PATRICK M. BURGAM

PLANT MAINTENANCE

COOLANT RECYCLING SAVES $50,000 ANNUALLY

AS A MANUFACTURER of process control valves, Fisher Controls, Marshalltown, IA, uses approximately 15,000 gal (57 000 L) of water-soluble coolant per year on its 250 turning, drilling, and tapping machines. Disposing of this coolant can be a costly exercise. Besides having to replace all that is lost, the company must pay salvagers to dispose of wastes that can't be sold off.

Searching for a solution, the company has installed a coolant recycling system that saves the company an estimated $50,000 per year by removing tramp oil and sludge, reconstituting the coolant, and returning it to the production line.

The semiautomatic system consists of a 1000-gal (3800-L) holding tank, a recycled coolant tank, a mixing tank, a new coolant tank, and a 3000-gal (11 400-L) underground tank for coolant concentrate.

Its main feature, however, is a centrifuge designed to remove oil from water. Made by Alfa-Laval, Inc., Ft. Lee, NJ, the WSB 104 centrifuge first separates heavy solids from the dirty coolant, which is fed into the unit's spinning bowl. The remaining fluid is then distributed through a stack of 70 conical disks through holes in the disks.

When liquid passes through these holes, it spreads out evenly between the disks and fine separation occurs. Tramp oil, being the lighter of the two liquids, moves to the center of the bowl along the upper surfaces of the disks, where it rises along the center shaft and is released through an outlet port. Coolant, the heavier liquid, is thrown to the outside edge of the bowl and travels over the top disk to the clean coolant discharge. At the same time, any fine solids remaining in the liquid are thrown to the periphery of the bowl.

DISCHARGING TRAMP OIL
This centrifuge cleans used coolant until there is only 0.5% tramp oil left in it.

Laboratory samples testing the effectiveness of the system show that the used coolant contains about 20% tramp oil and 80% coolant and solids. After processing in the centrifuge, samples contain 0.5% tramp oil and there is no trace of heavy solids. Further, samples of the tramp oil reveal no coolant. Circle no. 180 for more information.

CAUSES OF NC DOWNTIME

ACCORDING TO consulting engineer Howard C. Cooper, the majority of NC downtime can be attributed to maintenance problems caused by one of five factors: heat, vibration, dirt, oxidation, and electrical power spikes and transients.

Cooper points to numerous examples where manufacturers have been bothered with significant computer equipment failures. In one instance a train valve manufacturer with a 15-month-old building and all-new CNC machines reported 40% downtime and 50% utilization of his machines. After installing the appropriate equipment, his downtime was reduced to 6% and utilization was rated at 90%.

In his experience, 70-90% of this downtime can be eliminated by identifying and controlling these five causes of failure. Among the problems that Cooper commonly deals with are circuit board failure; loss of memory data on mainframes, CNC, and executive tapes; and unstable machine and control operation.

SYSTEM RECYCLES ONCE SCRAP DUST

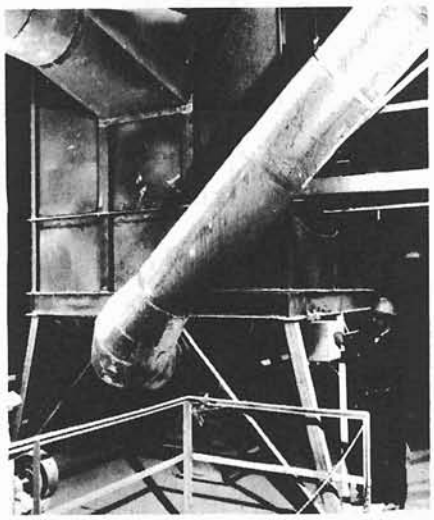
PRODUCING titanium dioxide created numerous headaches for engineers at one of Gulf + Western's Natural Resources Group facilities. The Ashtabula, OH plant was continually under seige by the fine, white, titanium dioxide powder lost in the production processes. Besides being a nuisance to employees, the dust collected on beams, fixtures, and machinery and had to be manually gathered and sold for scrap.

Engineers considered simple ventilation systems, but deemed that the emissions would violate clean air standards. The solution at the facility came with the installation of a special dust control system which captures fugitive dust and returns it to the process in an uncontaminated state.

The system combines three filter cartridge dust collectors, manufactured by the Donaldson Co.'s Torit Div., Minneapolis, MN, with rotary airlocks, a screw conveyor, special ducts, and hooding to prevent the pigment from escaping materials handling, production, and packaging processes.

Engineers devised hoods, specifically for this application, that introduce ambient air to reduce moisture content of the powder picked up through the steam jet milling process used to produce the pigment. This feature eliminates the possibility of caking on the filter elements and returns the uncontaminated powder to the process trouble-free.

Company officials estimate that each day up to 500 lb (227 kg) of material dust are collected and returned to the production process, which turns out some 8000 lb (3629 kg) of titanium dioxide pigment an hour. To find out more details, circle no. 181.



TITANIUM DIOXIDE RECLAIMED
One of three Torit dust collectors controls and returns titanium dioxide powder to the production process.

CLEANING & FINISHING

MAKING AIRLESS ATOMIZATION PRACTICAL

ACCORDING TO Harold Powers, director of the design engineering laboratory for Sherwin-Williams Chemical Coatings