



# Case study

## ICE Arena Riga



### SUMMARY OF RESULTS

After the installation of adiabatic panels on the cooling equipment of Ice Arena Riga:

- The ability of cooling equipment to produce more cooling capacity in the hot period has improved by 23%
- The operating cycle of equipment compressors has been shortened and it does not operate in an overload mode any more even at critical outdoor air temperatures (+35°C).

### CUSTOMER

ICE Arena. The building was constructed in 2006. Its total area is 22,568 square metres and it can hold 14,500 spectators. Since ice is maintained in the arena and the cooling of spacious premises is necessary in the hot period, cooling efficiency was a very topical issue for the arena. The cooling equipment: chiller York, and dry cooler Alfa Laval, with the total cooling capacity  $Q = 556\text{kw}$ , has been installed in the arena to ensure the maintenance of ice and cooling.



### PROBLEM

In the hot summer period, when the outdoor air temperature reached +27°C, cooling facilities were operating in peak mode, the operating cycle of facilities was continuous and they were working in overload mode, failing to ensure the required cooling capacity. At that time electrical energy consumption considerably increased and the same happened to the costs.

### TASK

To boost the efficiency and capacity of cooling equipment. In order to maintain the ice rink during the hot summer, additional cooling capacity was necessary.



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### SOLUTION

In order to obtain additional cooling capacity, it was decided to install Blue Energy Adiabatic Panels “Smart Cooling™”. As a result, in the hot period, when the air temperature reaches +27°C, lower temperature air would flow into the equipment condenser and the facilities would operate in a lower outdoor temperature mode, due to the adiabatic panels. The inflowing air temperature would be lowered by 10 - 15°C. In such a mode the equipment can produce considerably more cooling capacity and consumes less electrical energy for ensuring this process.

### PROCESS

Adiabatic panels BY 70 - 140 were installed on the cooling equipment of ice arena: York, and dry cooler Alfa Laval.

The aforementioned facilities were located on the roof.

Installation of Blue Energy, adiabatic panels BY 70-140 additionally to air temperature lowering caused by evaporative process ensured condensers shading (protection against direct sun exposure).



### RESULTS

Customer’s technical director informed that, after the installation of adiabatic panels “Smart Cooling™”, the cooling equipment of arena was able to produce the required cooling capacity and the efficiency boosted. At the same time the cooling equipment operated in a normal mode even at critical outdoor air temperatures (+35°C and more). The operating cycles of equipment have been shortened and the compressors are not overloaded any more.



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