

Ambient temperature-dependent set-point shifting

Güntner Motor Management GMM offers a function which reduces operating costs by accurately regulating the minimum condensing temperature.

For years now, people have been talking about energy efficiency and energy savings. However, the popular belief was that the investment costs for refrigeration systems are too high. This is not the case from a long-term perspective, as appropriate measures to optimise individual components can considerably reduce the costs of operating an overall system. Naturally, this applies to control systems too. Güntner Controls has now developed a new function especially for the high-pressure side which shifts the set-point value depending on the ambient temperature.

The efficiency of a refrigeration system depends to a large extent on the condensing temperature. After all, the lower the condensing temperature, the less mechanical compression work is needed. Minimising the electrical load which results from driving the compressor can considerably reduce system operating costs. Optimising the way in which the condensers on the high-pressure side are regulated can have a significant effect here.

In specific cases, e.g. where there are high evaporating temperatures, very small partial loads or condensers with a high electricity consumption, it can be a good idea to shift the condensing set-point value according to the ambient temperature. Güntner Motor Management offers a control function which allows you to do just that.

An example: If the ambient temperature approaches or exceeds the specified condensing set-point value, this value can no longer be achieved. The fans will then run at full speed. This is all well and good when the refrigeration system is operating at full load as the power consumption of the fans is much lower than that of the compressor. If, however, the refrigeration system is operating at partial load, the

balance between the power consumption levels shifts. In this case, the amount of energy required to drive the condenser fans would be disproportionately high.

In a scenario such as this, raising the set-point value in a controlled manner would make it possible to regulate the system again. This would allow the speed of the fans to be reduced during partial-load operation, which in turn would reduce the amount of energy required to drive the fans. The amount of extra energy needed to power the compressor would then be smaller than the amount saved by slowing down the fans.

The Güntner Motor Management GMM menu allows you to set the minimum and maximum values for the ambient temperature. Set-point value shifting is then possible anywhere between these two values. An offset value between the ambient temperature and the set-point value can be freely defined. If, for example, the offset value is set to 5 K, the set-point value must always be 5 K above the ambient temperature. Set-point shifting would therefore begin as soon as the ambient temperature is 0.1°C above the set minimum value.



Temperature shifting for reducing the fan speed in summer and at low refrigerating load

Of course, selecting the right fans helps to protect the environment, too. The environment also benefits from the use of highly efficient condensers with a high energy efficiency rat-



ing – not only because they reduce energy consumption and operating costs but also because they always result in lower levels of noise pollution.