

Increasing safety in overhead cranes

Crane operators in steel mills work in extreme conditions where there are large volumes of dust and high temperatures. They rely on air conditioning units to supply clean air. These in turn rely on radiator cooling coils which can withstand the harsh environment.

STEEL mills and foundries learned years ago that operating an overhead crane with an enclosed, air conditioned cab is much safer and more comfortable for workers, not to mention more productive.

Thankfully, today's equipment is a far cry from the dangerous open cabs on these kinds of cranes in the early 1900s.

Components in cabs on today's overhead cranes are also built to withstand extreme heat, dirt build up and corrosive environments.

In the early days, overhead crane operators wore heavy wool clothing that had to be watered down frequently to stay cool while pouring ladles of molten steel. Besides the constant threat of catching fire, operators were subjected to dirty air, dangerous gases, deafening noise and strong vibrations from the crane rolling along steel tracks, combining to make for a dangerously unhealthy occupation.

The Lintern Corporation Worldwide of Mentor, Ohio, US was the first company to develop heavy-duty air conditioners and filters in 1940 for enclosed cabs on overhead cranes that improved environments for operators. Equipment included heavy duty electric motors, compressors, filters, ventilating and air conditioning systems that withstood extreme conditions.

A long lasting association developed between Lintern and Super Radiator Coils (SRC) in Minneapolis, MN, a relationship that played a significant role in the growth of both companies. The two companies worked together to overcome challenges and establish themselves in their respective fields.

Lintern developed and refined its products, and grew to become the largest manufacturer of heavy-duty A/C equipment in the world. Before long, their equipment was also used to improve the environment for workers in control rooms inside steel mills and smelting operations for other primary metals, such as steel, aluminium, copper, zinc, lead and nickel.

Temperatures

"Overhead cranes built by our customers operate in plants with high ambient temperatures all the time," said Dick Lintern, President & CEO of the company. "Metals smelted in these places generate huge volumes of dust and dirt that build up on our equipment and cause corrosion. Among the vital components that we depend on are ruggedised coils that hold up in that environment."

The coils must have thick, tempered aluminium fins on copper condenser tubes because they need to be cleaned frequently with high pressure air or water that bend and ruin conventional fins.



Lintern severe duty AC units on a crane control cab

SRC also produces coils for Lintern that have a rifling pattern inside the tubes to circulate refrigerant more efficiently through interior surfaces.

The outer surfaces of the coils are epoxy coated by another supplier to provide extra corrosion protection and are easier to clean. A number of coils were constructed with support brackets at refrigerant connections to withstand strong vibrations.

Lintern spends \$350k/y with SRC to buy about 500 coils, all for cooling applications. SRC manufactures about two dozen models of coils exclusively for the company.

Components from other manufacturers used in Lintern's products also have to be reliable because continuous mill operation is expensive to lose. Downtime costs about \$40k/hour or more according to Lintern.

Coils

Mr Lintern started working with the family business in 1974 and did not pay much attention to the coils until the late 1980s, when he took over purchasing for the company. At that time he met Jon Holt who had bought Super Radiator and was looking for new opportunities.

He remembered how Holt and his engineers had issues adapting their coils to meet the 1986 Montreal Protocol for refrigerant standards, as well as meeting Lintern's other growing needs. "They were not the least expensive supplier either," he said. But SRC's aggressive attitude, engineering, production, delivery and quality impressed him to the point where the



Lintern AC system inside a plant control centre

company soon became the exclusive coil provider to Lintern, a situation that remains the same today.

Growth area

Lintern's heavy-duty air-conditioning (A/C) equipment and filters are used in control rooms inside smelting plants and other production facilities to remove harmful gases and particulates from the air. The business has changed from worrying solely about overhead crane operators to computer equipment in control centres and cabinets on the production floor.

"Electronics cannot stand the heat any better than human beings. Electronic enclosures are where our business is growing, because this kind of high tech, heat sensitive equipment won't operate well in temperatures above 100°F (37.7°C)," said Mr Lintern.

The other growth area for Lintern is sales to developing nations. More than half the company's sales in 2008 came from international markets. "We would eventually like our export business to account for about 80% of our business," he said, "because developing nations are building the kinds of plants that need our products."

Lintern systems are used in more than 45 countries, including India, China, Indonesia and others along the Pacific Rim. They also export to Africa, Central and South America, the Middle East, the European Union and UK. It employs 26 people at its headquarters and production facilities in Mentor, USA.

SRC was founded in 1927 and is a \$70M company that employs 400 people at its plant in Phoenix, Arizona. It is headquartered near Minneapolis, Minnesota and has a production site in Richmond, Virginia.

SRC produces condenser, evaporator, steam and other coils for more than 20 industries, including HVAC equipment manufacturers; chemical producers; petroleum operations; pharmaceuticals; pulp and paper companies; food processing, storage and display equipment; and textile makers. ■

Contact

Lintern Corporation, 8685 Station St, Mentor, Ohio, USA, 44060-4380

Tel +1 (440) 255-9333, Email solutions@lintern.com,

Web www.lintern.com

Super Radiator Coils, 104 Peavey Road, Chaska, Minnesota, USA 55318-2324

Tel +1 (800) 394-2645, (952) 556-3330

E-mail mninfo@superradiatorcoils.com, Web www.srcoils.com



Lintern AC system with SRC coils attached