GOT GAS ? ?

In mixing processes that require the introduction of a gas to complete a reaction, the design of the gas sparging device is critical to both the mechanical and process success of the application. A gas sparge arrangement that is not compatible with the mixer design can lead to process problems; i.e. incomplete reaction, extended retention time, gas wastage, mounting support fatigue, excessive shaft deflection and even impeller blade and shaft failures. The solution is for the mixer supplier to work closely with the end user to ensure the entire system is not just compatible, but also optimized.

A good example of this type of application is gold leaching where air is added to complete the chemical reaction needed to extract the gold from the slurry. To ensure maximum recovery is achieved in the shortest possible time, the air must be well dispersed throughout the vessel while maximizing the surface area of the air volume; i.e. break the gas into small bubbles. We have encountered numerous air sparging methods over the years with the most common being 3 or 4 open pipes ending in various locations on the tank floor. These pipes are susceptible to clogging, which leads to uneven volumes of air from each pipe, causing unbalanced loads on the mixing impeller. In addition, open pipes introduce relatively large air bubbles into the slurry.

Hayward Gordon works with our customers and consulting engineers to develop air sparging devices that improve both the mixer performance and the respective reaction. While a number of different designs have evolved, the most common is depicted in Figure 1.

A simple inverted cone with serrated teeth provides good initial dispersion of the gas, is inherently non-clogging and introduces the air into the highest flow velocities created by the mixer for good "hydraulic shear" and maximum dispersion.

This coordinated effort has produced superior process results as well as a much more reliable mechanical system.

FIGURE 1: