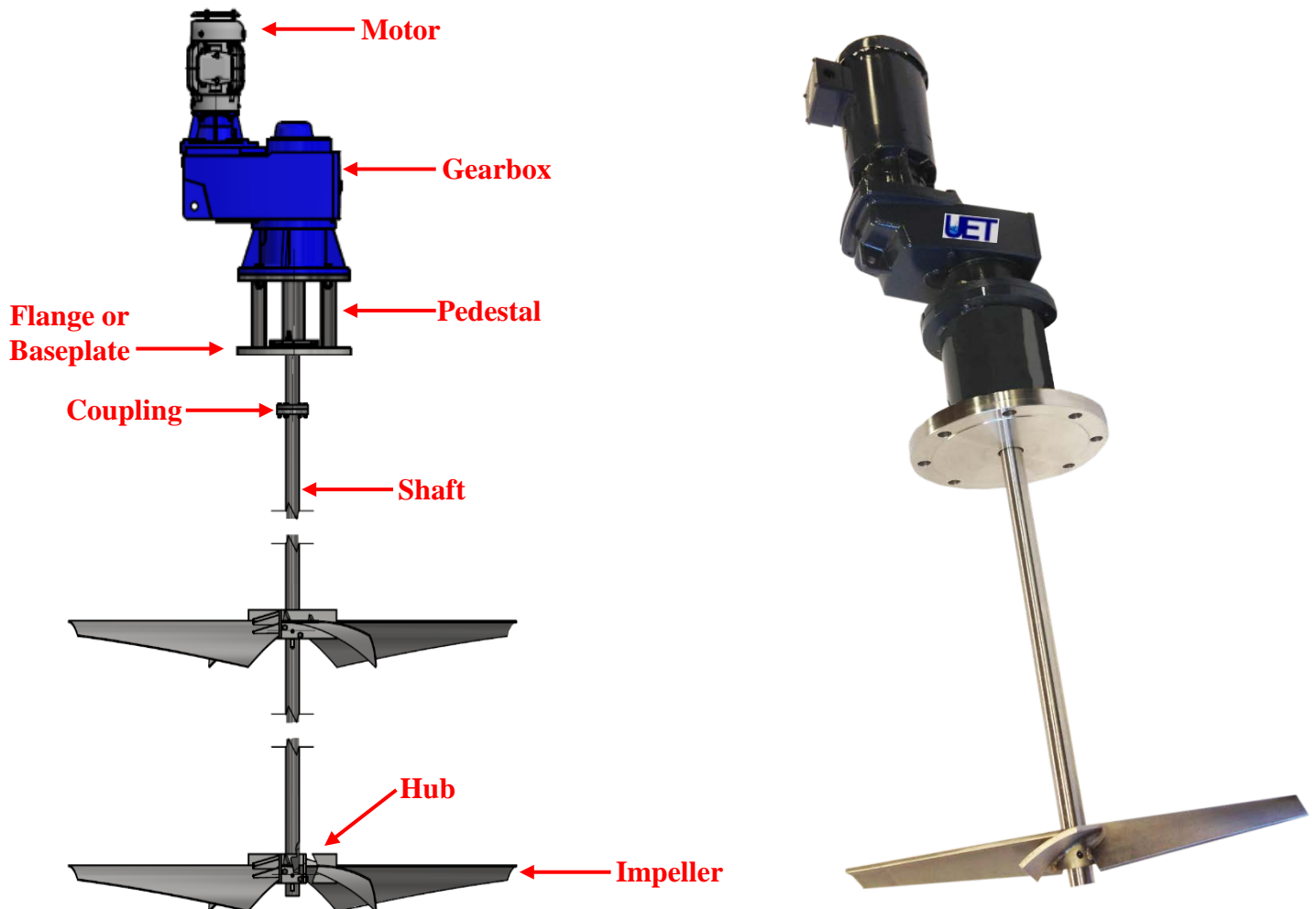


## Learn about Agitators

Agitators, also referred to as mechanical mixers, are an excellent mixing solution for inside a tank or basin. They are most commonly used in batch applications, such as mixing in a tank, but can also be used in continuous applications, such as municipal water treatment. Agitators can be designed for blending, dispersion, or solid suspension. They work well with a very wide range of fluid viscosities.

Agitators are traditionally driven by an electric motor and gearbox, although other options are available. See below for common agitator components.

### Common Agitator Components



## How an Agitator Works

Most commonly an agitator works by having an electric motor drive a gearbox. The gearbox is designed to turn the shaft at a certain speed. The shaft includes one or more sets of impellers. The specific size and design of the motor, gearbox, shaft, impeller, etc. is based on the process. There are many different gearbox and impeller styles. In terms of the impellers, some designs force the fluids to the bottom of the tank, some to the sides, and some to the top. Some impellers produce a high level of shear, while others impart minimal shear. In terms of mounting the agitator, it is typically bolted in place. In a closed tank, the agitator includes a flange which is bolted to a flange on the top of the tank. In an open tank/basin, the agitator is bolted to a support that runs across the top. Small agitators can also be clamped onto the side of a tank. Options also exist for side and bottom entering agitators.

The purpose of an agitator is to force fluids/solid particles to move in such a way as to increase contacting and provoke mixing. Exactly how vigorously you want to design the fluids to move is completely dependent on the process. For some applications, such as a long term storage tank, the ideal mixer will likely provide a “low level” of mixing. For more complex applications, such as mixing two fluids with extremely different viscosities, you will need a mixer that produces a “high level” of mixing. As a general rule, the “level” of mixing is determined by the bulk fluid velocity, which is the impeller pumping rate divided by the tank cross-sectional area. There are a variety of factors that affect mixer performance, but as a very basic rule you can think of “low level” mixing as producing a low pumping rate and “high level” mixing as producing a large pumping rate.

### Agitator Advantages

- \*Control of mixing time and quality
- \*Wide range of fluid viscosities
- \*Terrific for solid suspension
- \*Enormous variety of materials of construction

## How to Design an Agitator

Herein lies the magic. The best agitators are designed for each specific application. The difficult part is that every application is different. As you might image, the best mixing solution will vary widely depending on the process requirements. The mixer pumping rate, flow pattern, and ideal shear to suspend solids is completely different than that of a rapid mixing application.

Fortunately, whatever your application or process requirements are, UET Mixers has you covered. When you work with UET Mixers you will receive a mixer perfectly designed for your application, based on your specific process conditions and requirements. In order to accomplish

this, we use a combination of experience and proprietary design programs. We take into account your specific process fluids, fluid properties, operating conditions, desired residence time, and final product.

To request a quote or find out more about agitators, please contact us. We're always excited to talk about mixing!

