



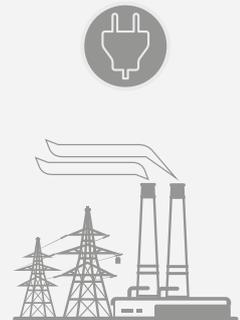
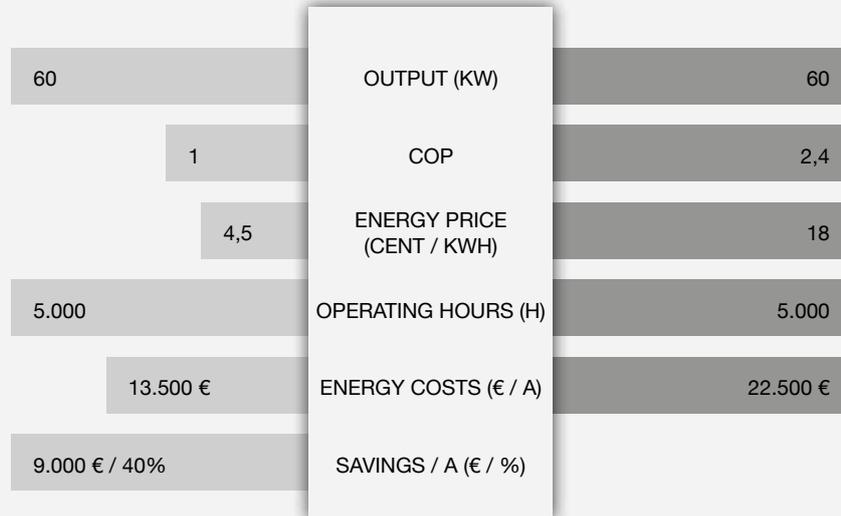
## **THE COOLEST WAY TO SAVE MONEY**

### **CHALLENGE**

#### **FRESH FRUIT - ANYTIME**

Every year, from August at the latest, trailers are pulled by tractors through the region between the Rhine and the Eifel hills, carrying a valuable load: tonnes of fruit – some sweet, some tart, but all of it juicy and crunchy. To ensure that the fruit maintains this consistency until it reaches the shops, local businesses need reliable warehouse refrigeration systems. Up to now, these systems have typically been powered by electricity.

When the Obstgut Margaretenhof fruit farm in the Grafschaft-Oeverich region expanded its operations, the KKV CONCEPT experts were given their first opportunity to provide impressive evidence of the high performance and profitability of gas motor refrigeration systems in this market.



Without taking into consideration the heat recovery unit for defrosting/heating -> potential energy savings of 54% for gas motor refrigeration systems!

**SOLUTION**

**WORLD PREMIERE - COMMERCIAL REFRIGERATION USING GAS MOTOR REFRIGERATION SYSTEMS**

As part of the extension of an existing warehouse, the Margaretenhof fruit farm constructed four new cold rooms for apples and pears with a total volume of 2,600 square metres. Each room is refrigerated to just a few degrees above zero with a direct evaporation unit, including a glycol-filled defrosting register. The specially designed evaporators are triggered with electronically controlled expansion valves. The total refrigeration output of 126 kW is generated by two YANMAR gas motor refrigeration systems, which are also fitted with engine heat recovery units. The modern aggregates have sufficient reserves for rapidly refrigerating the rooms to the target temperature as soon as the fruit is stored, but are also highly efficient during permanent operation even when the rooms are almost empty.

**OUTCOME**

**OPTIMAL PROFITABILITY AND RELIABILITY**

An innovative commercial refrigeration system was implemented in close cooperation with BERNDT ENERGYSYS. The system will pay for itself in just two years, unlike a conventional electric refrigeration system. As well as the economy of gas as a fuel, the motor heat recovery unit pays off here: the practically free engine heat can be used for regularly defrosting the evaporators and for heating the considerable volume of process water for the harvest machinery. The Margaretenhof fruit farm also benefits from other significant advantages: the gas-powered refrigeration system is particularly reliable compared with electric refrigeration systems, and a significant load is taken off the local power grid.

**OVERVIEW**

<b>Project:</b>	Obstgut Margaretenhof - Grafschaft
<b>Products:</b>	2x gas motor refrigeration systems 2x KKU refrigeration kits 2x motor heat recovery units
<b>Refrigeration-capacity:</b>	126 kW
<b>Heating capacity:</b>	max. 60 kW engine waste heat
<b>Construction area:</b>	4 cold rooms, 88 m2 each, 650 m3 volume per cold room, total volume 2,600 m3
<b>Savings:</b>	54%
<b>Competition:</b>	Commercial refrigeration system
<b>Contributors:</b>	Berndt Energsys GmbH + Berndt Kältetechnik

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