

## Steel Manufacturing Plant



### Project Snapshot

#### Industry

Steel Manufacturing

#### Application

General exhaust for steel manufacturing plant

#### Aerovent Representative

Zimpher Kyser Inc.  
Piqua, Ohio

#### Challenge

Easy access to the fan, easy installation, easy maintenance, corrosion resistance, high reliability

#### Solution

Customized Aerovent DDPRC direct drive, swing out panel fan with special reverse construction and corrosion-resistant epoxy coating

#### Result

A customized fan solution that's easy to access, easily installed and maintained, with high performance characteristics and high reliability

#### Overview

A steel plant located in the Midwest produces carbon, stainless, and electrical steels; hot and cold-rolled steel; as well as aluminum-coated stainless steel. The plant's hot strip mill building is a large facility where slabs of steel are rolled into steel coils. The building is currently ventilated with upblast roof exhaust fans. Access for routine maintenance is difficult, and consequently, the roof exhaust fan bearings are beginning to fail.

Instead of replacing the roof ventilators with newer units, which would have the same accessibility problems, the steel plant decided to place fans through the side of the building instead of along the roof. The plant also wanted to access these fans from the outside of the building to facilitate installation and maintenance. The plan was to procure one fan to prove the concept and purchase more if the fan satisfied the requirements.

The steel plant turned to Scott Zimpher at Zimpher Kyser Inc., an Aerovent representative located in Piqua, Ohio to help select the right fan to satisfy the building's ventilation requirements.

#### Challenge

The steel plant required ventilation fans that could remove fumes, heat, and moisture from the building. "The existing roof ventilators are being scrapped," said Zimpher. "Because of the years of hard usage in a steel mill, they haven't held up to the exposure to heat and moisture. The plant needed a fan that would withstand the rigors of operating in a tough steel mill environment."

The plant originally intended to have a contractor build a box to house a fan and have it hinge away from the outside wall of the hot strip mill building where it would be mounted. Although the box and fan would be nearly 50 feet in the air, a swing-out design would allow personnel to work on the fan from the outside of the building using a lift bucket.

Zimpher explained that Aerovent could custom design a fan to meet their needs. "We can furnish a mounting adapter with a hinged door that will allow access to the fan," Zimpher said. "The plant said 'That's exactly what we want.'"

# CASE STUDY



INSTALLATION TO  
PROVE CONCEPT



MODEL DDPRC  
CUSTOM DESIGNED  
SWINGOUT PANEL FAN



**AEROVENT**   
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After discussing the ventilation, installation and fan requirements, Zimpher concluded that the plant needed a custom-designed swing-out panel fan with a wall box, inlet screen, and outlet damper. The custom design required the damper to be mounted outside the mounting adapter, which needed to be split into two pieces and hinged to allow access. The damper would be located on the outside of the assembly and the fan was designed to be mounted rigidly inside the wall mounted section of the hinged mounting adapter. The entire assembly would be installed about 50 feet high through the side of the building.

The fan was to have few removable parts. However, those parts had to be removable from the outside of the building so the main fan components could be easily accessed using a lift bucket. Other fan requirements included a direct drive motor, heavy duty construction, corrosion resistance, and easy installation.

## Solution

Zimpher Kyser Inc. supplied a DDPRC direct-drive, reverse-construction panel fan from Aerovent. "Reverse construction means that the propeller is mounted to the outside of the fan assembly," Zimpher said. "The main reason for choosing this fan is access. They can work on this fan from outside the building. When they lost motors on the roof ventilators, the only way they could get them off the roof was by helicopter and that was very expensive."

The 48-inch 5HP fan exhausts 35,000 CFM of air at 0.125-inch static pressure, which allows for the mounting adapter and louvers. The heavy duty fan has a solid cast aluminum propeller, and a corrosion resistant epoxy coating to withstand the harsh conditions.

## Results & Benefits

Aerovent provided a custom-designed swing-out panel fan to help ventilate the steel plant's hot strip mill building. Zimpher worked with the company and their installing contractor to custom design a fan solution to satisfy the ventilation requirements while overcoming the accessibility issue. The plant can now access the new fan to perform preventive maintenance or make repairs if they become necessary.

In addition to reliability, easy access, and ease of installation, the company wanted a fan that's easy to maintain. "They also wanted the fan to have a direct drive configuration," Zimpher said. "There's no belt, sheaves, or extra bearings to worry about with this fan. Combining that with the all-welded solid construction and solid cast aluminum propeller makes this the best type of fan for this application."

Zimpher recognized the need for what the plant wanted to accomplish. And Aerovent was open to building what the customer needed. "Our biggest advantage over other fan companies is that Aerovent is open to building fans for special applications," said Zimpher. "Being adaptable to customers' needs pays dividends later on. People appreciate that."

The plant is very happy with the fan from Aerovent because it's the right fan for the application and they have ordered several more. The plan is to install nearly 40 fans like this one to accomplish the required amount of ventilation needed for this application. "Aerovent is one of the only fan companies that would say, 'Yes, we can build the mounting adapter like that. We can do that.' They designed it within a couple of weeks without having done anything like that before. Aerovent pulled it off. Many other fan companies don't do specials anymore. That's our ace in the hole. Aerovent is willing to consider specials. It's their niche it always has been."