminate concentration, velocity and thermal gradients and ensure a homogenous discharge mixture.

Our static mixers which are especially suitable for slurry conditioning duties such as flotation reagent preparation and addition, flocculants mixing and addition to thickener and filtration feed slurries as well as reagent preparation, mixing and addition.

◆ **Side Entry Mixer:**

The MPTEQ Side Entry mixer is the most efficient converter of energy into fluid motion. Unlike jet mixer systems, they do not suffer significant energy losses at the pump, in the pipework, in the bends, or most significantly, at the jet nozzles. Also, capital costs are lower and access to intank components is not restricted, while the problem of frequent, urgent maintenance on tanks that must be emptied and cleaned is eliminated. Side Entry mixers are also more efficient than top entry mixers for larger diameter tanks, and are significantly less expensive for larger diameter tanks. Side Entry mixers are ideal for use on tanks with floating roofs where practical considerations preclude the use of top entry mixers.
A properly selected side entry mixer, complete with a reliable shut off device and high efficiency impeller outperforms all other mixing devices.

Side-entering mixers work efficiently where a tank is too large for convenient installation of a top-entering mixer, or where headroom is severely limited.

Used effectively where:
- Head room constraints prevent the use of top entry units
- Mixing is required only in the bottom portion of a deep tank
- Large diameter storage tanks
- Low viscosity blending is required
- Low capital equipment cost is a governing criteria

MPTEQ side entry mixers are available in a variety of configurations for a wide range of applications like pulp and paper, petroleum / Petro chemical, chemical, food processing, oil & gas application etc.

**Impeller Design:**

The high efficiency impeller developed by MPTEQ for Side Entry Mixers is technically advanced design of impeller, having a optimize blade area that provides the optimum cavitation free suction conditions promoting maximum pumping rate and entrainment for any installed power. Each impeller is accurately fabricated or casted to eliminate the setting variances.

A rigid inspection of pitch uniformity and balancing ensures minimal vibration and optimum pumping efficiency. Impeller is positively retained on shaft by a taper fit, key and lock bolt

**Mixer Shaft:**

The shaft has been designed to minimize misalignment, deflection and vibration which all affect the mechanical seal and bearing life. It is a **one-piece** component with no intermediate couplings and is ground between centres at the bearing and seal areas. The range of MPTEQ mixers has been designed for heavy duty operation and the large diameter shafts have a first critical speed of at least 250% of the operating speed.
changes without emptying the tank.

- Positive metal to metal taper lock on shaft and flange ensures full engagement of shut-off. All tapered faces are wearing and corrosion resistant.

- Leak detector valve ensures that tank contents are sealed off prior to dismantling.
- All wearable parts are serviceable without removing the mixer drive from the tank.
- No wearable, replaceable or perishable parts - such as O-rings are incorporated into shut-off seal.

All units incorporate a tank shut-off device to allow the shaft seal and bearings to be changed under full tank conditions. (See Below fig). The tank shut-off mechanism incorporates metal to metal faces, positively clamped by a bolted flange which both seals products in the tank and securely supports the shaft during bearing and/or shaft seal changes. All faces are wear and corrosion resistant. The most important aspect of the mechanical seal assembly is that it incorporates a safety check valve for ensuring that the shut-off is 100% effective before removal of any bearings or mechanical seal.

**Mechanical Seal**

The mechanical seal is completely enclosed inside a housing which is fitted with a close clearance throttle bush outboard of the mechanical seal to restrict leakage rate of tank media in the event of ultimate seal failure. A safety check valve is fitted for venting the seal chamber to ensure that it is completely filled with liquid prior as well as to Shut-off 100% and the device is effective. (See fig. Below Fig).
MPTeq’s product range further includes:
- Thickeners & Clarifiers
- Horizontal Vacuum Belt Filter & Filter Press
- Pug Mixers
- Flotation Cells
- Reagent Dosing & Preparation Systems
- Packed bed clarifiers
- Log washers
- Multi Media Sand filters
- Solid-liquid separation equipment.
- Solvent Extraction
- Leaching systems
- Flocculant Plants
- DEMSEP’s
- Jigs
- WTP/ ETP

MPTeq are proud to have a technology agreement with world mixing and agitation experts – Vmix, located in Bangalore India and who have supplied over 4000 mixers globally.

All MPTeq products are manufactured in accordance with international Standards and can be CE Certified.
We are available at any time at your convenience to gain an understanding of your exact requirements. Please do not hesitate to contact us!

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