

# Power Generation



**There's no room for complexity or error when operating a power plant—and that applies to its ventilation equipment as well.**

Power generation is a complex process. It takes an act of congress (figuratively and literally) to build, operate and maintain a power generation facility. Ventilation equipment should not add to this complexity. Rather, the equipment should be tough enough to avoid operational failure and to minimize installation and repair work. The rugged, high-performance fans Aerovent provided to a state-of-the-art hybrid energy center, were ideal for the task. Aerovent was chosen for this project because of their reputation for building large custom fans for extreme industrial applications.



Hybrid Energy Center Construction



Stator Installation

## THE CHALLENGE

The energy center's primary requirement was that its chosen vendor be able to design and build a set of the most rugged, efficient roof ventilators within budget. Most roof ventilator fans last between 10 and 20 years when properly maintained. Because of the permits and cost involved in performing maintenance work on the roof of a power plant, they wanted their fans to have a longer life span (up to 40 years). This lifespan requirement meant that the fans had to be constructed using industrial grade materials and components.

## THE AEROVENT SOLUTION

Aerovent's solution was to build twenty-six 96" diameter Tu-Way roof ventilators, driven by premium-efficient severe-duty motors. The energy center wanted the larger-diameter fans to reduce the total number of roof openings, thereby reducing construction costs and the risk of future leakage. Aerovent's experience with custom-manufacturing large roof ventilator fans made it the perfect choice. To ensure the fans' ruggedness yet keep them lighter-weight for rooftop placement, most parts were made out of galvaneal, a special paintable metal dipped in molten zinc. A protective coating was applied on top of the painted galvaneal surface to make it even more corrosion resistant.

### Aerovent Tu-Way™ 96" Roof Ventilators



#### Performance

airflow from 4,265 to 96,200 CFM  
Static pressure to .5" w.g.

#### Manufactured Sizes

24" to 72" wheel diameters (standard)  
up to 96" wheel diameters (custom)

## THE CHALLENGE

Another important requirement of the power company was to achieve 128,000 CFM exhaust flow, along with the ability to run the fans in supply mode as well. The high CFM was required to keep the cavernous turbine and boiler buildings tolerable for workers during the summer months. In the event of air contamination or any other hazard, the power plant needs to be able to reverse the fans in a hurry in order to supply fresh air into the buildings.

## THE AEROVENT SOLUTION

Aerovent's fan propellers provide equal airflow in both directions. Other companies' fans have a standard-exhaust one-direction propeller and are run backwards for the supply mode, producing about 40 percent of exhaust-mode airflow. Aerovent fans produce 100 percent airflow in either direction. Aerovent also produced an integrated electrical control system guaranteed to work with its fans instead of the power plant having to acquire a separate system from another source. The system features an onboard starter-disconnect switch, which boosts the motor's start and can be easily disconnected.

## THE CHALLENGE

Fire safety is a challenge in any environment, and especially so in a power plant. In case of a fire, the first priority is to ensure the safety of employees. Another goal is to be able to salvage expensive equipment in the building. With ventilation fans, if the motor fails during a fire, it is more beneficial if the fan's dampers automatically fail in the "open" position, and allow smoke to escape.

## THE AEROVENT SOLUTION

Aerovent's expertise in custom-building fans for complex applications, like this energy center, allowed them to design and construct a special fire damper for the fans. When the motorized damper is activated, a metal linkage arm attached to the damper blades moves to open or close the damper. Aerovent's custom-made damper features a fusible linkage arm with a "soft metal" section in the link. When temperatures reach 212 degrees (as in the case of a fire), the soft metal plate fails, breaking the linkage, and a heavy counter weight swings the damper into the "open" position.

## Features Overview

- ▶ Aerovent custom-built twenty-six 96"-dia. Tu-Way roof ventilators with 30HP premium-efficient severe-duty motors to ensure the rugged fans could last up to 40 years.
- ▶ Hoods and plenums were insulated with fiberglass batting, then covered with a perforated galvanized sheet, to keep sound at a healthy dBA.
- ▶ Fan parts were made out of galvaneal, a special paintable metal dipped in molten zinc. This ensured fans were corrosion resistant, yet lightweight.
- ▶ Fan propellers were designed to provide 100% airflow in both exhaust and supply modes (in either direction) along with a special integrated electrical control system.
- ▶ Specially designed fire damper/fusible link ensures that in a fire, fan motors fail in the "open" position, allowing smoke to escape and damage to be controlled.

## THE INDUSTRIAL CHOICE

Aerovent is one of the only manufacturers with the engineering capability and fabrication resources to accommodate this type of demanding ventilating project. In addition to the demand for high-performance fans, this project also included significant documentation requirements such as weld certifications, dye penetrate testing of the propellers, damper fail tests, and witness testing of the fans. From design to shipment, all work was performed on schedule and the customer was impressed with the construction and installation. Aerovent's knowledge and expertise in accommodating each customer's unique situation has made them a leader in its field and produced an impressive 85-year track record.



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