

Case Study:

2950 Fahrenheit—No Match for Pixim-Powered Cameras



Speco and Pixim solve steel mill's ultimate lighting challenge

Rob Irwin had the ultimate challenge for a video camera—recording and monitoring a room that goes from dark to as bright as the sun in a matter of seconds. As melt shop electrical supervisor for Severstal, the fourth largest steelmaker in the United States, he needed to find a camera that could continuously monitor the mill's huge electric arc furnace (EAF).

Continued

For over fifty years, Speco Technologies has been dedicated to providing the latest innovations in closed circuit video surveillance and electronic accessories.

Speco Technologies is a Pixim Brand Partner dedicated to producing industry-leading enterprise video capture solutions based on Pixim's award-winning Digital Pixel System® technology.

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A steel mill is a hazardous environment and risk to employees needs to be minimized as much as possible. The EAF poses a variety of potential dangers. An electrode is lowered into the furnace and an electric arc creates an intense heat which melts scrap metal into new molten steel. The furnace is lined with refractory material called fire brick. This special refractory brick lines a big, steel ladle that is used to place the scrap metal inside the EAF. The ladle's fire brick jacket has water pumping through it continuously. Workers monitor the refractory material 24 hours a day looking for cracks and other defects. Since steel melts at 2950 degrees F, any water that gets into the metal will superheat, and the whole furnace could explode like a bomb.

An explosion would result in critical downtime for the steel mill. Though Severstal has a backup EAF, it would take a week for the damaged furnace to cool down enough to be moved. Thousands of dollars a day would be lost. More critically, lives could be lost. This disastrous scenario happened in January 2010 at a steel mill in Indiana. The water in the EAF reached the molten steel, and the furnace exploded killing one worker and injuring four others.

In addition to observing the refractory material, the workers monitor the entire melt process. Is the electrode working correctly? Is the lid closing properly? Is the material melting as it should? To mitigate human error during monitoring, Rob needed a camera that could watch with an unblinking eye and accurately record events.

Solution

The numerous cameras Rob tried in the past could not handle the extreme lighting conditions. The images would bloom whenever the lid of the furnace would open, rendering the cameras useless. In desperation, he turned to his security distributor, Grainger, for help.

The representative from Grainger knew who to ask. He contacted Glenn Good, national sales manager for Speco Technologies. "Grainger arranged for Glenn to come on site, look at our set up, and determine if they had a camera that would work," explains Rob. "Glenn immediately recommended Speco's line of Pixim-powered cameras, and gave us a camera to test."

"We had to leave a demo camera with them," Glenn says. "The environment is dangerous so only employees are allowed in the area. They set up the camera right out of box with good results. They placed the IP camera on their network which enabled it to be remotely controlled through the DVR. We then conducted a remote demonstration."

Impressed with the results of the demo camera, Rob elected to buy several Speco IP wide dynamic range cameras. Wide dynamic range is the ability to capture shadow and highlight detail simultaneously in the same video frame. "The cameras powered by Pixim bloom briefly, but then immediately correct themselves." Rob continues. "The correction is brief and doesn't hurt what we are trying to do. We went from getting completely unusable pictures to having monitors that show us more than what we can see with our own eyes."

Why do the Pixim-powered Speco cameras work when other cameras failed? In traditional, analog CCD cameras, all the pixels in the image sensor have the exact same shutter speed. As a result, every pixel receives the same exposure creating overexposed images in bright areas and underexposed images in dark areas. Pixim-powered cameras employ the only all-digital technology in the industry – its Digital Pixel System® technology. Pixim's technology employs hundreds of thousands of self-adjusting pixels to act like individual cameras, eliminating image compromising visual noise and delivering the highest resolution, natural color and clarity, even in challenging lighting conditions. This all-digital system efficiently captures the whole picture, down to the crucial details.

Since many of the cameras are hooked to DVRs, recorded incidences are also used for employee training. "We can discuss what happened with our staff," says Rob, "and show them how to avoid the situation in the future. It helps us eliminate any safety issues."

Expansion

Rob is continuing to expand his use of the cameras throughout his department. "The Speco IP cameras are a very affordable solution compared to other camera suppliers for the same application," he explains. He recently placed an order for 15 more cameras.

Glenn Good hopes the results of the cameras will convince Severstal to use Digital Pixel System technology throughout its facility. "Right now, we are only selling to the melt shop," he explains, "but we could be selling them throughout the facility. We recently did an installation for another steel company. The mill uses the cameras to watch as melted steel goes through the coolers. They can tell by the color of the steel if it is the proper temperature. The accurate color provided by our Pixim-powered cameras is essential."

Speco's Pixim cameras successfully met Rob's challenge. From dark rooms to super-bright light and everything in between, Pixim-powered cameras are the answer to any lighting issue.

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