IRISS Partner Implements Unique Solutions for Phosphate Mining Client

By Mark Bowling, Level II Thermographer, IRISS Inc.

Overview:

Connected Power Phosphate Services LLC of Lakeland, Florida services the maintenance needs of the mining sector in Florida and Georgia and are a preferred channel partner of IRISS Inc. One of their major customers, a phosphate mining operation with multiple sites around the USA, was experiencing difficulties with some of the high power electrical equipment.

Case Study

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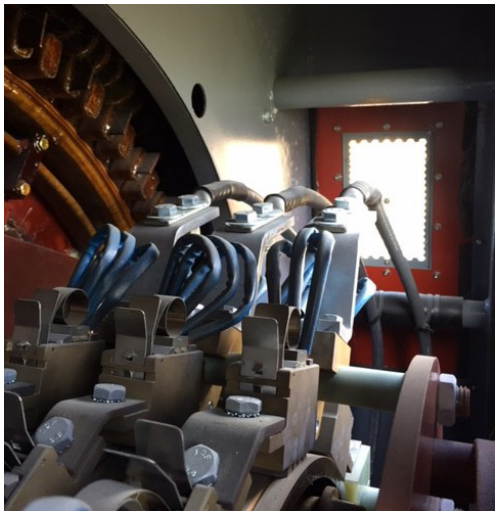
On the mining site, the phosphate is mined by a dragline and the phosphate rich sediment is then mixed with water to form a slurry. That slurry is pumped via 1500 Horsepower motor / pump combinations to the processing plant so that the phosphate nodules can be separated from the rest of the sediment and rock. Each site has multiple sled mounted Motors and Motor Controllers for pumping the slurry material. The motor / pump is typically mounted on one sled while the Motor Controller Speed Drive is mounted on a second sled. To complicate matters from a safety perspective, all of this equipment operates at 4,160 Volts.

For Condition Based Maintenance (CBM) purposes, it was desired to be able to perform Infrared inspection on both the motor and the motor controller sleds under load but, for safety, with all panels and doors in a closed and guarded condition. CAP-ENV-12 large format IR windows were mounted on the motor starter housing to allow inspection of the main cable leads to the motor as well as on the motor end housing to enable inspection of the motor brushes.



In addition, CAP-ENV-24 windows were mounted on the main incoming cable termination chamber of the motor skid to allow inspection of the main cable terminations and the large Medium Voltage starter capacitor terminals.

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In addition to the six (6) IR windows fitted to the motor / pump skid, an additional five (5) IR windows were fitted to the Motor Controller Speed Drive skid. These units allow for IR inspection of critical electrical joints as well as providing a means of visual confirmation of disconnection of the main short circuit protection device which is an MHSA (Mining Safety and Health Administration) requirement.

Ralph Durance, President of Connected Power Phosphate Services, explained that the end customer is very pleased with the outcome of this project. “The mine was so happy with the first sleds we did, they quickly agreed to roll this out on a wider basis. We have now completed fourteen sets of sleds,” said Ralph. He added, “IRISS has been great to work with making some design modifications to make it easier for us to install these units – especially when mounting to ¼” steel plate that makes up the structure of the motor housing. The mine had tried round crystal IR windows in that past and those just didn’t stand up to the harsh conditions of the site. Some of those failed within months of installation. We have had zero issues with the IRISS products since we started this program nearly two years ago.”

The CAP-ENV Series of large format rectangular IR windows used on these projects feature:

- patented reinforced polymer optic system
- NEMA 6 / IP67 protection rating
- Construction from Stainless Steel for harsh mining environments
- Fix and Stable Transmission (FAST) for consistent infrared transmission rates over the life of the window
- Impervious to shock and vibration
- Unconditional lifetime warranty on the IR Window for the life of the electrical equipment

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