Keep a cool head: StarragHeckert relies on thermal management of enclosures from Pfannenberg

Highest machine availability through innovative condensate management

Hamburg, January 2012 - In production and fabrication, machine availability is fundamental. StarragHeckert - SIP, an internationally active Swiss industrial company specializing in machining centers knows these requirements well. “Precision and productivity - those are the decisive factors that our SPC machining centers from SIP must fulfill. As well as quick set-up and short tooling time, the efficient processing of parts and the shortest of “chip-to-chip times” - that is what is increasingly important today”, say Jürg Peter, StarragHeckert Marketing Director. The SPC Series SIP (Super-Precision Center) is conceptualized for the horizontal production of super precise parts. They are especially utilized for fine drilling and milling of holes, edges and surfaces. Here, the control systems in the enclosures of the system require special attention - they are the heart and provide for ensuring that everything runs. Therefore, a reliable, thought-through thermal management of an enclosure is of great importance to the machine availability.

Four-fold protection against condensation
Condensation development has long been a special challenge in thermal management of enclosures. The penetrating condensation damages the sensitive control units of the enclosure and paralyzes fabrication and production processes. Cost intensive downtimes threaten. That’s why StarragHeckert relies on the new top mount cooling units from Pfannenberg. The company located in Hamburg, specializing in thermal management of enclosures and signaling technology provides for four-fold protection with its DTT top mount cooling unit due to the optimal, patented Pfannenberg condensation management. “Our SPC Series achieves the requirements of precision machine construction and air transport exactly due to its flexible and compact machine concept, as well as its super precision and efficiency. Among other things, this is achieved with reliable thermal management of
enclosures”, adds Jürg Peter. A very good air circulation in the enclosures of SPC machining centers is necessary to avoid hot spots. Additionally, a uniform temperature level must be ensured for all enclosure assemblies. Pfannenberg achieves this by foregoing air ducts. "In conventional cooling units, cold air and warm enclosure air mix on the outer surface of the air guiding ducts. That is when there is a risk of condensation development in the enclosure”, explains Rudolf Görz, Sales Director, Pfannenberg Germany. Through the omission of air ducts, there is simultaneously a respective hardware and installation cost advantage, as well as a space requirement that no longer needs to be kept free. Instead, the company uses high performance fans, which increase the speed of the cold air supply. In this manner, a high flow speed of air is achieved and thus, the entire enclosure is cooled. The SPC Series enclosure, which is comparatively high at 2.2 meters, is cooled safely down to the electrical components that are located in the bottom of the enclosure due to the excellent air flow. A constant cooling performance and thus, better energy efficiency is achieved utilizing the high performance fans.

In conventional units, a portion of the condensation that develops in the top mount cooling unit flows to the enclosure below. In order to avoid this, Pfannenberg arranges the cooling unit circuits oppositely. That means, the cold, internal cooling circuit is above the external warm cooling circuit and accumulating condensation is safely guided to the integrated condensation evaporator. The cold air that is blown into the enclosure is just as problematic because condensation develops during the transmission through the warmed area of the cooling unit. This can penetrate, together with the cold air, into the enclosure by means of droplets swirling around. To work against this, Pfannenberg has adjusted the arrangement of the DTT Series. Therefore, the air flow and the evaporator are spatially separated from each other in order to guarantee the avoidance of swirling droplets. Condensation water also often develops because usually the lower cold side of the cooling unit borders the upper warm side of the enclosure. That is how condensation forms on the ceiling of the enclosure and drops in the interior. To avoid this, Pfannenberg arranges the internal climatic circuit (cold side) above the external climatic circuit (warm side). Thus, a large temperature difference on the contact surface of the DTT with the enclosure is avoided and condensation development is eliminated.

Long service intervals and simple installation
Another thing that speaks for the DTT from Pfannenberg is that the assembly into or on the enclosure doors is eliminated. Thus, the enclosure doors can be opened completely and emergency exit paths are not narrowed due to protruding cooling units. The cooling unit is better accessible when mounted on top and the machining center has a smaller perimeter. “At some of the operating locations, the SPC machining centers are exposed to difficult ambient condition such as high humidity due to cooling oil or oily air. Through the large fin spacing of the condenser of just 3 mm and the high air performance, dirt and dust cannot
settle. Therefore, the service intervals for the DTT are distinctly longer”, says Rudolf Görz. Due to this, the filter mat can be eliminated. However, if the operator values this, a metal filter mat or Pfannenberg’s patented folded filter mat may be utilized. The replacement of the mat is simple: With one single movement, the front cover is opened and the filter mat can be replaced. And: “The simple quick assembly concept of the DTT ensures a low installation expenditure and good changeability in case of failure. Only one cut-out is necessary for fastening the cooling unit. Drilling is not necessary”, says Jürg Peter. Therefore, there are immense cost advantages during maintenance or replacement of the cooling unit, as well as transport of the enclosure. An included seal ensures the protective class safety, as well as high quality and time-saving installation. Furthermore, access to the electronics and fan motor is arranged in an especially user-friendly manner. The most important components are easily accessed from the service cover on the front of the unit. In comparison to conventional units that have a hood that is removed towards the top, Pfannenberg’s hood can be pulled off completely from the front. Thus, access to all components in unfavorable space conditions is unproblematic.

Save energy - sink costs
The top mount cooling unit is available in three sizes and six cooling performances (500 W to 4 KW). Energy savings of up to 20% is possible with the DTT because efficient and lighter components are utilized. Excellent energy efficiency is achieved because Pfannenberg foregoes the use of air flow channels for the top mount cooling units and thus, an air performance reduction is ruled out. Additionally, energy is saved with the optional Multi-Controller with an energy saving switch mode. “Another advantage for us is that the cooling units are 400/460V 50/60 Hz compatible. Thus, the device type does not need to be exchanged based on the supply voltage. That is very important to us since the machining centers are in use worldwide”, explains Jürg Peter.

About StarragHeckert
StarragHeckert offers a comprehensive range of technologically highly developed precision milling machines, productivity increasing software packages, engineering and process optimization solutions, as well as a comprehensive assortment of special tools. They supply customers worldwide in the segments of air transportation, energy production, transportation and precision machine construction. The company possesses almost 150 years of experience with innovative technology, which allows its customers to manufacture more productively, efficiently, more precise and in a more advanced manner. StarragHeckert possesses production sites in Rorschacherberg/Switzerland (Starrag), Chemnitz/Germany (Heckert), Geneva/Switzerland (SIP) and Haddenham/UK (TTL), as well as sales and service bases in China (Shanghai and Beijing), the USA (Cincinnati, Dallas and Seattle), Canada, France, Great Britain, India, Russia and Turkey. The StarragHeckert stocks are listed on SIX, the Swiss stock exchange (symbol: STGN).

About Pfannenberg

The Pfannenberg GmbH is a medium sized company providing innovative and high quality electronics for industrial markets. With its headquarters in Hamburg and other locations in England, France, Italy, USA, Singapore, China and Russia, the company ranks among the global players in this industry. The product range includes components and system solutions for thermal management of enclosures, optical and acoustic signaling technology and customized solutions. A special highlight in the Pfannenberg Portfolio is the artistically designed lighting on behalf of architects, designers, urban and regional planners: (www.art-illumination.com).

Further information about Pfannenberg GmbH can be found at http://www.pfannenberg.de

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