CASE STUDY

Vortex Cooling Ensures Cabinet Humidity and Temperature Remain Low

Titan Sales and Consulting was established in 2002 in a small garage in Elkhart, Indiana, by Tobin Goode. Now Titan is a market leader in the adhesives, bonding, and sealing markets and has grown into a 2.4 million cubic foot corporate facility with 25 associates. They also are a converter of foam tapes and other bonding materials.

The Challenge

Titan purchases large "logs" of foam tape with a self-adhesive backing and slits them into narrower widths to meet their customer's requirements. A water-based mist is used as a lubricant on the slitting machines. The controls for the slitting machines had fans installed to keep the electronics cool. In the summer months, the fans simply pulled hot and humid mist-laden air into the control panels causing the A/C drives and power supplies to short out. This forced production to stop and deliveries to be delayed until the controls could be repaired.

The Solution

Jeff, the systems and process manager at Titan, contacted Vortec and spoke with an application engineer. Together they determined the total heat load in the enclosure based on Jeff's inputs and compressed air conditions.

The Vortex A/C 7715 NEMA 4/4X enclosure cooler was the best solution, a model that uses 15 scfm of compressed air to produce 900 btuh of cooling and required no electricity to operate. A built-in mechanical thermostat keeps the enclosure temperature between 80 and 90°F (27 to 32°C). In addition to cooling the panel, the 7715 also provides slight pressurization when operating to keep humid air, mist, and other contaminants out of the enclosure and from ruining the electronics inside.

VORTEC

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For more information on Vortex A/C, click here or scan this QR code with your smart phone.

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The Results

Jeff purchased the Vortex A/C 7715 and installed it on the first slitting machine control. Only a 1-1/2” knockout hole (a 1-15/16” or 49 mm diameter hole) in the enclosure was required to mount the Vortex A/C, making the installation quick and easy. He removed the existing fan from the control and blocked off the openings. Although the 7715 is self-venting (to prevent over-pressurization), Jeff installed a secondary vent to monitor the air’s temperature and humidity exiting the enclosure. **The results were immediate: the enclosure’s relative humidity dropped from 55% to 10%, and the temperature stayed between 78 to 82°F (26 to 28°C).** Since Jeff installed the first 7715, he has ordered six more to install on Titan’s other control panels.

How the Vortex A/C Works

The Vortex A/C uses compressed air and vortex tube technology to create clean, dry, low-pressure cold air to cool the electronic enclosure. The Vortex A/C utilizes a built-in non-adjustable mechanical thermostat to monitor the temperature inside an enclosure. The thermostat regulates an air valve to the vortex cooler to keep the enclosure’s temperature between 80 and 90°F (27 to 32°C). There are vents built into the Vortex A/C that vent the cooling air out of the enclosure after it has lost its refrigeration (so that the enclosure is not over-pressurized). The cold air pressurizes the enclosure slightly to keep any contaminants or humidity out of the enclosure. All models can be mounted on the top or side of an enclosure and install in a matter of minutes.

All Vortex A/C models are UL Listed and rated UL Type 4/4X. They are available in cooling capacities from 900 to 5000 btuh (263 to 1465 watts). Vortec also offers UL Type 12, HazLoc, and ATEX enclosure coolers.

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