

# CHEMICAL PLANT & ENGINEERING

40 Years of Manufacture and Supply Experience



## CHEMICAL PROCESSING AGITATION



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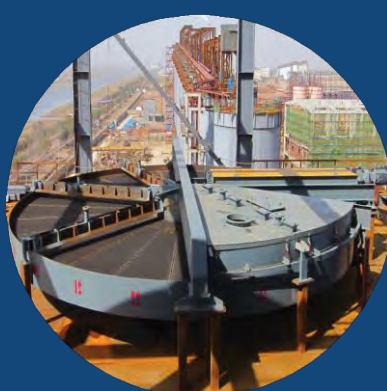
Chemical Plant & Engineering (CPE) is a world leading designer, manufacturer, and supplier of field process technology, and a division of CEM International Pty Ltd which is a wholly owned Australian company.

CPE specialises in global supply of Liquid Agitation, Filtration, and Powder Mixing solutions to a wide variety of industries including Wine and Spirits, Food and Beverage, Mineral Processing, Chemical and Pharmaceutical, Environmental, and Oil & Gas industries.

Headquartered in Melbourne, Australia, the company enjoys multiple strategic manufacturing partnerships and licensing agreements across the world. CPE's global presence is strengthened via agents and partners in New Zealand, SE Asia, South Africa, Europe, and America.



**Agitators**



**Filters**



**Powder Blenders**

# CHEMIX AGITATORS

CHEMICAL INDUSTRY

CPE is a world leading designer, manufacturer and supplier of Chemical Mixing Solutions, CHEMIX™. With decades of knowledge, experience and market exposure, we thoroughly understand the requirements of this industry.

CPE has numerous installations in major chemical processing plants throughout AUNZ, Asia and USA.



## DESIGN SCOPE

### OUR FOCUS

- CHEMIX™ is designed and manufactured with the process needs of chemical applications in mind.
- We provide custom design services to meet the process requirements of each application.

## APPLICATIONS

### INDUSTRY

-  Polymers and Plastics
-  Construction Chemicals
-  Paints & Coatings
-  Industrial Cleaners & Detergents
-  Fertilizers
-  Acids, Bases, Solvents, Surfactants

## OFFERINGS

### CPE DIFFERENCE

- **World Leading Technology:** fast mixing at a fraction of energy input offering significant cost savings
- **Optimised Product Quality**
- **Maximum Plant Utilisation**
- **Laboratory and Pilot Plant Testing**
- **Aftermarket Services:** process optimisation, failure analysis

## IMPELLER OPTIONS

CHEMIX™ is offered in a range of agitator configurations to meet various customer and process requirements. Pilot plant units are available for on-site or laboratory testing to ensure the results meet customer expectations.

### High Efficiency Hydrofoil (RTF4)



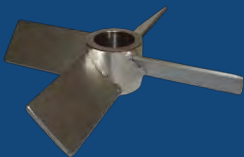
Low Shear Mixing  
Solid Suspension  
Mass & Heat Transfer

### High Shear Rotosolver™ (RS)



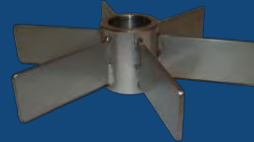
High Shear Mixing  
Dissolving  
Homogenisation Other  
Difficult Mixing

### Pitched Blade Turbine (P Series)



Medium Shear Mixing  
Solid Suspension  
Dissolving

### Flat Blade Turbine (S Series)



Low Liquid Level Mixing.  
Used when foaming is an issue (placed at liquid level) or for suspending heavy precipitants (placed close to tank bottom)

### Rushton and Smith Turbines (Gas Dispersion Impellers)



### ViscoPro Series (Anchor, Helix, Counter Rotating)

For High Viscosity Mixing

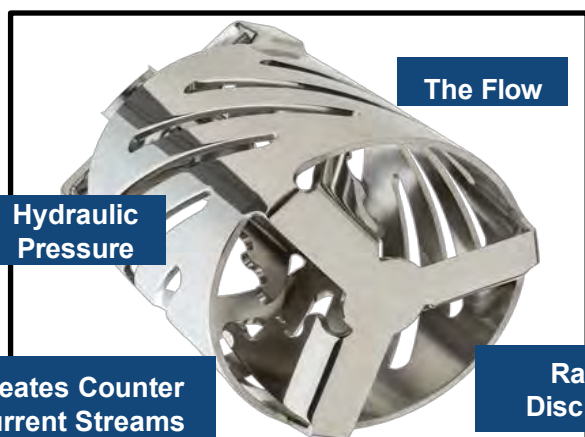
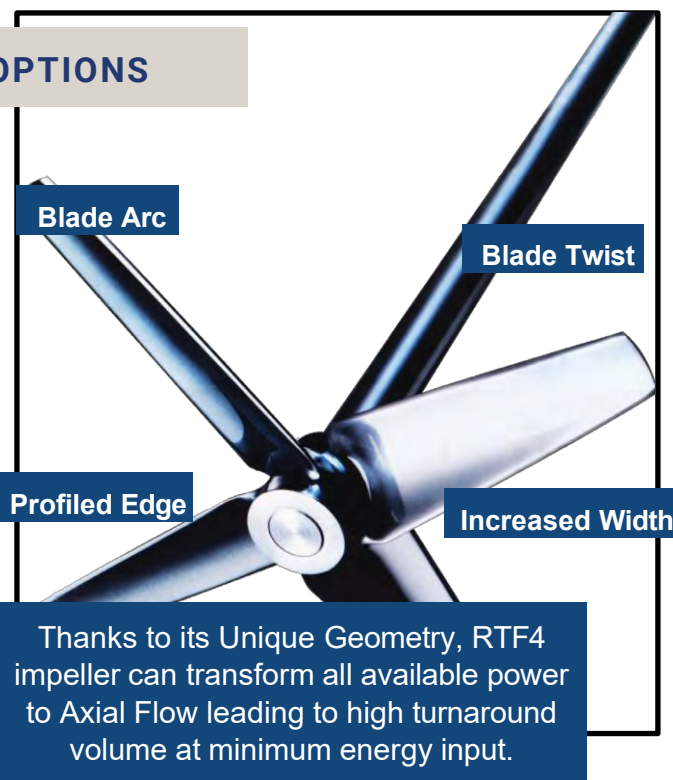
Retractable agitators offer ease of maintenance by eliminating confined space work and the need for emptying the tank before conducting any maintenance work.



## IMPELLER OPTIONS

### Hydrofoil Technology - RTF4

- Suitable for fast and thorough mixing and effective solid suspension.
- Efficient with minimum energy input to achieve desired results, leading to major cost savings
- Fast heat stabilisation
- Anti-scaling



### High Shear Technology - Rotosolver

- Maximum efficiency and intensity
- Fully dissolves and hydrates powder in a short time at lower energy input
- Guarantees volume scalability
- Optimises the balance between shear rates, particle size reduction, and tank flow/circulation

Rotosolver delivers with its optimised balance between particle size reduction and flow circulation. This leads to an efficient yet thorough mixing process improving product yield, product quality, process time and consistency

## CHEMIX™ Configurations



- Top, side, and bottom tank entry points (portable agitator available). Our top entry agitators are cantilevered which eliminates the need for a steady bearing assembly.
- Direct drive and gear reduced motors
- Electric or air operated motors available to meet hazardous zoning requirements.
- Retractable agitator for ease of maintenance
- Various seal options (mechanical, lip, hydraulic, etc.)
- Explosion protected motor available

## AGITATION OF PAINTS & COATINGS



**CHEMIX** agitators are widely incorporated in processing of Paints & Coatings, from light blending and storage to heavy duty high shear dispersion. Backed by our world leading agitation technology, Chemix™ can create high velocity flow with minimum energy input which offers below process benefits:

- fast and thorough blending and homogenisation, thus maximum plant utilisation
- effective solid suspension
- lower energy consumption, thus operating and maintenance cost savings
- enhanced paint quality (colour, clarity, finish smoothness)

Chemix™ is used by the major Paints and Coatings manufacturers worldwide who rely on our solution to achieve their critical product quality and process efficiency.

Agitator Type	Flow	Paints & Coatings Applications
CHEMIX™ - RTF4 Side Entry	Low Shear High Efficiency	Ideal for low to medium viscosity liquid blending and storage
CHEMIX™ - P Top Entry	Medium Shear	Ideal for thorough and quick homogenisation and dissolving when low to medium shear is adequate.
CHEMIX™ - RS Top Entry	High Shear	Ideal for thorough and quick homogenisation and dissolving when high shear is required
CHEMIX™ - HSD Top Entry	High Shear	Ideal for thorough and quick homogenisation and dissolving when high shear is required. HSD is a more economic option for high shear mixing of paint than Rotosolver™

Designed and manufactured specifically to address the demanding requirements of the paint industry.

## AGITATION PROCESS OPTIMISATION

At CPE, we can conduct in-depth analysis of your process and recommend cost-effective solutions to optimise your process.

### When to Retrofit an Agitator?

- Ineffective solids suspension
- Time to uniform mixing is long or never!
- Frequent mechanical failure or maintenance shutdown
- Excessive energy consumption
- Considerable change in physical properties of the slurry

### Why Agitators Fail?

- Undersized agitator (impeller or motor)
- Wrong impeller design
- Wrong flow rate/pattern
- Low service factors in agitator design

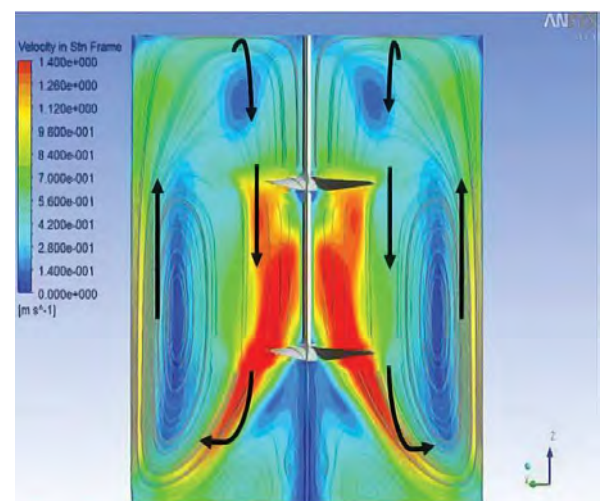
In most cases, retrofitting of an existing agitator involves impeller replacement (same size or different) without changing the motor and gearbox.

## BENEFITS of agitator retrofits with RTF4 Technology

CPE has a long history of retrofitting underperforming mineral processing agitators to provide enhanced performance and efficiency.

Our world leading **RTF4 impeller technology** offers:

- quicker mix time at the same power input
- lower power consumption and maximum plant utilisation
- effective solid suspension
- increased mixing capacity
- lower power loadings, thus longer lasting agitator



Flow analysis of a top entry hydrofoil agitator

## Why Use CHEMIX ?

- Decades of design, manufacture and global supply experience.
- Superior agitation technology with many installations worldwide.
- Manufacturing facilities in Australia and strong global partnerships.
- We can custom design agitators to your specific process needs.
- A range of agitator configurations to suit various application requirements.



Top Entry RTF4 Hydrofoil Agitator

### Applications & Processes By Impeller Type

Impeller Type	Process	Application
High Efficiency Hydrofoil (RTF4)	<ul style="list-style-type: none"> <li>• Low Shear Blending</li> <li>• Solid Suspension</li> <li>• Homogenisation</li> </ul>	<ul style="list-style-type: none"> <li>• Solvents, Surfactants</li> <li>• Cleaning Products</li> <li>• Acids, Bases</li> <li>• Glass Bead Dispersion</li> <li>• Storage Tank</li> </ul>
High Shear Rotosolver™ (RS)	<ul style="list-style-type: none"> <li>• High Shear Mixing</li> <li>• Liquid/Liquid, Solid/Liquid Dispersion</li> <li>• Dissolving &amp; Hydrating Powders</li> <li>• Polymerisation</li> <li>• Other difficult mixing applications</li> </ul>	<ul style="list-style-type: none"> <li>• Pastes &amp; Putties</li> <li>• Filler addition</li> <li>• Polymerisation</li> <li>• Paints &amp; Coatings</li> </ul>
Pitched Blade (P series)	<ul style="list-style-type: none"> <li>• Immiscible Liquid Blending</li> <li>• Polymerization</li> <li>• Additive Dissolving</li> <li>• Medium Viscosity Liquid Dispersion</li> <li>• Emulsification</li> </ul>	<ul style="list-style-type: none"> <li>• Adhesives &amp; Sealants</li> <li>• Polymerisation</li> <li>• Rubbers &amp; Plastics</li> <li>• Bitumen</li> <li>• Storage Tank</li> <li>• Paints &amp; Coatings</li> </ul>
Flat Blade (S series)	<ul style="list-style-type: none"> <li>• Slow Blending</li> <li>• Low Liquid Level Mixing</li> <li>• Polymerisation</li> </ul>	<ul style="list-style-type: none"> <li>• Polymerisation: process involving foaming and precipitation</li> </ul>
ViscoPro Range (Anchor, Helix & Counter Rotating)	<ul style="list-style-type: none"> <li>• High Viscosity Mixing</li> <li>• Polymerization</li> </ul>	<ul style="list-style-type: none"> <li>• High Viscosity Polymers</li> <li>• High Viscosity Storage</li> </ul>
High Shear Disc (HSD)	<ul style="list-style-type: none"> <li>• Dissolving</li> <li>• Homogenisation</li> <li>• High shear mixing</li> </ul>	<ul style="list-style-type: none"> <li>• Paints &amp; Coatings</li> </ul>

### Aftermarket Services:



Process analysis using CFD modelling for failure analysis and process optimisation



Supervision of installation and commissioning



Retrofitting of existing agitators to enhance performance or reduce energy consumption



## Chemical Plant & Engineering

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