

APPLICATION OF NON-INTRUSIVE SONAR TECHNOLOGY TO FLOW MEASUREMENT AND CONTROL IN MINERAL PROCESSING PLANTS

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ABSTRACT

In this presentation, CiDRA's patented technology platform and its applications will be described. CiDRA's non-invasive, passive sonar array-based flow meter technology provides the volumetric flow rate of single or multiphase fluids by measuring the speed at which naturally occurring structures such as turbulent eddies or density variations convect with the flow past an axial array of sensors. These sensors are incorporated in a band that is wrapped around the outside of the pipe, resulting in no process downtimes for installation and unprecedented reliability. This technology has resulted in a unique ability to measure the flow rate of most fluids – clean liquids, high solids content slurries, pastes, and liquids and slurries with entrained air. Unique and difficult minerals processing flow measurement problems and their solutions will be described, such as high solids content abrasive slurries, pastes, and liquids and slurries with entrained air. These applications are located in concentrator plants, hydrotransport lines, and tailings lines.

Recent developments in extending this technology to solve other unique minerals processing measurement problems will also be presented. Applications to be discussed include; non-invasive slurry velocity profiling, and sanding detection which make use of the unique ability to measure localized velocities within a slurry pipe; valve movement detection which uses the unique ability to measure overall frequency selectable sound levels within a process pipe to provide acoustic condition monitoring.