



MINING AND SMELTING

Overview

When a mining and smelting company in Canada embarked on a massive project to upgrade its mill, the plan included a new 38,000 square-foot building for its state-of-the-art flotation operation. Flotation is an ore separation process designed to improve nickel recovery, and requires adequate exhaust ventilation to remove dust and vapors from working areas. The most common way to do this is utilizing roof exhaust ventilation. However, there's a lot more to this application than merely installing fans on the roof of a building.

Hatch – a well-known engineering firm that supplies services to the mining, metallurgical, energy and infrastructure industries – was contracted to provide the construction management on this project. Hatch had worked with EFI Concepts, a Twin City Fan representative, on previous projects, and was aware of the HVAC firm's excellent track record. Hatch knew that by partnering with EFI Concepts and the TCF team, not only would they get well-built, high-quality fans, they would also be able to satisfy the unique requirements of this demanding application.

Challenges

More thought went into the design of the new flotation building than just calculating volume, meeting indoor air quality and volume exchange requirements, and complying with a plethora of codes and standards. Other challenges that raised the bar on fan selection criteria included:

- Designing a direct drive swingout fan for easy access
- Heavy-duty construction
- Corrosion resistance
- Low-noise operation

Although these criteria seemed rather demanding, Twin City Fan was uniquely qualified to deliver the solution – with ease.

Solution

EFI Concepts supplied nine 54-inch UBVS swingout fans from Twin City Fan, each weighing more than a ton. The original specification asked for a tilt-out roof ventilator, but tilting a fan of this size is very difficult and generally requires a crane. Another problem with some roof ventilators is access, and finding a safe way to work on them is often a challenge.

One of the many advantages the UBVS product offers is heavy-duty construction. Using the swingout design meant that these fans didn't need to tilt-out. Because these fans are extremely heavy, the customer wanted easy access to the motor and fan wheel. "These fans are designed so that the motor and fan wheel swing out so someone can service them very easily," said Dave Carpenter, PEng, EFI Concepts. "Although the swingout fan is a special, it's something that Twin City does quite well."

Quick Facts

Industry

Mining and Smelting

Application

Roof Ventilation

Customer

Large Mining and Smelting Company in Canada

Twin City Fan Representatives

Dave Carpenter P. Eng.
EFI Concepts, Toronto, ON, Canada

Engineering Firm

Hatch, Mississauga, ON, Canada

Challenge

Providing easy access for cleaning and maintenance; reliable, heavy-duty construction; corrosion protection; and low-noise operation

Solution

Twin City Fan & Blower's 54-inch UBVS swingout fans

Result

The facility is properly ventilated, the noise level is low, and the fans operate efficiently and reliably with minimal maintenance requirements

CASE STUDY



Model UBVS Swingout Upblast Power Roof Ventilator

Wheel Sizes
12" to 54"

Performance
Airflow to 80,000 CFM
Static pressure to 7" w.g.

Twin City Fan & Blower has the engineering and manufacturing capabilities to accommodate virtually every conceivable application. We have completed thousands of successful installations worldwide and have a proven track record for tackling the most technically complex and unique applications.

We separate ourselves from the competition by offering a greater breadth of products and quickly adapting to the needs of our customers. This is truly a testament to our company philosophy – respond to the needs of the customer, the first time, every time.



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Cleaning and maintenance were further simplified because the wheel was mounted directly on the motor shaft. “The standard fan for this service would be belt driven,” said Carpenter. “There’s more that could go wrong when there are more components.”

In keeping with the heavy-duty fan design and construction, each of these UBVS swingout fans had a special heavy-duty 7.5 HP motor built to IEEE 841 specifications. IEEE-841 identifies the recommended practice for chemical industry severe duty squirrel-cage induction motors in order to enhance their reliability and maintainability.

The customer’s specification also included a special coating requirement. In the past, the area in which the smelting facility is located experienced SO₂ in the airstream. Although SO₂ levels have been greatly reduced from what they were, the customer required a sophisticated coating system to protect the fans from corrosion.

As a result, the fans were constructed using heavy gauge mild steel and protected with a 13-mil-thick coating of Carbolite Plasite 7122L, a cross-linked epoxy phenolic.

Another challenge was meeting the facility’s low-noise level requirement. The sound pressure level was not to exceed 80 dBA at a distance of 3 feet. That level is quite low for this size fan. TCF met the challenge by using a relatively low fan speed of 720 RPM.

Results and Benefits

The fans are designed to – and will – run 24/7. Because they’re equipped with heavy-duty IEEE 841 motors and direct-drive fan wheels, the customer shouldn’t have to touch them for many years, with the exception of basic maintenance. In the unlikely event there would be a failure, the swingout fans are designed for easy access and safe servicing. There are also extended lube lines that run to the inside of the fans so maintenance personnel can grease the units without having to open them.

As a result of Twin City Fan’s flexibility in meeting the customer’s special requirements, they can operate their new flotation facility knowing that the building is properly ventilated, the noise level is low, and the fans will operate efficiently and reliably with minimal maintenance requirements.

“I’m not sure anybody else would have quoted a fan like this,” said Carpenter. “A lot of other fan suppliers tend to do more conventional fans, where these swingout fans are really quite a niche that Twin City has developed.”

That’s because when faced with challenges such as these, Twin City Fan is uniquely qualified to provide efficient, reliable solutions.