

# CASE STUDY

## ARC SUPPRESSION TECHNOLOGIES



### Roberts Automatic Products Chanhassen, Minnesota

#### SECTOR

Precision Manufacturing

#### PROBLEM

The unpredictable failure of electromagnetic relays in CNC and screw machines leads to significant maintenance costs and lost productivity.

#### SOLUTION

Install NOsparc® arc suppressors (MHXAC1F240) to increase the operational lifetime of the EMRs by 10x and eliminate downstream costs.

**R**oberts Automatic Products is a third-generation ISO 9001 company specializing in screw machine parts, computer numerical control (CNC) machining, and precision machining. Founded in 1947 and located in Chanhassen, Minn., Roberts Automatic serves a demanding worldwide market by maintaining the highest level of quality, service and productivity.

Nearly three years ago, Tony Lake, secondary operations leader at Roberts Automatic, was facing a problem that is familiar to many precision manufacturers: the early and unpredictable failure of electromechanical relays (EMRs). These relays were critical to the function of the CNC and screw machines at Roberts Automatic, and their untimely failures were causing unplanned downtime that hindered company productivity. Being the guy in charge of machine set up, operations and repairs, Lake saw that relatively inexpensive EMRs were causing significant problems for Roberts Automatic.

**“You avoid the cost of the replacement EMRs — that’s easy — but you also avoid the cost of replacing a \$600 motor.”**

“Depending on the machine, its cycling time and usage rate, we could typically count on a relay to last up to two years,” says Lake. “But we have more than 50 machines and they all operate at different rates for different jobs, and they all had different relays. It seemed that I was always getting calls from frustrated operators telling me that a machine was down. And more often than not, the shut down was caused by a failed relay. When I removed the relay, I could see that its contacts were completely burnt out by the arcing that occurs each time the relay opens and closes. Many of our relays would be used to stop and start the coolant pumps each time the tool indexed, which could be every 30 seconds or so. They were going through a lot of cycles and their failure points were completely unpredictable.”



## THE DOWNSTREAM COSTS OF FAILED RELAYS

Each of these service calls required Lake to shut the machine down, locate the correct replacement EMR, remove the access panel and the failed EMR, and then install the replacement. This process could take up to an hour or more, which backed up parts production and caused scheduling issues downstream.

“When a relay fails on a CNC machine, it would drop one of the three legs of power, causing the motor to run inefficiently and overheat the thermal overload relay,” says Lake. “This would eventually trip the overload relay and shut down the motor. In some cases the motor itself would have to be replaced.”

Frustrated by the problem, Lake began scouring the Internet for a solution to arcing in electromechanical relays. One such search for “arc suppression” immediately directed him to a company called Arc Suppression Technologies, and he was astonished to find that the company was located in the Twin Cities, just ten miles from his manufacturing facility.

“It was amazing to find that they were so close to us, and as I looked over their web site it occurred to me that they might have the solution to our problem,” says Lake.

## EXTENDING THE LIFE OF AN ELECTROMECHANICAL RELAY BY 10X

Lake talked to a representative and zeroed in on an AC NOsparc® arc suppressor that fit the amperage of his CNC and screw machines. He then ordered the products and installed them on several machines, connecting just two wires per line protected and attaching the small arc suppressor to the cable run. “I installed the first NOsparc arc suppressors more than two and one-half years ago, and have yet to have an EMR failure,” says Lake. “There is no telling how long NOsparc will extend the lives of our relays, but I look forward to finding out in the years ahead. With virtually no arcing taking place, who knows how long an EMR will last.”

“Convincing the purchasing folks to invest in NOsparc arc suppressors has been very straightforward because what we are really doing is avoiding all the downstream problems caused by failed EMRs,” says Lake. “You avoid the cost of the replacement EMRs – that’s easy – but you also avoid the cost of replacing a \$600 motor, many hours of maintenance at about \$60 per hour, and the very real cost of shutting down an entire parts production run for an hour or two or possibly days waiting for repair parts. Suppressing the arc in EMRs can save the company a lot of money in the long run.”

“Ultimately, I would like to see manufacturers of CNC machines incorporate NOsparc arc suppression capabilities into their products,” says Lake. “It would decrease my maintenance costs and increase our productivity, and because the NOsparc products are so small they could easily be integrated next to the EMRs. I think a lot of machine operators would appreciate that advancement.”

### About NOsparc® Arc Suppressors

NOsparc® arc suppressors from Arc Suppression Technologies extend the operating life of power contactors and other automated switches by at least 10X, producing enormous cost savings in replacement contactors and motors, scheduled maintenance, and unscheduled downtime. Robust NOsparc products eliminate 99.9% of contact arcing energy at its source, and have immediate uses in thousands of commercial and industrial applications. Never before has there been an off-the-shelf solution to contact arcing that operates across a broad range of AC and DC power applications. Patented and UL Certified.

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