



**master
CHEMICAL
CORPORATION**



501 West Boundary
Perrysburg, OH 43551-1200 USA
Phone: 419-874-7902
Fax: 419-874-0684
www.masterchemical.com

CASE STUDY



Process Improvement Results in \$2400 a Day Savings

Using exactly the right coolant for the turning centers meant not having to stop to change tools and brush on tapping compound so frequently; helping Suruga pick up more than 2.5 hours per machine per shift—for a savings of about \$2400 per day.

Addison, Illinois-based Suruga USA Corp. manufactures metal forming machinery and accessories, and special mechanical parts for factory automation. As sister company and sole distributor to Misumi USA, a subsidiary of the Misumi Corporation of Japan, Suruga's mission is to provide highly original products with high quality, competitive prices and short delivery times. "Our customers want and need the finest quality parts possible when they are doing factory automation and we have both first class people and the tools here to provide just that," said Wally Campbell, plant manager of Suruga USA.

Suruga manufactures precision plant automation components in lot sizes from one to more than 100 parts with very short lead time. The twin goals of very high quality and very short turn-around time leads Suruga to do much of its machining in the "hard". Typical materials are 52100 at 58RC, 440C, A2, 304, and 316. "I have been making parts of one kind or another out of a wide variety of materials for more than thirty years," said Mr. Campbell. "Each of the plants I have worked with in the past has had one or more tough jobs. Here we have very few easy jobs and we regard tapping the end of a 52100 shaft at 58RC as standard fare," he said.

Combining tight tolerances and surface quality requirements with small lot sizes causes constant searches for better ways to produce parts. "One of the key goals of every modern manufacturer is to make a better part at lower cost," said Wally Campbell. "I started looking at my costs and production choke points and realized I needed to focus on tapping the ends of the shafts because we make a lot of shafts and I was only getting a few parts per tap."

Supply Chain Collaboration

Mr. Campbell brought in tooling professional, Jeff Whyte, of Colmar Industrial Supplies, for assistance. Colmar is a supplier to Suruga and prides itself on providing not only tools but creative solutions to process problems. "Suruga was spending more than 2.5 hours every day shutting down machinery in order to apply and re-apply tapping compound," said Mr. Whyte. "They were applying tapping compound manually and were not getting the expected tap life," he said. The tapping fluid was causing other problems," added Mr. Whyte. The tapping fluid was polluting the cutting fluid in the machine, degrading the coolant, and causing rancidity. Lubrication is critical to the machining process—coating sliding surfaces, eliminating wear by carrying away the heat generated by friction, and helping to remove chips from the cutting zone. Jeff Whyte suggested involving an expert in coolant management and recommended Max Bailey, of Illini Coolant



Management. "You can minimize coolant problems and increase throughput by partnering with an expert," said Mr. Whyte.

Coolant management is the monitoring and control of all coolant-related variables to optimize tool life, increase productivity, improve the overall shop environment, and reduce coolant waste disposal problems. Control of these factors can yield significant bottom-line gains. Coolant contaminated with tramp oil in the coolant sump can develop bacteria, becoming rancid and foul smelling. Bacteria can be a major contributor to coolant failure. It chemically alters coolants and destroys the lubricants and corrosion inhibitors in the process. It can also pass off corrosive acids and salts into the coolant, which can lead to low pH and corrosion problems. Parts and tools can be contaminated causing damage or excessive wear. "Being a believer in optimizing the process as much as possible when I am tinkering, it only made sense to ask Max for help," said Mr. Campbell. According to Mr. Campbell, partnering with a coolant distributor to identify the product best suited for the operation improves machining processes and lowers costs.

Illini Coolant Management is a Premier Distributor of Master Chemical Corporation's TRIM[®] product line and prides itself on providing its customers with complete solutions. In addition to providing coolant, and the services needed to maintain coolant, Illini's expertise extends to an understanding of machining processes. According to President, Max Bailey, "Illini has spent many years developing a network of relationships with other vendors including tooling companies like Colmar, grinding wheel specialists and waste haulers. We have a good working relationship with Colmar," said Mr. Bailey. "We are able to assist Colmar's customers when they have coolant management issues and we call on Colmar when our customers have tooling issues," he continued. As a Master Chemical Corporation Metalworking Fluids Specialist, Max Bailey has undergone years of training in cutting and grinding issues, coolant management and recycling, and methods to diagnose and fix coolant-related function problems. "Master Chemical teaches its distributors to identify and solve cutting fluid problems in the field. We are trained to understand not only cutting and grinding and coolant-related problems but machinery issues as well," said Max Bailey. "We don't provide cookie cutter solutions," he continued. "We are prepared to analyze a customer problem, review the range of possible solutions, and make our recommendation. According to Mr. Bailey, Illini offers a no-cost risk proposition. "We'll come in and do all the work. We'll guarantee the product and if the product doesn't work, we'll remove it, so the customer risks nothing," he stated.

Cost Savings Realized

Max Bailey ran tests and assessed the situation. At this point—while using a tapping compound that had to be applied manually—the tapping operation was averaging four parts per tap at a cost of approximately \$23 each. Stopping to change taps and apply tapping compound was costing Suruga an average of 2.5 hours per machine, on ten machines, running two shifts. "Solving cutting fluid problems can seem pretty straight forward," said Max Bailey. "But the process is complex. Machining coolants come in a range of chemical compositions and you need to match the properties of the fluid with the demands of the job," he concluded.

After reviewing test results, Mr. Bailey proposed a different solution. "We elected to proceed with a high lubricity, low foam synthetic, because it had the potential to be used across the board—eliminating the need to manage three different fluids," said Mr. Campbell. "We chose a TRIM[®] synthetic coolant that approaches the machining performance of premium soluble oils. Even with its very high performance, the coolant meets or exceeds the most stringent environmental standards," he stated. As soon as the product had been chosen, Illini Coolant Management technicians cleaned a machine to conduct a trial and recharged with the new TRIM fluid.

More than a year later, Wally Campbell is still pleased with the solution. Eliminating the noncompatible tapping compound has saved time and increased productivity as well as extending the sump life and reducing fluid contamination. Suruga has standardized using the TRIM product. "The TRIM coolant is about 15% more expensive on average than the products it replaced," observed Mr. Campbell. "However, we use about 40% fewer gallons and the machines are running

cleaner with less odor," he concluded.

Additional Benefits: Savings in Cost AND Time Savings

Illini Coolant Management continues to identify changes to further improve processes for future cost savings. Suruga has added eight small, inexpensive coalescing units designed for sump-side use with a flow rate of 1.5 U.S. gpm (5.6 l/m). The Sump Side Coalescer™ was developed by Master Chemical Corporation (the originators of coolant recycling) to meet the needs of any metalworking plant for a simple, effective, low-cost tramp oil separator. The Sump Side Coalescer will process machine tool coolants to remove tramp oils and fines and provide clean, reusable coolant.

Wally Campbell can list the benefits of the fluid change. They include longer tool life, improved part quality, reduced rejects and scrap, less machine downtime, and improved work environment. Suruga's average tap life is up from four parts to more than 30. The cost per tapped hole has gone from \$5.75 to \$.77 per hole. As a result of not stopping so frequently to change tools and brush on tapping compound, the company has picked up more than 2.5 hours per machine per shift, for a savings of about \$2400 per day. "Using this TRIM product has resulted in finding the equivalent of three new machining centers worth of capacity without spending a dollar in capital," stated Wally Campbell.

Colmar Industrial Supplies, LLC

Based in Northbrook Illinois, Colmar Industrial Supplies (www.colmarindustrial.com) is an industrial distributor of metalworking tool and abrasives including:

- Cutting Tools-HSS & Carbides
- Indexable Carbide Tooling
- Abrasives
- Workholding & Toolholding
- Measuring Tools
- Shop Supplies
- Machinery

As a child, Colmar President Aaron Shapiro's basement had toys on one half and tools on the other. His father had started a company that sold tools out of the back of his station wagon, and used the basement for overstock. By age 12, he was grinding points on used taper shank drills to make up sets. Mr. Shapiro's father always said that customers were loyal to distributors that save them money.

Today Aaron Shapiro understands that if a distributor provides the tools and services that deliver value and cost reductions to the customer, the distributor's business will grow. "In the 25 years I have been in the Industrial Distribution industry, I have learned to empathize with the customer," said Mr. Shapiro. "I know if I can't bring more value to my customer than the competitors, the competitors will get the orders," he stated.

The Colmar philosophy is that the people who actually run a company are its customers. Colmar works to earn the customer's trust by providing the highest quality tools and by being creative problem solvers. "Part of the value we provide is our knowledgeable, experienced staff and our understanding of industrial processes," said Mr. Shapiro. Colmar has built a strong business network and partners with colleagues to provide customers with expert solutions to machining problems.

Illini Coolant Management Corporation

Illini Coolant Management Corporation (www.illinicoolant.com) is the Chicago Metro area's complete coolant management resource. "Our goal is to provide our customers with much more than industrial cutting fluids," said President of Illini Coolant Management, Max Bailey. Illini Coolant Management Corporation's expertise extends well beyond coolant management and recycling and methods of diagnosing and fixing coolant-related function problems to include cutting and grinding issues and a solid understanding of machining processes. Illini has built a network of vendor relationships including tooling, grinding, and waste, which enables it to provide complete solutions for its customers. "Our customers know that when you buy a drum of coolant from Illini you're getting much more than the coolant," he stated.

Managing coolants effectively and proactively can improve processes and lower cost. According to R. Eric Bevevino, CLS, U.S. companies lose an estimated \$4 billion annually by not adhering to a proactive coolant maintenance approach and responding to ensuing lubrication-related failures. "Among the benefits of single-source coolant management are single-source responsibility and environmental compliance," said Mr. Bailey. "Not to mention the savings in process efficiencies," he added.

Illini Coolant Management has both the technology and expertise needed to maintain the daily requirements of industrial metalworking equipment. As a Premier Distributor of TRIM brand fluids and XYBEX® recycling equipment from Master Chemical Corporation, Illini personnel has undergone extensive training. Master Chemical's training programs are based on 50 years of research and studies in the metalworking industry. Illini Coolant Management's experienced technicians use Master Chemical's portable recycling equipment for in-plant coolant recycling services.

The company maintains a state-of-the-art laboratory, constructed in cooperation with Master Chemical Corporation, for the purpose of conducting coolant testing, which helps maintain optimum coolant performance. Illini's onsite coolant recycling allows the customer to benefit from the cost savings of recycling fluid without a capital investment. Cost savings are realized in the reduction of waste disposal and eliminating the cost of replacing reusable coolant. The company offers economical programs to meet customers' specific needs. Illini Coolant can help control metalworking fluids and meet water minimization goals, whether a facility includes one, or hundreds of machine tools. Illini Coolant Management's services include tank-to-tank centrifugation of fluids, centrifugation of fluids from machine tool reservoirs, cleaning of machine tool reservoirs and the full cleaning of machine tools.

Illini Coolant Management is so confident in the quality of its products and services that it offers a no-risk guarantee. "We will come in and do all the work," said Max Bailey. "We guarantee the product and if the product doesn't work we'll remove it so you risk nothing." According to Mr. Bailey, this customer-focused approach combined with the high quality Master Chemical TRIM fluids and XYBEX recycling equipment has been spectacularly successful.

TRIM® and XYBEX® are registered trademark of Master Chemical Corporation
The Sump Side Coalescer™ is a trademark of Master Chemical Corporation

