Reliable Refrigeration from the Container.

Low temperature ammonia refrigeration system cools the production process at Nordmark Arzneimittel.

Medium-sized company active throughout the world: Nordmark Arzneimittel GmbH & Co. KG in Uetersen specialises in the manufacture of substances and pharmaceuticals of biological origin. By focusing its activities on this niche market in the pharmaceutical industry, Nordmark has successfully positioned itself at an international level. The company is a world-leader particularly in the manufacture of pancreatin and collagenase.

The refrigeration container: a complete solution for future security

Due to the age of the chiller it was not possible to refurbish the old R22 system at Nordmark; this would have been an unwise choice with regards to the costs - here a new refrigeration solution had to be found. A refrigeration container from ENGIE Refrigeration that completely replaces the R22 refrigeration system as of May 2015 was quickly installed, ensuring safe cooling of the production processes on a permanent basis.

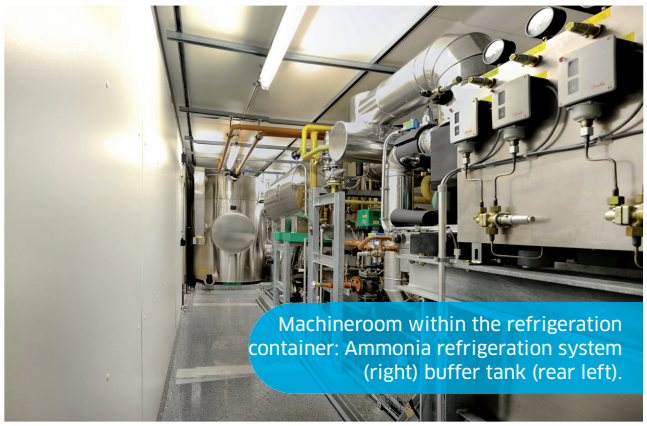
Efficient technology: speed-controlled lowtemperature ammonia refrigeration system with open-flash-economizer and flooded evaporation

The refrigeration container has a refrigeration capacity of 110 kW at the operating point (-26 °C) and consists of several assemblies. The ammonia refrigeration system with open flash economizer and flooded evaporation operates with speed-controlled screw compressors. Due to the extreme temperature difference between evaporation and condensation temperature, this two-stage refrigeration process increases the efficiency of the refrigeration system. The open- flash-economizer further increases the energy efficiency of the refrigeration process. The infinite power control of the compressors also guarantees an optimal adjustment to the refrigeration demand of the production processes at any time.

On the other hand, the container has an integrated brine module including buffer storage. This brine module ensures a hydraulic separation of the refrigeration from the production process and gives Nordmark the possibility to adapt, for instance, its production pumps to the demand without influencing refrigeration.

2 rooms, 3 doors and 1 convincing overall concept

The container consists of two rooms: the machine room and the control room which houses the entire electronics. The gas warning system is also integrated there, as well as a cabinet for the personal protection equipment such as gas masks. The advantage of this 2-room concept is obvious: Persons entering the control room do not need special instructions in dealing with the refrigerant NH_3. This is due to the fact that the machine room can be accessed through a separate door; in addition, there is a double folding door in the rear side for revision purposes.



Machineroom within the refrigeration container: Ammonia refrigeration system (right) buffer tank (rear left).

Legally Compliant and Ready to Use: Refrigeration Container from ENGIE Refrigeration

The chiller is controlled via S7 controller with touch panel which can also take on the visualisation of the supply on the consumer side. The switch cabinet is equipped with an energy measurement that, for instance, can be used to record the efficiency of the refrigeration container.

Control room of the refrigeration container with switch cabinet, gas warning system as well as heating & ventilation.

The completely equipped machine room is in full compliance with the requirements of DIN EN 378. For the customer this means: Nordmark did not have to worry about compliance with the rules; as refrigeration provider, ENGIE Refrigeration took care of this. Only the flow and return lines of the heat exchanger had to be prepared and connected on site. In addition to the space-saving and safe outdoor installation, the container also serves as base for two dry coolers of the energy efficiency class A. They are located in a collection basin which is in compliance with the Water Resources Law. The transfer points for the production as well as supports for the construction of an inspection platform are located on the roof of the container.

A refrigeration system for Nordmark Arzneimittel: challenges and solutions

The Nordmark Arzneimittel GmbH & Co. KG wanted a safe, efficient and turnkey refrigeration system. The space occupied by the old system was to be converted into production area. A container solution was the logical consequence. However, the outdoor installation was a challenge due to limited space - the current container has a special dimension. The brine module, which is the interface between refrigeration and customer process, had to be adjusted to the increased requirements of the pharmaceutical industry; a test run (factory acceptance test) at the operating point at -26 °C prior to delivery was mandatory. Also of interest to the customer: The refrigeration container is eligible for subsidy according to BAFA.

Why Did Nordmark Opt for ENGIE Refrigeration as Partner?

- Convincing refrigeration concept
- Highest energy efficiency thanks to 2-stage refrigeration process
- Turnkey refrigeration system
- Comprehensive technical guidance such as needs analysis, system concept, system construction, hydraulic design, risk assessment, service and maintenance.

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