

Midwest Engineered Products Corporation Indianapolis, Indiana

CENTRIFUGE

Without ABB's Direct Torque Control ACS 600 Variable Frequency Drive technology, the "single-motor centrifuge would not be a reality," according to its inventor, MEP president Jeffery Beattey. Marking a quantum leap in design, MEP's CentraSep™ is the first centrifuge to combine a revolutionary bowl/blade clutch design with a single AC motor and AC motor drive; the unit can remove sub-micron-to-one-half-inch particles and fines from virtually any coolant or lubricant at a processing rate ranging from 25-135 gpm - and is able to remove as much as four times the quantity of fines of traditional centrifuges, and extend fluid life at least four times.

MEP, founded in 1981, created the centrifuge out of necessity, realizing that most of the units sold to get metal fines out of grinding swarf, coolants, phosphate baths, wastewater, and other process fluids, were broken down or abandoned in plant boneyards. Usually installed on a side stream or kidney loop treating a specific manufacturing process, these units need to operate automatically 24/7, and save the higher operating costs associated with paper filtration systems, sludge tanks and disposal. Design and operating benefits that ABB electrics provide this OEM include:

- **Seamless Electrical/Mechanical Integration** - A unique positive locking clutch couples the bowl's main spindle and the blade together so that both rotate at precisely the same speed when processing fluids. ABB's ACS 600, 10 HP drive accelerates the bowl and blade very rapidly for the processing cycle, bringing the loaded bowl to a controlled stop, and turning the bowl against the scraper blades, which requires high, breakaway torque and extremely precise motor control. The drive's unique open-loop DTC feature calculates the state (torque and flux) of the single AC motor 40,000 times per second - and provides triplax operation.
- **Adaptation On The Fly** - DTC drives also adapt to and immediately handle changes in load, over-voltages, and short circuits. If the load in the bowl becomes too heavy, the drive/motor enter a stall mode, rather than turning the bowl and breaking the shaft or blade assembly.
- **Long MTBF, Exact Program Replication** - ABB's Mean Time Between Failure on this drive application is at 150,000 hours and counting. Identical start-up software is programmed into every drive, too, using ABB's DriveWindow™ tool, which allows MEP to back-up the programming, then restore it on each subsequent drive. The drive, in tandem with a call-out on a PLC, makes it easy to customize the centrifuge for any kind of application.

Offered with a lifetime guarantee, sales prospects of the existing units are bright, with an increase of several hundred percentage points per year predicted over the next five years.

