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(54) Title: MAGNETOHYDRODYNAMIC STERILIZATION APPARATUS AND METHOD

(57) Abstract

The object of the invention to use magnetohydrodynamics (MHD) for the specific purpose of destroying populations of microorganisms in materials conducted through a passageway or a static cell. The MHD cell (16) consists of a fluid containment passageway (48) with electrodes (50, 52) positioned between and 90 degrees out of phase to the poles of a magnet (42). A current is sent transversely through the fluid at a right angle to the moving parts other than the fluid itself. The crossed electric and magnet fields induce ion motions that meet or exceed the ion velocities that exist in boiling water. In a flow–through MHD sterilization system (10), the material flows past a flow transducer (12) and a conductivity material conduit regulates the flow as controlled by the system's ability to sterilize effectively. The system computer (20) also instructs the controlled power supply (28) to provide the correct potential across the MHD cell electrodes (50, 52). A static cell MHD sterilization system (60) is also described where the passageway through the MHD cell (62) is closed on one end.

