

# ConSep™

# Mayfran Products at Work



## Chip-Handling, Coolant-Processing Methodology Reduces Downtime

The switch to common platform conveyor/ coolant handling units reduced or eliminated downtime for filter changes, overflows, and low volumes for a mid-western manufacturer.

For more than 40 years, Team Industries, headquartered in Bagley, MN, has been leading the way in research, engineering, prototyping, and manufacturing drive train and chassis components. And, like virtually any worldwide supplier to today's OEMs, the pressure to provide the highest quality products, faced with price and timeline constraints, is a constant factor of doing business. At Team Industries, whether the part is the latest design for a transmission or gear box, axle housing or differential, a continuous variable transmission or a trans axle, all must meet the most rigid specifications for quiet noise levels, to handle severe shock loads, to fit in tight spaces, and to provide long service and durability.

At the company's Cambridge, MN machining facility there's additional pressure- the high pressure operation of the plant's thru-the-spindle machine tool coolant systems that, up until a short time ago, were creating problems in keeping machines and parts running smoothly at optimum output levels. With the ever-present need for filter bag change-outs, and the likely potential for overflows and low coolant volume shut downs, Steve Buchholz, new business development engineer, and Ron Boudreau, maintenance manager, were challenged with the task of reducing downtime and maintenance/labor costs while enhancing coolant recovery efforts and chip handling operations. They were introduced to ConSep, a combination chip removal conveyor and coolant filtration/separation unit from Mayfran International, Cleveland, OH, by Hegman Machine Tool, Inc.

One of Team's other machining facilities ordered a new machining center and specified a Mayfran ConSep conveyor/



*The Mayfran ConSep conveyor-separator has helped Team Industries reduce downtime while improving tool chip/coolant processing.*

separator. The machine was initially set up in our plant for trials and runoffs. Ron and I were impressed, and have since included four of the Mayfran ConSep systems with our new machines—two horizontal and two vertical machining centers,” explains Buchholz.

From the first unit put into operation, the results have been outstanding, going three or more months with no problems, and no downtime due to filtration blockage issues, changeover requirements, foaming, or overflows. For the operators, facing fewer problems has been a win-win situation. And, for Team, productivity has improved while costs have decreased.

Buchholz provided a brief review of the Cambridge operation prior to installation of the Mayfran ConSep units. He says that the facility, among the other Team plants, is one that is well-equipped for heavy duty machining needs of steel components and those made from cast ductile and grey irons. Among these items are pump housings, differential cases, transmission housings, and hydraulic motor housings

—requiring face milling, boring, drilling, and tapping; and deep-hole drilling for oil passages included in the various operations performed. “These operations required the machines be outfitted with thru-the-spindle, high-pressure systems,” notes Buchholz. “In particular, the deep hole drilling tasks, to help cool and protect the tools, and to efficiently flush chips from the hole. Our previous machining systems included a chip conveyor and coolant tank from one supplier, while the separate high-pressure pump and filter system were from a different supplier.”

Therein lay several problems,” adds Boudreau. One problem being that the cast iron components produced both chips and small fines that created a grinder-like sludge that quickly clogged the bag-type filters. Clean filters are critical to the operation — keeping coolant lines clear and flowing; eliminating the grit that wears on machine, tool, and pump parts; and helping to make sure that the coolant’s cooling effect is not undermined.

There were times when a filter would require changing or cleaning every week, with one or two hours of downtime. If not done, low coolant alarms or shut-downs could occur, and worse, filter backups could result in overflows and cleanups.

As coolant levels dropped in the “clean” reservoir, the high pressure pump would start suctioning air, resulting in foaming with an eventual drop in coolant performance and protection. Because the coolant tank was from one manufacturer and the high pressure unit from another, the tank never seemed to have the right capacity for Team’s needs, and often required refilling and topping off to keep the machines running. There were also the trials and tribulations of integrating the different systems — the machine tool, the conveyor, and the high-pressure unit — so that all would be on the same page as to alarms, emergency shut downs, and such. A condition might be critical to one piece of machinery, but not to another, so the company had to devise their own wiring schemes to provide the warnings and procedures best for each application.

That’s where the Mayfran ConSep offers a different approach to the chip-handling and coolant-processing methodology. First, ConSep 2000 II is the latest-generation design of the original ConSep 2000 single-platform chip conveyor/coolant separator. ConSep has a low profile to fit with a wide range of domestic and imported machine tools, and easily interfaces with international machine system controls; having construction standards that meet the specifications and requirements of machine tool builders and users worldwide. The unit is ideal for all types and sizes of chips, including long strings and expansive nests.

In addition, the number of parts is kept to a minimum including a standard hinged steel belt conveyor system for larger chips and strings, and an inner chip handling system with spiral conveyor underneath the belt used to carry and discharge smaller chips and contaminants removed by the integral drum filter. Unique to the ConSep unit is the on-board drum filter that uses a poly fiber fine mesh filter cloth with a

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***—Steve Bucholz, Team Industries***

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back-wash system with a flow-through venturi nozzle to clean the filter media — a combination that makes the base unit virtually maintenance-free.

The pressurized wash system means no downtime for manual cleaning, and the process can be viewed through a clear access panel for visual inspection and verification of the cleaning action. The filtered coolant is held in a clean coolant holding tank for return to the machine tool. The removal of fines and sediments to 50 micron from the fluid results in a less abrasive, gritty coolant flowing back into the machining process—which helps reduce wear on machine components as well as on tools. Maintenance is minimized while part tolerances are more easily held.

Various high-pressure systems are available with up to eight gallons per minute flow rates and pressures ratings to 1000 psi. Important to Team, the high-pressure system with filter can easily be linked to the conveyor system, and typically include electrical controls that provide connectivity to the machine tool’s CNC for program-imbedded operational instructions.

Mayfran offers an AT-Cleaner based high-pressure package that is integral to the main ConSep providing 50 micron nominal clean coolant. The AT-Cleaner delivers 10 to 15 micron clean coolant to an ultra-clean tank, to which the high-pressure pump is mounted.

“When putting together the ConSep unit and high-pressure package,” Buchholz remarks, “Mayfran developed a truly integrated package, taking into account the reservoir capacity requirements, the need for communication and interfacing to a host of machine brands and equipment manufacturers, and of course, our need for improved uptime and lower costs. With the ease of integration along with downtime for filter media replacement or accidents, and no more media handling or disposal costs, the ConSep 2000 II units are just what we needed at Team.”

“Given the performance of our existing ConSep systems and how they’ve improved the overall operations of the machine tools they’re working with, any new machines ordered will most likely be specified to include Mayfran’s ConSep units,” states Buchholz.



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