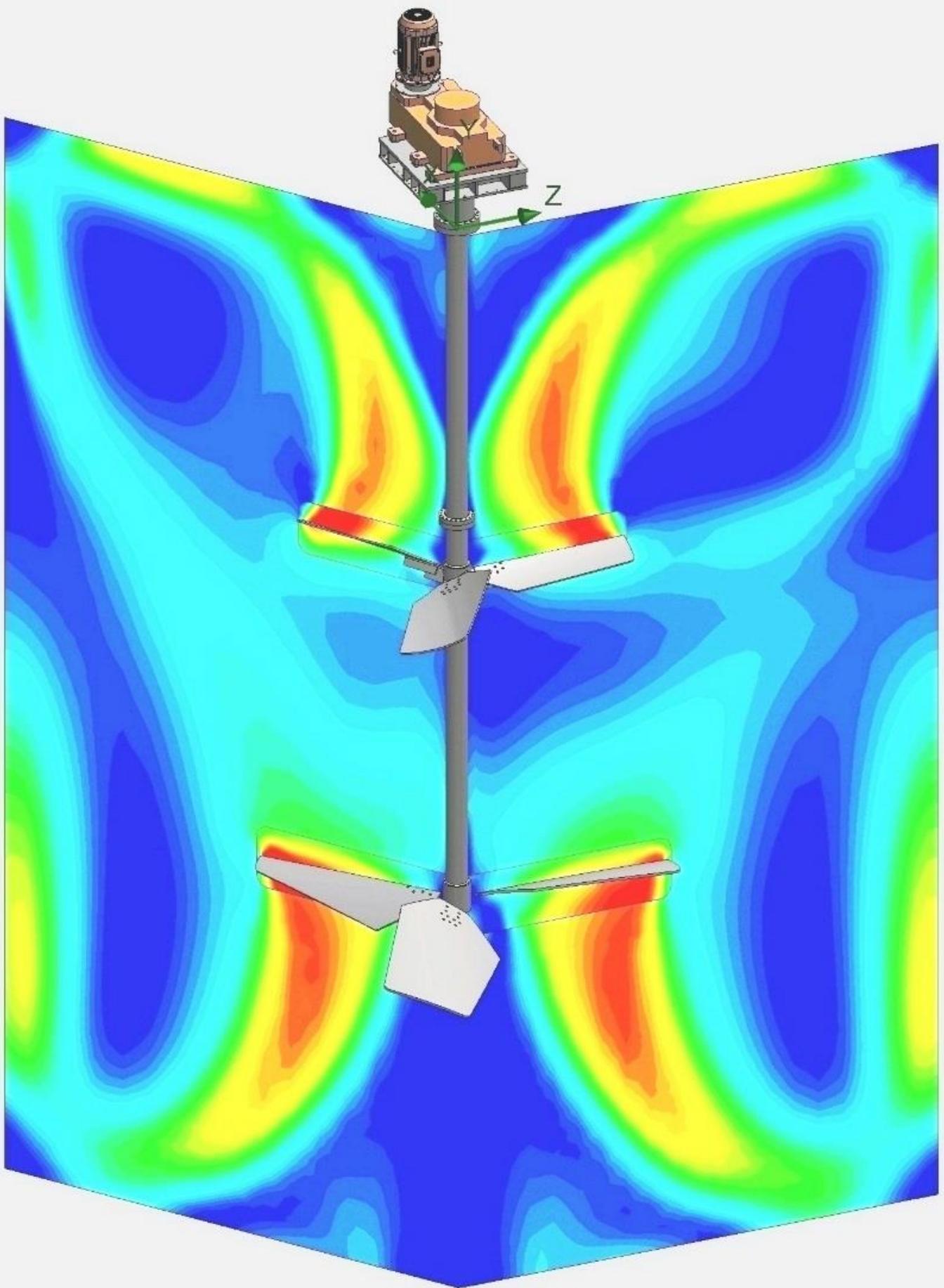


# AGITATORS





**CFD Analysis of an Up – Down Pumping, Hydro-Foil Agitator**

## Specialised Mixing Technology for Demanding Applications

Industrial process engineering agitation is a unit operation that involves the random distribution of a substance in different phases to achieve a desired process result. Fluid mixing plays a major role in processing a multitude of products and with the correctly selected equipment it is possible to mix, combine, suspend or disperse any liquid, slurry or gas.

Kemix designs and manufactures agitation and mixing systems catering for light, medium and heavy duty applications.

These applications may range from simple slurry storage in open tanks to complex chemical reaction systems under extreme conditions of temperature and pressure.

Medium to heavy duty agitators are used predominantly in the mining, mineral processing, chemical, sewage and water treatment industries. While the light duty range is predominately used in the food and pharmaceutical industries.

Correct impeller choice will minimise absorbed power without compromising the mixing efficiencies for the particular application. Therefore, every impeller selection is custom designed to optimise the cost and performance associated with a particular application.

Kemix offers a range of impeller systems from high efficiency hydro-foil impellers to pitched, flat or curved blade turbines. Customised mixer and agitator system design is possible by combining any of the above mentioned impeller types to achieve the required mixer duty.

The robust design and construction of the Kemix agitator minimises maintenance requirements and extends service life. The Kemix agitator is designed for optimum mechanical strength which enables it to transmit the full gearbox output torque while withstanding the cyclic forces associated with mixing.



**Up – Down Pumping, Hydro-Foil Agitator**

## Kemix Agitators Description

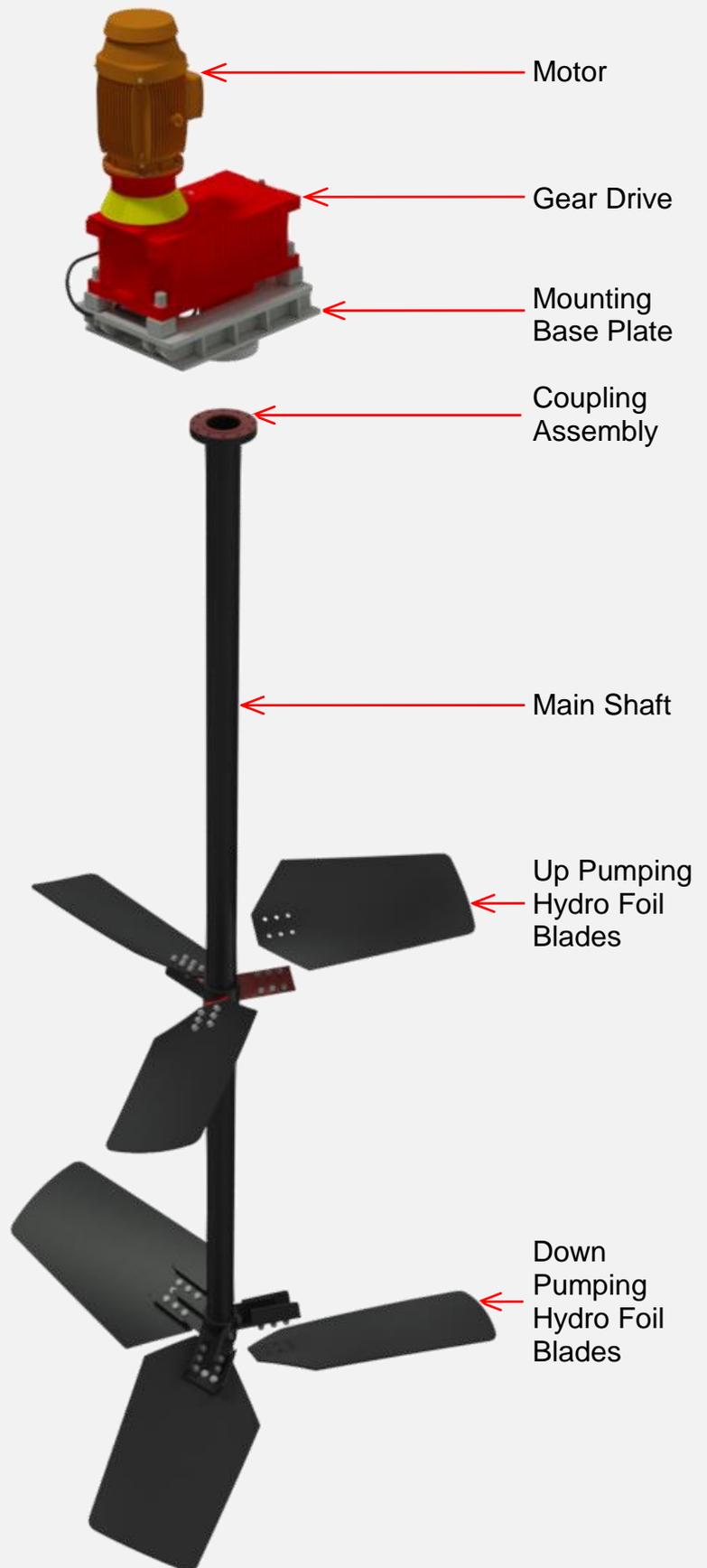
A detailed selection criteria is used in selecting the correctly sized agitator for customer specific process design information. Based on this information, Kemix will determine the correct number, size and type of impellers required.

A gearbox and electric motor drives the predetermined wet end configuration. The drive assembly is mounted on a base plate which is adequately sized to withstand the forces associated with agitation. The shaft and impeller system comprises of a solid or pipe shaft complete with spokes and impeller blades. The impeller blades can be either bolted or welded onto the spokes. The complete assembly can be manufactured from any material and if required, coated with suitable material selected for the process conditions.

## High Efficient Hydro-Foil Impellers Or Hiflo Blades

The high efficiency hydro-foil impellers are divided into two different blade shapes known as Hydro-foils and Hiflo. The Hydro-foil and Hiflo impeller design produces an axial flow with a minimal radial flow component. They are used extensively in flow sensitive applications such as solid suspension or simple blending where maximum flow for minimum power investment is required. The use of either impeller is dependent on process design criteria.

The Hydro-foil impeller design can be designed to produce either downward or upward flow and is the predominant impeller of choice in the Kemix range.



**Up – Down Pumping, Hydro-Foil Agitator**

### **Pitch Blade Turbines**

Pitch Blade Turbines can be used in a wide range of duties due to the combination of axial and radial flow provided by the impellers. Furthermore these impellers can operate within a wide range of tip speeds and are ideal when high flow rates are required at relatively low tip speeds. In addition they are used extensively when a high power input is required combined with good flow rates.



**32° PBT Blade**

### **Flat Blade Turbine**

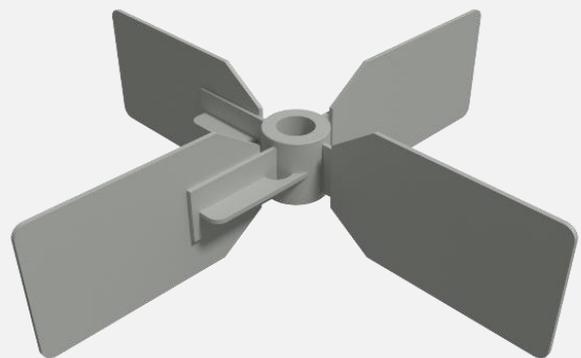
The Flat Blade Turbine is an open type impeller with a predominately radial flow component. As a result they are ideal for low level agitation and where a relatively high degree of shear is required. In addition these impellers can operate very efficiently at low tip speeds.



**45° PBT Blade**

### **Curved Blade Turbine**

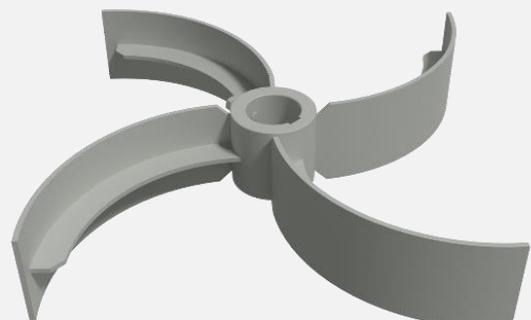
The Curved Blade Turbine has the same flow characteristics as the Flat Blade Turbine but without the high shear characteristics. Similar to the Flat Blade Turbine the Curve Blade Turbine can be used in slurries where low level agitation is required. Furthermore, because of the low shear and radial flow characteristics these impellers are extensively employed in the sewage industry.



**Flat Blade Turbine**

### **Impeller Stabilisers**

Impeller stabilisers are fitted to impellers whenever the operating tank level is expected to move below the lower impeller while in operation. These stabilisers will ensure that the integrity of the shaft remains intact.



**Curved Blade Turbine**



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