MANUFACTURING

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ACCIONA OPENS TURBINE ASSEMBLY PLANT IN BRAZIL

Facility capable of producing up to 200 units annually

Acciona Windpower

Acciona Windpower, the Acciona subsidiary dedicated to the design, manufacture, and sale of wind turbines, has opened a turbine assembly plant at Simões Filho, Bahia, Brazil. The facility has already producing all the 3 MW machines for the Brazilian market.

An opening ceremony commemorating the event was presided by the Governor of Bahia, Rui Costa dos Santos, who was accompanied by State Secretary for Industry, Trade and Mines, James Correia. ACCIONA was represented by Group President José Manuel Entrecanales, the CEO of the Energy Division, Rafael Mateo, and the Executive Director of ACCIONA Windpower, José Luis Blanco, together with senior managers in Brazil.

The Simões Filho plant has a production capacity of 100 turbines per year (300 MW), which can be increased to 200 units (600 MW) depending on demand. The facility has created 150 direct jobs and around another 500 indirect jobs, and it manufactures the hubs that ACCIONA Windpower previously produced at a location very close to the present one.

"This plant shows our industrial commitment to Brazil, today becoming a reality in Bahia, and is a testimony to the great reception given to our most advanced product — the 3 MW wind turbine — from wind power developers in the country," Entrecanales said at the opening ceremony.

The entry into service of this plant, which assembled its first turbine in December 2014, is a direct result of the positive reception given to the AW3000 (3 MW) in the Brazilian market, evidence of its adaptation to the wind conditions of the country and its high level of competiveness.

Since it started marketing turbines in Brazil in 2012, ACCIONA Windpower has signed contracts for 1,020 MW. Over the period, the company has fulfilled the requirements for the gradual production in Brazil of components established by the BNDES (National Economic and Social Development Bank) under the FINAME regulations. This process enables wind power developers to gain access to finance on more favorable terms than those offered in the market.

At present, there are two wind power complexes in service in Brazil, with 3-MW turbines from AWP totaling 210 MW. Another two are under construction, totaling 201 MW, and those pending implementation represent 609 MW.

All these contracts have been signed for turbines with rotor diameters of 116 and 125 meters mounted on 100- or 120-meter-high concrete towers. The company is now supplying machines with a rotor diameter of 132 meters and a tower height of 137.5 meters.

In addition to the new wind turbine manufacturing facility, the company has a plant to manufacture sections for concrete towers located at Areia Branca (Rio Grande do Norte).

ACCIONA Windpower has a workforce of 288 people in Brazil at present. The company's operations have created (or consolidated) more than 1,000 direct and indirect jobs in the country.

The ACCIONA Group has been present in Brazil since 1996. It has carried out major infrastructures projects, among them part of the Metros of São Paulo and Fortaleza, the Mario Covas ring road around São Paulo, the extension and concession of the BR-393/RJ highway in Rio de Janeiro and the installation of a wastewater treatment plant and pipe network in São Gonzalo.

— Source: Acciona Windpower

Optimal performance from thermal management products

Optimal performance from thermal management products

By Gary Steiger,
STEGO, Inc.

Heating and cooling devices in enclosures are designed to protect electrical and electronic components from low and high temperatures, as well as moisture. However, even with the appropriate equipment and controls, problems may arise due to incorrect positioning within the cabinet.

Heating

As the requirement of heaters for the prevention of condensation formation becomes more widely acknowledged, engineers and design teams must consider the equipment placement in an enclosure along with the devices they are intended to protect. It is not uncommon to find systems added after the fact, fitted into whatever space remained. While this may be the only solution available, it could potentially be the cause of other problems such as creating "hot spots" or "heat nests" near temperature sensitive electronics.

Ideally, most heaters will perform optimally when mounted near the bottom of an enclosure and used in conjunction with a separate controller such as a thermostat and/or hygrostat. With the controller located in an area of the cabinet that is representative of the average temperature or humidity requirement, the heater should then be placed in a position near the bottom but not directly beneath the controller (see Ill. 1). This placement will ensure that the controller is not influenced by direct heat from the heater.

For smaller areas such as shown in Ill. 1, convection heaters will generally provide adequate heating power to maintain temperature and humidity control. For example, a 36"x 24"x 24" free-standing, insulated stainless steel enclosure with a desired interior temperature of 45°F with an ambient temperature of 25°F will require a 100W heater:

Power (W) = (enclosure surf. area) x (delta T) x (heat transmission coefficient)

= (28.8 sq. ft) x (11.1 K) x (0.325 W/sq.ft K)

= 104W

In the case of Ill. 2 shown below, with all other parameters remaining the same, the height has been increased to 72" thereby increasing both the air volume and the surface area. Accordingly, the required heating power has also increased:

Power (W) = (encl. surf. area) x (delta T) x (heat transmission coefficient)

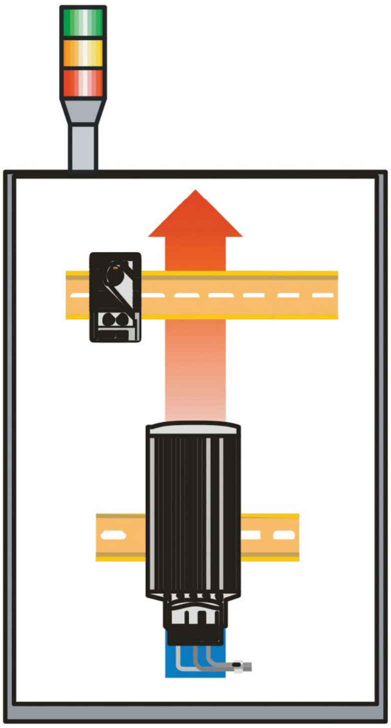
= (50.4 sq. ft) x (11.1 K) x (0.325 W/sq.ft K)

= 182W

For larger cabinets with greater heating power requirements, convection heaters are not a practical solution. As Ill. 2 shows, the most effective heat distribution is accomplished by a fan heater with greater air circulation to ensure rapid and efficient control of the temperature and/or humidity.

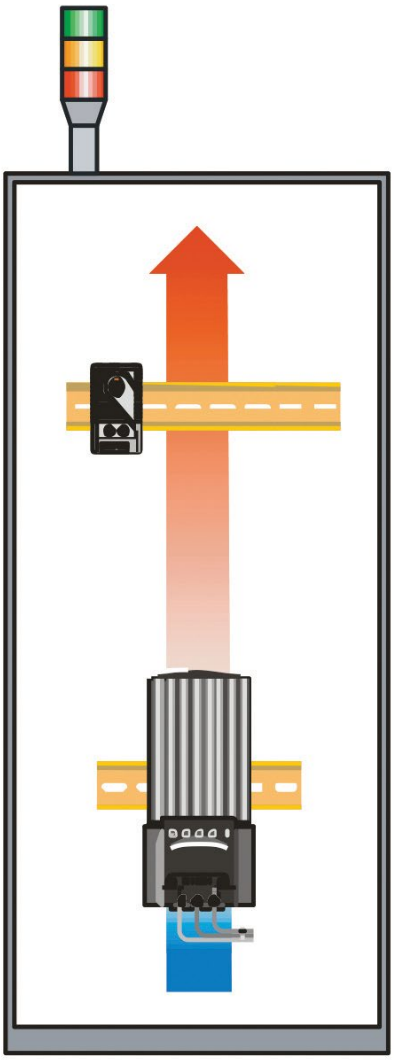
However, as mentioned previously, space for a tall heater is not always available. Packing densities have increased as more equipment is designed into smaller spaces. In the case of the enclosure shown in Ill. 1, only 100W of heating power is required, but as shown below in Ill. 3, the high packing density limits the available space for a convection heater.

The alternative is a compact fan heater positioned to provide adequate heat distribution throughout the cabinet. The position of the controller can vary depending on the air flow and temperature gradient, providing that it is not impacted by direct heat.



Ill. 1

In any circumstance where a heater is required, the location of all other equipment relative to a heater should be carefully considered. Most heater manufacturers recommend a minimum distance of 2" (50 mm) from components inside an enclosure. However, the temperature sensitivity of each component should be assessed along with the heater temperature profile to ensure no damage will occur.

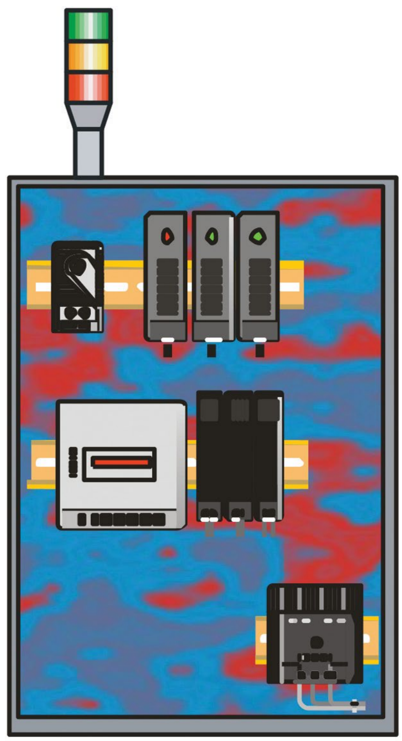


Ill. 2

Cooling

Enclosure cooling solutions range from louver plates to heat exchangers and high performance air conditioning systems. In all cases, the intent is to remove excess heat from the cabinet interior. Whether naturally or mechanically achieved, the basic principle of heat rising is utilized.

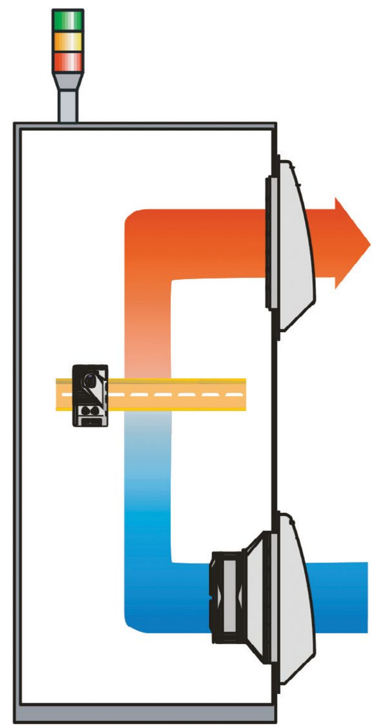
One common and simple method is by using forced air ventilation, which is most effectively achieved with filter fans. Since outside air is



Ill. 3

introduced into a clean sealed environment, high efficiency filters are required to maintain that integrity. An example of a typical layout is shown in Ill. 4.

This arrangement with the filter fan (air intake) at the bottom and the exhaust filter near the top is highly effective by using cooler ambient air to displace the warmer air inside the enclosure. The exhaust filter is typically mounted as close to the top of the cabinet as possible to take advantage of natural convection forces, and should also be located as far as possible from any heat producing components. If designed properly, the air path created by the filter fan system will pass through critical areas that are to be cooled, allowing for maximum cooling efficiency. Ideally, a control thermostat should be located in one of the critical areas where it will turn the fan on and off when



Ill. 4

temperature set points are reached.

Many other arrangements are possible, even so far as letting ventilation occur naturally. One such system would allow for passive cooling by letting the warmer air escape through a roof-mounted vent. Again, the key is that cooler air is used for displacement, so an intake filter would be required near the bottom of the cabinet.

Conclusion

Designing the layout of cabinets and enclosures that house sensitive electronic components is a challenging task. While it may seem a less important consideration than many other aspects of proper control system design, the suitable placement of heating and/or cooling components can have a major impact on system operations. Following these simple guidelines will help ensure system functionality and long service life.

PRODUCT

LAPP INTRODUCES DUAL VOLTAGE-RATED, FLEXIBLE VFD CABLES

The Lapp Group's new ÖLFLEX® VFD 2XL, UL TC-ER rated motor cable is a robust, oil-resistant shielded design for use with variable frequency drives.

Also available with a pair for brake or temperature, the ÖLFLEX VFD 2XL comes with XLPE (plus) insulation and a phthalate-free TPE outer jacket that gives the cable maximum flexibility, low capacitance and flame-retardant properties. ÖLFLEX® VFD 2XL is dual rated for applications ranging from 600 to 2000 volts, which allows a single cable to serve in a wide range of applications.

The ÖLFLEX VFD 2XL features a specially-formulated thermoplastic elastomer jacket and conductors made from finely stranded tinned copper. Its cross-linked polyethylene insulation provides superior electrical properties and allows the cable to withstand heat generated by overcurrent conditions common with VFD's. Shielding for the ÖLFLEX VFD 2XL series includes barrier tape, triple layer foil tape and tinned copper braid.

The motor cable has a test voltage of 6000 volts and minimum bend radius of 7.5 times the cable diameter. Ideal applications include VFD drive and motor connections for pumps, compressors, conveyors, elevators, extruders, pressers and HVAC especially in industrial environments.

A brochure with detailed, technical information on ÖLFLEX® VFD 2XL is available at www.lappusa.com/pdf/vfdbrochure.pdf.