

## GEEP Project – Refrigeration warehouse

### Refrigeration warehouse cuts electrical consumption, by 50%

The company was established in the 1990s and offers refrigerated storage space to its customers in old warehouses from the Soviet period, within the customs area. Now it expands its operation and is constructing a new refrigeration warehouse. Energy consumption in the old refrigeration warehouses corresponds to a significant part of the operating costs of the company.

In the old refrigeration warehouses, the energy consumption is particularly high because

- An old, inefficient refrigeration system works on ammonia as refrigerant, which is expensive and dangerous to operate when old
- Oversized compressor motors
- Central plant can operate at only one temperature, but storage requirements vary in temperature
- Poorly insulated external surfaces of the warehouses.

The refrigeration warehouse will consist of eight refrigeration cells, each capable of storing products at temperatures from 0 to -25°C. The total storage capacity of the cells is 7,000 – 8,000 tons. For the new refrigeration warehouse, it is proposed to erect a new, modern, energy efficient refrigeration system with well-insulated external walls for the cells, and individual refrigeration modules in each cell. The refrigeration is achieved through a standard vapor-compression refrigeration cycle with R404 acting as the working refrigerant fluid. Cells that store goods at 0°C require two refrigeration units operating whilst cells that store goods at -25°C, require four refrigeration units operating. Today with the old ammonia freezing system there is an electrical energy consumption of 4.75 GWh/year at a cost of 265,000 USD. By introducing the new system, the saving of the electrical energy is of the order of 2.4 GWh and a cost of 135,000 USD.



#### The Company

<b>Main activities</b>	Offering refrigeration storage
<b>Region</b>	Poti, Georgia

#### Project Goal and Main Investments

<b>Project goals</b>	<ul style="list-style-type: none"> <li>▪ To replace old cold storage warehouses running on ammonia with modern storage and equipment running on R404</li> </ul>
<b>Main investments</b>	<ul style="list-style-type: none"> <li>▪ The new refrigeration cells are built with modern improved insulating material and low heat loss doors</li> <li>▪ Old central plant running on ammonia is replaced by several modular units running on R404 in each cell</li> <li>▪ Modern control system to regulate the cell temperatures</li> </ul>
<b>Investment size</b>	Approximately USD 1.0M

#### Expected Results

<b>Operational results</b>	<ul style="list-style-type: none"> <li>▪ Decreased electrical consumption, from 4.75 to 2.35 GWh/year</li> <li>▪ Better regulation of the temperatures in the individual cells to meet customers requirements</li> </ul>
<b>Investment profitability</b>	<ul style="list-style-type: none"> <li>▪ Annual saving of around USD 135,000</li> <li>▪ Payback period of 5 years</li> <li>▪ Over 15% IRR</li> </ul>

For more information on how your company can receive financing for energy efficiency projects, visit [www.energocredit.ge](http://www.energocredit.ge), or call +995 32 224962.

The GEEP assignment is funded by EBRD through grant funds by: United Kingdom Sustainable Energy Initiatives Funds, Canadian International Development Agency, EBRD-Special Shareholders Fund and Early Transition Countries Funds