



# CHEMENTATOR

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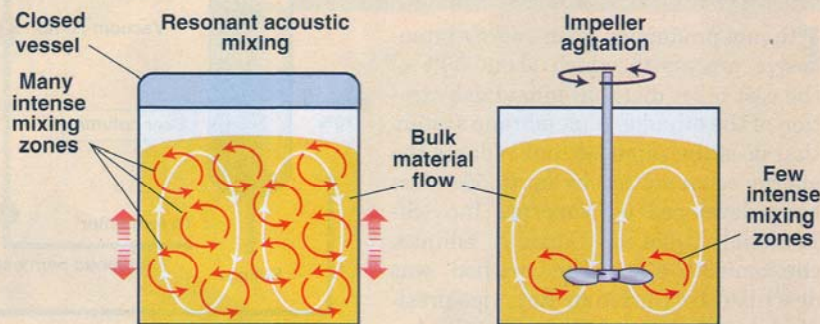
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## Resodyn unveils 'entirely new' mixing technology

At the Chem Show last month (New York; Oct. 30–Nov. 1), Resodyn Acoustic Mixers Inc. (Butte, Mont.; [edlinks.che.com/6902-531](http://edlinks.che.com/6902-531)) demonstrated its new, impeller-free mixing technology, which induces microscale turbulence through the propagation of acoustic waves. Dubbed Resonant Acoustic Mixing (RAM), the now commercially available process promises solutions for many of the complications associated with conventional mechanical mixing: unwanted heat generation, due to excessive hydrodynamic shear stresses; long, inefficient mixing times; and impurities acquired during the transfer of products from mixing to shipping containers.

The technology generates acoustic waves via the resonant vibration of a simple, mechanically driven agitator. The agitator system is kept on a resonant frequency by a closely controlled electromechanical oscillator, generating intense circular-mixing zones, each with a diameter in the range of 50–60 microns (diagram). In contrast to the bulk fluid flow induced by impeller mixing, which tends to localize mixing around regions near the impeller(s), the acoustic stream generates small eddies that are evenly dispersed throughout the process fluid. The created vortices homogenize process fluids faster while reducing energy consumption and heat generation, says the firm.

RAM differs from ultrasonic methods



in that its high-intensity sound energy occurs at a low (50–60 Hz) frequency, and is amenable to scaleup, says marketing manager Elyse Lewis. Among RAM's ancillary benefits is the potential for previously prohibitive high-viscosity mixing. In one trial, a solid mixture of micron-sized powders was easily mixed with a viscous polymer resin at an 80 wt.% solids loading in approximately 2 min. Exhibiting a viscosity in excess of 80 McP, the material had been very difficult to mix with prior methods, says Lewis. Additionally, as RAM is noninvasive, it is also safer and more hygienic, allowing both toxic materials and contaminant-sensitive products to be mixed in sealed containers without the risk of exposure, she adds.

On display at the company's booth was the LabRAM, which comes with an adjustable holder designed to accept 1–16-oz vessels and handles a maximum weight of 500 g. The company plans to offer a 5-gal mixer (RAM 5) by the end of 2007 and a 55-gal mixer (RAM 55) in 2008.

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