TITAN

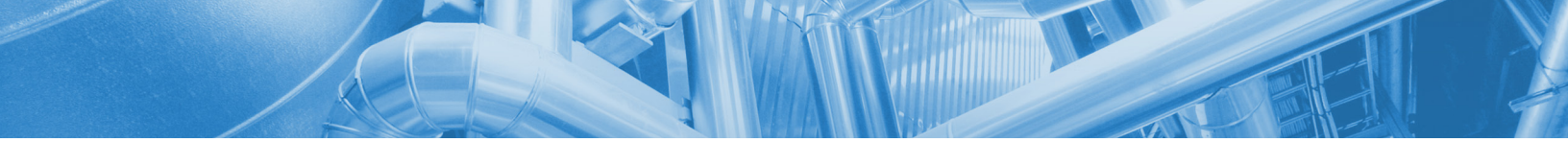
COMMERCIAL & INDUSTRIAL HVAC EQUIPMENT

CASE STUDY:

Implementation and Transformation for a Manufacturing Facility

Terry Kette of Gundlach Sheet Metal Works, Inc. says this about Titan Air:

"It is easy to be a great manufacturer when things go well. The proof of a great manufacturer is when things don't go well. And all too often the unexpected arises. We chose Titan Air for this project since we found Titan Air to be helpful and responsive."



Company & Background

Terry Kette at Gundlach Sheet Metal Works, Inc. provided this technical information for a recently completed project where Titan Air manufactured multiple makeup air units that were integrated into the building control system of a facility owned by a leading manufacturer of components for the automotive industry. They are a full-service automotive parts supplier of car hood hinges, brake components, car and truck frames, axles and many other car and truck parts.

The Situation

After two major robotic truck chassis welding production lines were added to one of their manufacturing plants using containment curtains (in lieu of local exhaust), the building exhaust now exceeded the air that the existing makeup air units were able to provide.

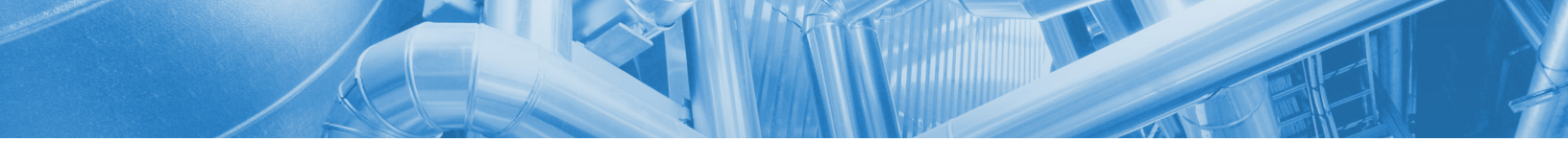
What We Helped Them Discover

Working together, Gundlach Sheet Metal Works, Air Control Products and Titan Air completed an assessment of their current HVAC systems in a plant that manufactures truck chassis. There are 4 main areas to this plant (over and above the adjoining original building). They are:

- E-Coat finishing line with independent makeup air and pressure control (four existing units).
- West Building that houses two robotic chassis lines with (2) 100% outdoor air units and (2) 80/20 units.
- East Building that houses small welding and assembly that feeds the two production lines with (1) existing 80/20 unit.
- New warehouse and light welding addition.

The assessment allowed us to discover:

- When the plant was built in 2001, eleven roof mounted HVAC units manufactured by others were installed. These units ran on a Johnson Controls Metasys N2 bus control system.
- The existing roof makeup air units were installed on a pre-engineered building with a standing seam roof and required helicopter placement. We deemed it impractical to reinforce the roof system for large makeup air units.
- Three 80/20 units are modulated to maintain plant pressure control of three large areas.
- The remainder of the units were 100% outdoor air units that were staged on/off with plant operation and to offset plant exhaust.
- The final building exhaust system had increased to 548,000 CFM. The 2001 makeup capacity was only 280,000 CFM.



What We Did

Since we had limited space for additional units we chose to build discharge plenums using perforated panels to allow relatively draft-less air in the building. We could not have high velocity air motion in most areas due to the customer's manufacturing requirements.

We chose to equip all new units with VFDs for the following reasons:

- With shop fabricated discharge plenums utilizing perforated metal, we knew that the system effect on unit blowers would be unpredictable. We believed this would be far easier and economical to trim fan speeds in lieu of large sheave changes.
- As plant pressures rise and fall with variable exhaust, we decided to stage on/off the new Titan Air units. Having VFDs in all of them, we would also have a soft start for each unit.

In addition, we implemented the following:

- We kept the eleven existing roof mounted units. These units all remained the same.
- We added an additional 290,000 CFM of heated makeup air.
- Lack of space around the building prohibited the use of vertical outdoor units. Instead, we installed an array of 30,000 CFM units suspended from the bar joists where space permitted.
- In the new building for warehouse space and light welding, we installed an 80,000 CFM roof-mounted 80/20 style unit for heating and variable outdoor air.
- We added (5) Titan 100% outdoor air 30,000 CFM units to the West Building.
- We added (2) Titan 100% outdoor air 30,000 CFM units to the East Building.

The Results

A large manufacturing facility must have the proper volume of makeup air to function effectively. Those energy costs are part of the costs of production. There can be energy savings by using makeup air only when you need it, and shutting it down or scaling it down to match variable exhausts.

When Gundlach removed all the Johnson Controls system controllers on the existing units and added control panels to all of the new Titan units, a seamless control system was achieved providing the following:

- Staging on/off all units for Occupied Mode/Unoccupied mode and maintaining area by area plant pressure control.
- Graphical interface for user navigation.
- All older existing units, Titan Air new units, precision Coordinate Measuring Machine rooms, human comfort office/locker/break rooms are all on one control system platform.
- Email alerts from equipment or control malfunctions.
- Change or check filter alerts.
- All control points and programming can be changed or modified both locally and remotely.

Terry Kette stated. "It was a pleasure working with Titan Air to ensure that the units were manufactured to integrate with our control system and meet the requirements of our customer."

About Titan Air

Established in 1983, Titan Air is a family owned and operated company that has been providing industrial and commercial HVAC systems for over 30 years. As a leading provider of industrial and commercial HVAC, our systems reliably improve indoor environmental quality.

Titan Air began providing direct-fired, makeup air units to the industrial painting and finishing market. In 1987, we diversified our product line and entered the HVAC market selling through manufacturer's representatives. We quickly excelled in both of these market areas and have become a widely respected manufacturer of custom heating, ventilation, and air conditioning equipment.

Located in Osseo, Wisconsin (approximately two hours east of Minneapolis/St. Paul), our manufacturing area is nearly 70,000 square feet and has land for future growth. We are a socially and environmentally responsible company.

Titan Air strives to be the best, build the best, employ the best, and lead the rest.

For additional information about Titan Air, call 715.597.2050, email sales@titan-air.com or visit http://www.titan-air.com.

Our Partners on this Project

Gundlach Sheet Metal Works, Inc. • Sandusky, Ohio
Air Control Products • Broadview Heights, Ohio