

This Sheet Has Been Replaced



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MIXER SYSTEMSA b s t r a c t

A mixer system for aggressive (toxic, hazardous, corrosive, etc.) materials which are mixed (agitated, suspended, circulated, etc.) in a vessel with an impeller connected to a drive shaft has the impeller and its shaft mounted in an assembly which extends through an opening into the tank and closes that opening. The assembly has a cylindrical hub with a passageway through which the shaft extends out of an open end of the hub. Bearings which are made of materials resistant to the aggressive material in the tank are mounted in the hub and journal and support the shaft. The passageway is part of a confinement region which is terminated by a confinement shell which separates inner and outer rotors of a magnet coupling. The inner rotor is connected to the shaft, directly or through a gear train (preferably a planetary gear set). The outer rotor is connected to a drive shaft. A motor and/or gear box may be mounted on a pedestal or support so that the shaft, the inner and outer rotors, the impeller drive shaft and the bearings are all coaxial with each other. There are no dynamic seals which close the confinement region so that the aggressive materials can be present therein. In the event that it is desirable that the bearings be replaceable or the confinement region be sterilized or purged, an expandable elastomeric collar may be disposed either at the end of the hub below the bearings, which may then be mounted in a cartridge in the hub which is removable therefrom, or in a plate spaced from the hub. Purge or pressure release passages may be provided which are opened and through which

purging or sterilizing gas is introduced into the confinement region. A secondary seal may be provided between a collar extending radially inward from the hub and a flange on the hub which is normally biased to disable the seal while the shaft is running, but when the shaft is stopped forms a static seal in response to force acting on the flange as a piston which exceeds the force behind the piston which is less than the force due to the material in the tank when the confinement region is opened, as through the purge passageways to the atmosphere.

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