

Press Release

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Roller defrost system reduces energy costs by 75%

Energy-efficient and reliable operation is essential when using air coolers in cooling applications. Electric defrosting, which is common in deep cooling, generates energy costs that can be reduced by up to 75% with an optimised defrosting system.

During operation of air coolers, frost accumulates on the fins depending on the working temperature difference. Depending on the size of the installed heat exchanger surface, defrosting cycles are therefore required. Energy is consumed for these regularly recurring defrosting cycles with electric heating rods, which often accounts for a significant proportion of the operating costs. Due to the worsening energy price situation, energy-optimised defrost systems are of particular importance. Roller has been working on the energy optimisation of its air coolers for quite some time. In addition to the already introduction of energy-efficient EC fans installed as standard, large heat exchanger surfaces and energy-optimised pipe geometries, Roller has now addressed the issue of defrosting efficiency.

The system was optimised by combining defrosting options into an integrated defrosting concept. A supermarket retailer with more than 4000 stores across Europe is planning to further reduce its energy costs in refrigeration technology. In a calculation model, a commercial deep-freeze evaporator with a cooling capacity of approx. 3 kW achieves an average savings potential of approx. 2.5 kWh per day or 900 kWh per year. With one freezer room per branch, this means that approx. 3.6 million kWh can be saved per year. This corresponds to an annual electricity consumption of about 1000 households. The aim of the Roller defrosting concept is to make the defrosting cycles as infrequent, as short and as efficient as possible in order to reduce the frequency ideally to only one defrosting per day. The cost of the defrosting equipment is amortised after only about 1.5 years.

This energy-efficient defrosting concept is the result of various individual measures, which can only achieve its full savings potential in the interaction of all components.

The proven, aligned Roller pipe system with 12mm fin spacing is used, which provides sufficient surface area as a frost store and, combined with optimally positioned electric heating rods connected in series in aluminium jacket pipes, facilitates the defrosting process. The defrosting process is also supported by the shut-up and defrost dome, which leave the defrosting heat in the cabinet during the defrosting process and make maximum use of it. This also ensures that escaping heat from conventional defrosting processes without a defrosting concept does not have to be removed from the room by additional cooling power, which would further reduce the overall energy efficiency of the system.

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This concept is rounded off by the use of the innovative, pre-installed EVD-ice control system, which consists of an electronic expansion valve and superheat controller and ensures efficient, safe operation with its precise control of the refrigerant flow and optimum charging of the evaporator.

In Roller's own laboratory, the interaction of the optional defrosting components was researched in numerous tests. It was proven that the defrosting efficiency can be increased considerably. With a well-designed system, energy savings of up to 75% can easily be achieved and the defrosting cycles can be reduced to up to one cycle per day.

With this innovation, Roller offers its customers a solution that makes a significant contribution to reducing energy costs and thus an active contribution to climate protection.

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About Walter Roller:

Walter Roller GmbH & Co. is an internationally operating family-owned company in the refrigeration and air conditioning industry. At the head office in Gerlingen near Stuttgart Walter Roller stands for 75 years for the development, production and the selling of high-quality heat exchanger products in the premium segment. Examples of the highly efficient solutions for heating, cooling and ventilation are applications in commercial and industrial refrigeration, air conditioning and process cooling where customized products are of high importance.

Via trade and service partners Walter Roller is present in over 30 countries worldwide. The products which are developed in Germany are as well produced in Bangkok for the Asian market.

The company is led by the acting partner Joachim Reule and managing director Wolfgang Krenn.

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Illustration 1:

Defrost-optimised Roller air cooler concept to reduce defrosting costs by up to 75%.

