

“Green Machining” at Ford’s Van Dyke Transmission Plant

Nearly dry machining slices seven figures from initial system cost for unneeded coolant tanks and high-pressure supply systems, reduces operating costs, and improves plant air quality

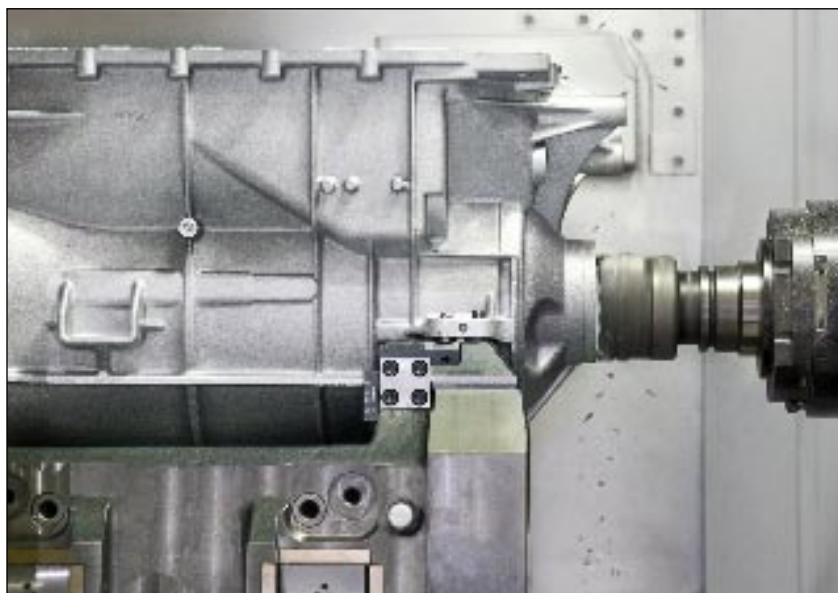
“Green machining” has a double meaning at Ford Motor Company’s Van Dyke Transmission Plant in Sterling Heights. Recently installed MQL (minimum quantity lubrication) machining systems from MAG Powertrain are paying both cost and environmental dividends. The systems netted green savings of seven figures in initial cost, and the machines are producing parts at lower variable cost, according to a release from MAG Powertrain. Plant air quality is improved compared to conventional wet machining, too. More important, the quality level achieved with MQL is equal to or better than comparable wet machining operations.

In 2008, Van Dyke Transmission finished first in Ford’s North American Powertrain Environmental Performance Awards. In addition, the plant was awarded *Quality Magazine’s* 2008 Quality Plant of the year Award.

Van Dyke Transmission currently uses more than 120 MAG CNC machines equipped with MQL or a hybrid system combining CNC and special machines. MQL is a nearly dry machining process that uses a through-tool oil mist, tailored to provide just the right volume for ideal lubricity at the interface of tool and work surface. The amount of lubricity is controlled for the particular machining operation and tool, such as tapping or face milling. MQL reduces metalworking fluid flow from gallons per minute (in traditional wet machining) to milliliters per hour.



MAG Powertrain horizontal machining centers, equipped for MQL machining, produce a family of valve bodies and transmission cases for Ford.



Machining a transmission case at Ford’s Van Dyke Plant.

The plant's most recent green-machine installation in 2008 included 52 MAG SPECHT® horizontal machining systems configured for 4- and 5-axis work to produce aluminum parts for the 6F mid-range FWD transmission. The high-speed machines complement MQL with a proprietary real-time temperature compensation system that constantly monitors the machine, the part and

ambient air to ensure consistently precise work. The steeply angled interior of the machine, coupled with a Handte chip evacuation system, eliminates the need for chip-flushing coolant and the resulting cost for pumps, filter media, and chip drying. The machining envelope is kept under negative air pressure, with chips and oil mist pulled out in an airstream, then through a centrifuge

and filter system. Dry chips collect in a hopper, and clean air is returned to the plant or back to the machine enclosure. A study conducted by Van Dyke Transmission showed that the filtered air from the chip evacuation system is as clean as typical office air, contributing to an improvement in overall plant air quality.

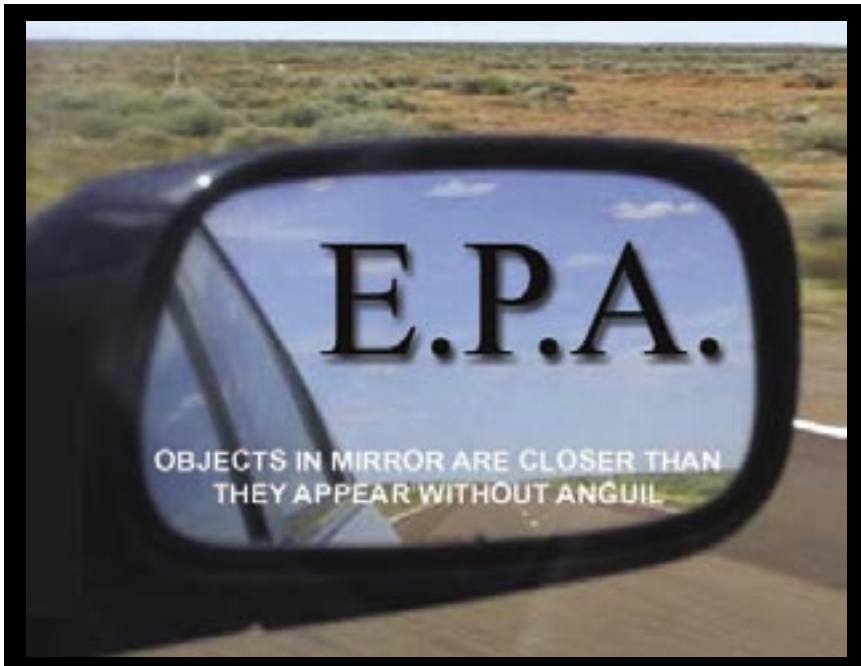
"The metalworking industry consumes several hundred million gallons of fluids each year," said Bob Taggart, VP of Sales for MAG Powertrain North America. "The investment, operation, and maintenance costs of traditional coolant systems can easily reach 15% of the life-cycle cost of a machining system. A machine that uses conventional coolants requires a more costly plant infrastructure, costs more to install, and is more difficult and costly to relocate. Coolant mist almost always fouls the plant air and equipment. There's a cascade of cost savings when you take flood coolant out of machining, and Ford Van Dyke has proven these benefits."

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