

Dongkuk Steel Mill Co., Ltd. uses Axis HDTV network cameras to improve inspection reliability and efficiency.

Using high-resolution Axis network cameras for real-time monitoring and inspection on the shop floor.



Organization:
Dongkuk Steel Mill Co.,
Ltd.

Location:
Songhyeon-dong,
Incheon, South Korea

Industry segment:
Manufacturing

Application:
Remote monitoring

Axis partner:
Mirae Information and
Telecom, Inc.

Mission

The Incheon Works of Dongkuk Steel Mill (DK UNC, SI) is a reinforcing bar manufacturing plant. Powered by long-standing steel production technology, it is one of the largest steel mills in Korea. In 1993 Dongkuk Steel introduced Korea's first 100-ton DC Electric Arc Furnace and became the largest steel producer in the world. In 2000, the company recorded an unprecedented feat of producing a cumulative 100 million tons of reinforcing bars. In 2010, the Incheon Works invested about 470 billion won to build the 120-ton steel mill, and a rolling mill is now under construction. Also, as core facilities for steel making/continuous casting/rolling are continuously improved, about 2.2 million tons of reinforcing bars are expected to be produced annually on the 278,000m² site. Accordingly, Dongkuk Steel needed to implement a more reliable and efficient scrap metal inspection system.

Solution

One of the most important jobs is inspection of scrap metal, a vital step in steel making. To understand what is going on at the scrap metal inspection station and the plant, every shop floor needs a monitoring system.

The collecting and sorting of collected scrap metals must have saved images for subsequent verification. Therefore, Dongkuk Steel introduced the Axis high-definition network camera solution and immediately gained greater reliability of scrap metal inspection and enhanced plant monitoring efficiency.

Result

DK UNC, SI which carried out this project, joined with Mirae Information and Communication, an Axis partner, to introduce AXIS Q1755, a megapixel high-resolution network camera for scrap metal inspection and AXIS 215 PTZ for control. These systems enabled Dongkuk Steel to greatly improve the image quality of monitoring images and thus perform jobs more efficiently and reliably. The biggest change after the introduction of the Axis network cameras was the ability to check the scrap metal inspection status in real-time, and save, store and utilize the scrap metal inspection process and data. The saved images are also invaluable in identifying the causes of industrial accidents in the scrap metal yard.

"Dongkuk Steel implemented a highly reliable image inspection system based on a state-of-the-art high-definition network video solution. By utilizing it in the scrap metal inspection process, we are now able to increase the efficiency of inspecting non-scrap-metal and use the images as evidence to prove quality and reliability. This system greatly contributed to enhancing our competitiveness by reinforcing the safety of the inspection work environment while raising the efficiency of image solution management."

Dongkuk Steel Mill Co., Ltd.

HDTV-level megapixel network cameras provide clear images of shop floor activities

What DK UNC emphasized the most during this project was outstanding image quality, scalability of the system, and saving the images via networking for later use. In the process of selecting the solution, picture quality and resolution were the most basic elements, and they also took environmental factors of the shop floor, like dust, into consideration. They needed a durable system that could withstand the rough internal environment of the plant and a system with superior reliability. They needed a solution that delivers high-quality images that compensate for vibration, refraction and backlighting. Accordingly, DK UNC installed 14 high-definition AXIS Q1755 Network Cameras for inspection and three AXIS 215 PTZ Network Cameras for monitoring.

Mr. Hwang Gyu-Seok of DK UNC in charge of this project said, "The most important factors in purchasing shop-floor cameras are the addition of camera and system scalability, convenience of network-based management, and excellent performance of the cameras. The Axis network cameras met all these requirements. In particular, the excellent quality and durability of the Axis cameras were the major reasons behind their selection, and the company was trustworthy in terms of brand awareness as well."

Dongkuk Steel introduced the Axis network cameras and immediately gained an appreciation for the excellent image quality, convenience of management, and high efficiency of operation. In particular, the image inspection VMS made it possible to remotely monitor the inspection status in the scrap metal area and the work status around the scrap metal area in the control room and related offices on a real-time basis, dramatically improving the productivity and efficiency of the scrap metal inspection station.

Monitoring scrap metal inspection work and utilizing data for subsequent analysis

The inspection of scrap metal, which is the raw material for steel making, is a mission-critical job. It involves checking whether the scrap metal used in the steel mill contains any impurities or hazardous materials. Dongkuk Steel purchases a considerable amount of scrap metals domestically and if they can filter out 1% of impurities, production costs will go down; and there will be less slag in the steel making process and an increase in the recovery ratio, thereby boosting productivity. As scrap metal inspection is directly connected to quality and cost, it requires great care. With the AXIS Q1755 on the job, the company can save high-definition images as evidence of inspection, utilize them as data for quality and grading, and raise the objectivity and reliability of inspection. In addition, as employees can monitor activities in the scrap metal area remotely from the central monitoring room and offices.

Efficiently saving and operating high-definition HDTV-level image data

Since the AXIS Q1755 Network Cameras, connected to the HDTV monitor, provide HDTV-level high-definition images, they are especially suitable for distinguishing scrap metal from impurities. Also, with the introduction of H.264, the storage space for recording high-definition images and bandwidth requirement is reduced. In comparison with Motion JPEG and MPEG4, the storage efficiency is definitely improved. The PTZ function that AXIS 215 PTZ has makes it possible to promptly follow objects and moving people. This coverage of wider areas makes it far more efficient than analog units. As a result, Dongkuk Steel now has an integrated network of cameras that are efficiently operated from the control room. Dongkuk Steel is also planning to install more network cameras to monitor dangerous areas and perimeter areas when the system is scaled up as the plant is expanded. They are considering the adoption of a system that will turn the existing analog cameras, installed in other areas of the steel works, into network cameras for the sake of integrated management.

