



## CASE STUDY

# Milk vending machines: Pfannenberg products help to preserve the freshness and the use of milk

## Thermostats and heaters for a microclimate of vending machines

*A-MOLOKO vending machines are machines, adapted to the harsh Russian climate. Milk is a delicate product, so reliability is critical. The goal was to ensure the smooth operation of the machine in severe weather conditions. We needed well-proven equipment with guaranteed quality. That is why we have chosen Pfannenberg products.*

*Olga Bobrova,  
Project Manager, MIG Electro.*

Business owners associated with the vending machines are increasingly wondering how to ensure the smooth operation of the machines, installed outside or in rooms without heating. The company A-MOLOKO also faced this question when they decided to launch a network of milk vending machines in Moscow.

To implement the project the company selected standard vending machines that widely used in European countries for the sale of milk. However, they had to adapt the machines for the Russian climatic conditions.

## A solution for a microclimate of vending machines

Milk vending machines are refrigerators with payment system and a camera for empty containers. The milk is stored in the machine 2 °C to 4 °C. The refrigeration compartment has a removable stainless tank. Before each filling this tank together with the pump and tubes are subjected to a hygiene treatment. After each milking the milk is cooled to 4 °C, then poured in 100-200 l stainless steel tank. During 4 hours after milked the milk is delivered to the vending machines in special refrigerated vehicles. A temperature inside milk vending machines is also kept at the 2 °C to 4 °C. In order to work outside milk vending machines had to be able to keep their performance at temperatures up to -30 °C, which significantly differs from their nominal temperature. The company MIG-Electro, the contractor of the project, has proposed to equip vending machines with FLZ thermostats and FLH heaters from Pfannenber.

## Heaters FLH heat vending machines



Heater FLH 400

Heaters FLH with 400W heating power became an optimal solution for the task. The FLH heaters are equipped with a built-in fan which supports natural convection and provides rapid and uniform distribution heat in the vending machine.

## Thermostats FLZ support the right temperature



Thermostat FLZ 520

FLZ thermostats in combination with FLH heaters perform the task of maintaining a predetermined temperature in vending machines very well. They also provide additional savings of electricity. The reliability of operation of the equipment increases thanks to reducing of heat dissipation and longer life of fans. After equipping with Pfannenber products, A-MOLOKO vending machines are fully prepared to work in conditions of the Russian winter at temperatures down to -30 °C.

## Moscow network of A-MOLOKO milk vending machines is equipped with Pfannenber climatic products



Specialists from MIG Electro company supplied Pfannenber climatic equipment for A-MOLOKO company, which launched a network of milk vending machines in Moscow. A-MOLOKO vending machines offer natural milk from large farms from Dmitrov district, Moscow region. Automated trading process can be performed at temperatures below zero, down to -30 °C. In order to maintain efficient operation the vending machines are equipped with the following Pfannenber products: Heaters series FLH (version with built-in fan or not), Thermostats series FLZ. We are proud that our equipment in vending machines allows to save the useful properties of natural milk.



## Facts at a glance

<b>Task</b>	<ul style="list-style-type: none"> <li>• Ensure smooth operation at any temperature of A-MOLOKO milk vending machines, which offer for sale milk on the streets of Moscow</li> </ul>
<b>Challenges</b>	<ul style="list-style-type: none"> <li>• The need to ensure an automated process of trade at negative temperatures down to -30 °C</li> </ul>
<b>Products used</b>	<ul style="list-style-type: none"> <li>• Fan Heaters FLH 400</li> <li>• Thermostats FLZ 520</li> </ul>
<b>Success factors</b>	<ul style="list-style-type: none"> <li>• 100% duty cycle</li> <li>• The lower limit of the working temperature range to -40 °C</li> <li>• Large variability of installation positions</li> <li>• Robust bimetal sensor of the temperature control system</li> <li>• Compliance of the technical specifications with the real product</li> <li>• High breaking capacity of contacts in conditions of an unstable voltage</li> </ul>



## Conclusion

Thermostats and heaters, produced by Pfannenber, appeared to be the right choice. Pfannenber products have allowed our clients to expand the range of applications of its equipment.

Olga Bobrova,  
Project Manager,  
MIG Electro.