

**METHODICAL DETECTIVE WORK BY A CIRAS METALLURGIST HELPED AN IOWA COMPUTER COMPANY KEEP A NEW PRODUCT ON TRACK AND PRESERVED THE POTENTIAL FOR AN ESTIMATED \$25 MILLION IN NEW SALES.**

**ABOUT CRYSTAL GROUP INC.** Crystal Group, Inc., an employee-owned and -operated small business founded in 1987, designs and manufactures rugged, high-performance servers, embedded computers, networking devices, displays, and data storage devices for high-reliability, mission- and safety-critical applications in harsh environments. Crystal Group has 294 employees located in its three-building, 160,000 square-foot campus in Hiawatha, Iowa. It is one of six 100% employee-owned companies within Dexter-Apache Holdings, Inc.

**THE CHALLENGE.** Crystal Group was working on machines for a new autonomous vehicle in spring 2019 when the company noticed a problem--corrosion in the computers' cooling systems. Crystal Group contacted CIRAS, the Iowa Center for Industrial Research and Services, part of the MEP National Network™, for help finding the cause and identifying a solution.

**MEP CENTER'S ROLE.** CIRAS project manager Adam Boesenberg ultimately diagnosed the problem as stemming from the use of a coolant that has known problems interacting with aluminum parts. Austin Kleinmeyer, a mechanical engineer with Crystal Group, said Boesenberg's work ultimately helped the company place new specifications on its supplier, who had provided aluminum without the correct type of protective coating.

Solving the problem required repeated tests of multiple parts before Boesenberg could confirm that the requested coating wasn't there. "CIRAS helped us analyze the corrosion and trace it back," Kleinmeyer said. "We don't have the testing resources to do that. The CIRAS lab enabled us to look at the problem more holistically and understand the full cause and effect."

"This is a common problem," Boesenberg said. "What they were requesting from the supplier wasn't necessarily what they got." In unrelated tests, Boesenberg also helped the company confirm that residue on a circuit board had been caused by an overheated motherboard and not any other kind of issue.

"The CIRAS lab is a very valuable resource for Crystal Group to partner with when deeper analysis is required than what our internal resources provide. Having contacts at the CIRAS lab allows us to respond quickly to our customers with a definitive action and resolution, and that is paramount."

-Austin Kleinmeyer, Mechanical Engineer

## RESULTS



**\$1,050,000** in cost savings (includes avoidance of penalties and cost of recall management)



**5** created or retained jobs



**\$9,500,000** in new or retained sales



**\$155,000** in new investment in plant equipment and new processes



**\$5,000** in training

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