

Why understanding metal temperature gradients is critical in tightening your process control and improving quality

Introduction

When it comes to the development of the modern world, the manufacturing of primary and secondary metal products is one of the most important industries. It is also one of the most energy intensive. That said, improving energy and production efficiency, as well as ensuring the quality of materials for OEMs, is likely near the top of your to do list. Fortunately, continuous thermal imaging can provide you with the necessary data you need to optimize your process.

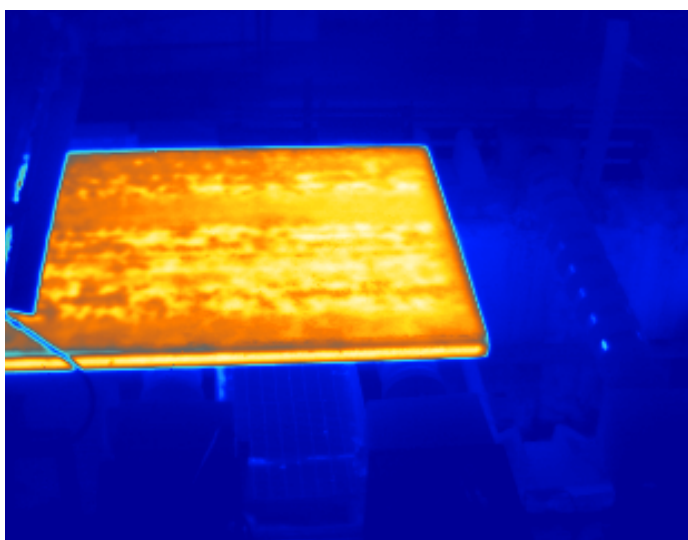


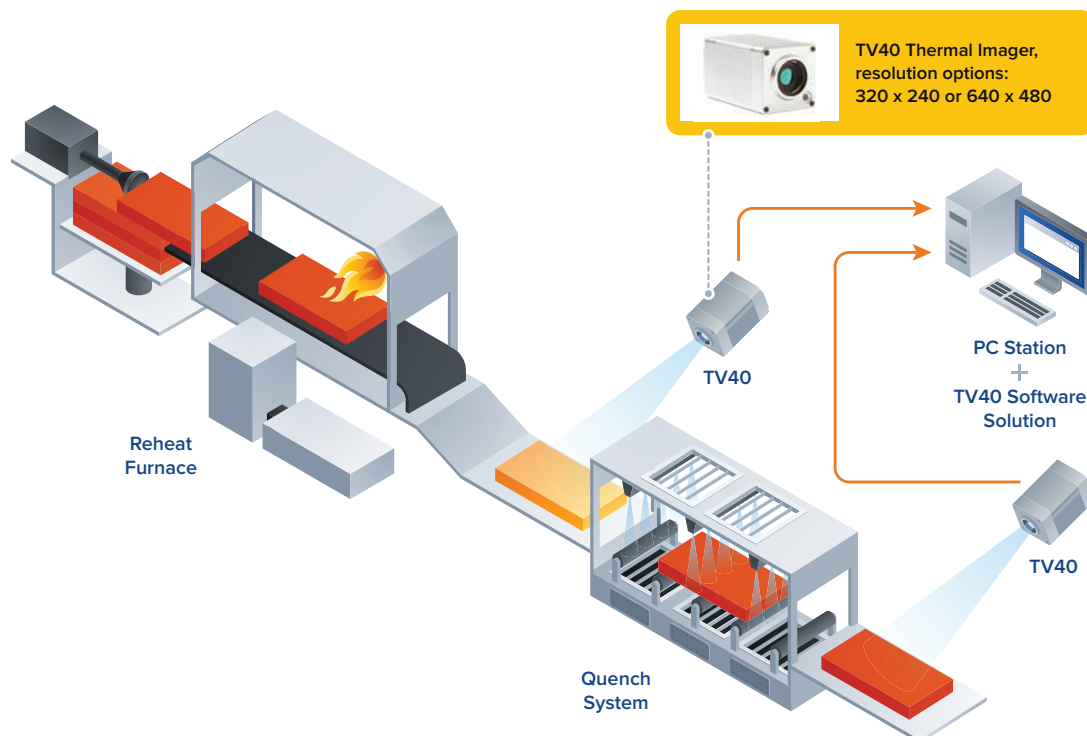
Recording the reheat process

Like the vast majority of steelmakers, our customers understand that monitoring variables such as temperature, speed, thickness, and other dimensional measurements is critical in ensuring metal slabs (and other products) maintain their metallurgical properties during the reheat and rolling processes.

Although the goal often is to eliminate bad product from moving further downstream, you can implement a continuous thermal imaging solution, such as the ThermoView TV40, to record the temperature gradient across metal slabs coming out of the reheat furnace. This provides a clear snapshot into the reheat process—including a detailed look at how the product is heated across different points, ensuring temperature uniformity is achieved.

With a better look at the reheat process, and therefore a better understanding and control of your furnace, you're able to make adjustments as needed to optimize your energy efficiency—saving your facility energy-related costs in the long-run.





Elevate your process visibility

When paired with another product, continuous thermal imaging can provide even more insights into metal processing. Pyrometers have long been used to accurately assess metal temperatures throughout the manufacturing process due to their reliability and non-contact measurement solution.

A temperature pyrometer may be enough, but only a single spot measurement is taken. While a repeatable measurement in one location may be acceptable in some situations, this is not always the case and you run the risk of sending bad product downstream, potentially reaching the OEM or end customer.

By combining the accuracy of the pyrometer with thermal imaging's comprehensive view and recorded data, you can create a robust temperature monitoring solution that both allows

for tighter process control, therefore improving quality, and ensures your product meets industry standards set by OEMs.

Additionally, when paired with a pyrometer, it is relatively easy to make emissivity adjustments or offsets to display temperatures within the thermal imaging software, making it more in-line with the pyrometer's accuracy and providing further insights into your process.

Conclusion

As production equipment and sensor technology continues to advance, more methods for process data collection are becoming readily available. With solutions like continuous thermal imaging and infrared pyrometers, you can rest assured that you will receive the most accurate, up-to-date data so you can optimize your process to ensure the product quality, improve production efficiency, and save on energy-related costs.

Fluke Process Instruments