



Furnace Life Optimization Solution

SmartMelter Reduces Repair Costs by more than 30% for Cardinal Glass

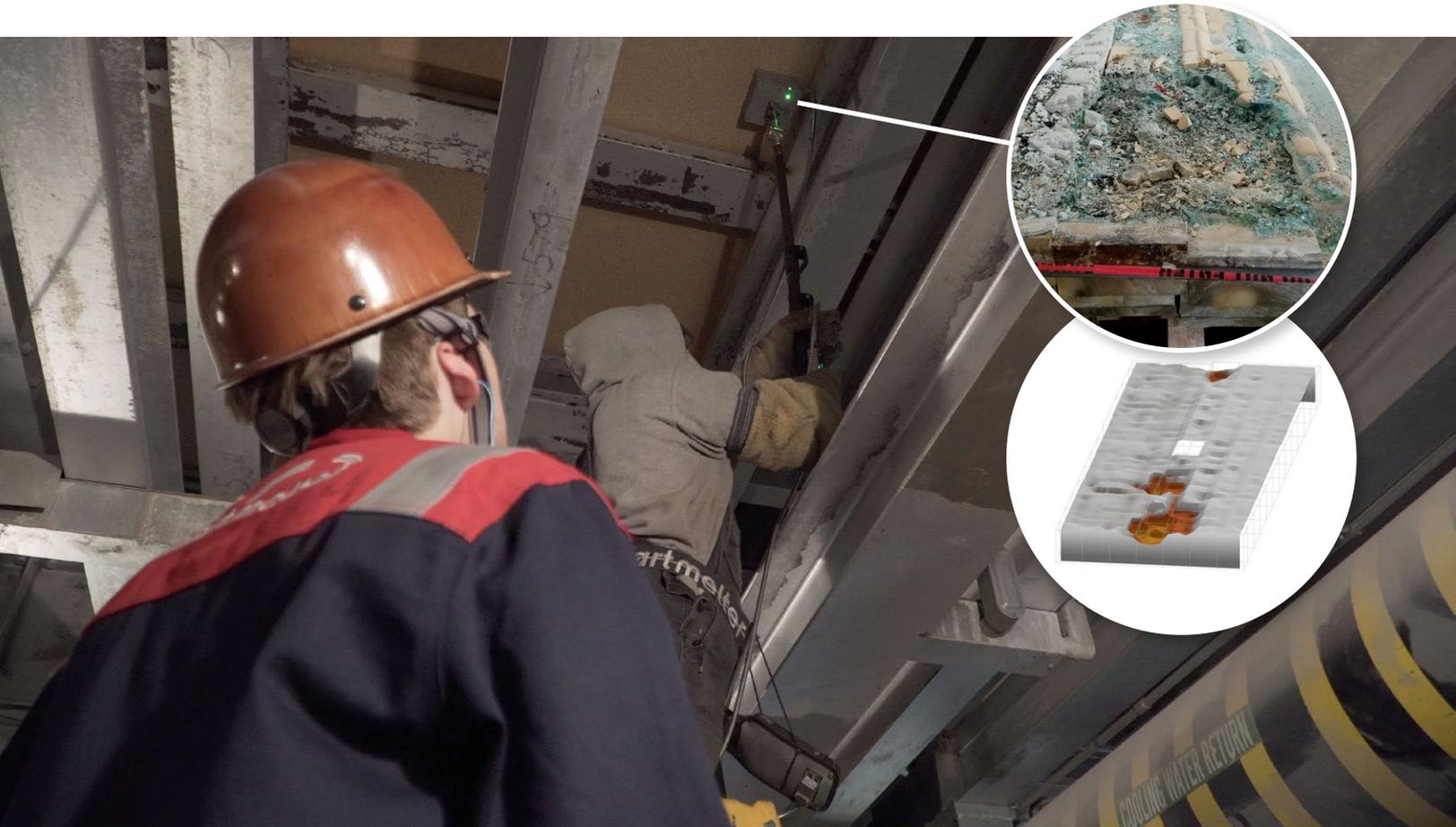
Cardinal Glass, a leading glass manufacturer in the United States, was an important industry partner in developing the SmartMelter® sensor for inspecting furnace bottoms. Cardinal's first experience using SmartMelter® on the bottom of a float glass furnace turned a potential surprise leak into a well-planned repair, keeping customer orders on track and saving both time and money.

After validating the accuracy of the SmartMelter® data in this first case, Cardinal FG made SmartMelter® Monitoring a new standard in their maintenance program. Kelly Busch, Vice President of Cardinal FG, and Mark Purcell, Production Manager, explained how this implementation discovered unexpected wear at another plant and cut repair costs by over forty percent.

The Risk of Inaccurate Furnace Life Estimates

A second float glass furnace was found to have extensive wear in select areas that would not last until the next scheduled rebuild date. Although the expected furnace life was at least three more years, the SmartMelter® data showed that a repairs were necessary much sooner.

"We would have been sitting there not knowing, typically...but now we had a very accurate system, that's proven, that would say this is wearing at a pretty good rate, this is what's left - we've got to repair," Mr. Busch explained, "If we would have waited until 2021 to repair this and not monitored it, it could have dropped to the basement, and that could have been catastrophic, cost-wise and penalty-wise."



Targeted Repairs Create Significant Savings

Mr. Busch estimated the typical cost of a cold repair to be about fifty-five million dollars. But the data from SmartMelter® monitoring showed the specific areas that were damaged along with the actual thickness remaining. This changed the scope of the repair. It also allowed Cardinal to slow the wear of the damaged area while preparing for the repair date. Water coolers were placed over the top and sprays were added to the bottom. Regular SmartMelter® inspections were performed to monitor the erosion progress. Finally, a very focused repair was planned that left the healthy area of the furnace intact.

“Instead of repairing the crown, or the ports, or the breast walls, we are just going to make access ways to go in and repair the area that’s damaged, and then start back up and reuse it. And that is a significant difference in cost and time,” Mr. Busch said. He added, “Typically a repair is 90-100 days, and we are looking at no more than 45 days.”

Mr. Purcell and Mr. Busch both agreed that this process saved more than 30% on the furnace cost alone, not counting production time saved and other costs that are incurred with a furnace repair. The total savings after all costs is even higher.

SmartMelter®’s Role in Cardinal’s Maintenance Program

SmartMelter® inspections continue to identify important data. For example, one furnace inspection identified significant wear in an area that they did not expect to see. Regular use of SmartMelter® technology has also helped Cardinal Glass make informed decisions about their furnaces. The company is changing the design of their furnace bottoms in an effort to reduce or eliminate hotspots. Newer furnaces now receive an annual baseline inspection using SmartMelter®, and Cardinal is now adding sidewall inspections to their program.

“From a furnace maintenance standpoint, I’m looking forward to that, because that will help us schedule those projects as well,” Mr. Purcell commented about the sidewall inspections. “You know, that’s a routine thing to go through and place overcoat block, and often times that’s done just on visual observations - how bright the block is, the condition of it. But being able to establish a baseline and monitor that on an annual basis will allow us to schedule out those projects more appropriately and maybe be able to push them off an extra year from what we thought, or move them up if need be to avoid a bigger problem.”

Mr. Busch also expects SmartMelter® monitoring to become a standard recommendation in their insurance agreement. He has found a willingness to factor in the reduced risk of SmartMelter® monitoring when determining rates.

“It’s a new tool that we never had before to handle the maintenance programs for the furnace and prolong or actually determine the life of the tank,” Mr. Busch summarized. “It’s an easy system to use and it works great.”



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