

CASE STUDY

Ice halls



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After installation of intelligent adiabatic pre-cooling system “Smart Cooling™” on ICE Arena Riga cooling equipment electric energy consumption dropped by 21% and cooling capacity produced increased by 23% on average.”



CUSTOMER

ICE Arena. The building was constructed in 2006. Its total area is 22,568 square meters 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 important 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.

CHALLENGE

In the hot summer period, when the outdoor air temperature reached $+27^{\circ}\text{C}$, 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. Therefore, it was important to boost the efficiency and capacity of cooling equipment.

SOLUTION

In order to obtain additional cooling capacity, it was decided to install intelligent adiabatic pre-cooling system “Smart Cooling™”. As a result, in the hot period, when the air temperature reaches $+27^{\circ}\text{C}$, lower temperature air flows into the equipment condenser and facilities operate in a lower outdoor temperature mode. The inflowing air temperature in such a way is lowered by $10 - 15^{\circ}\text{C}$ and the equipment can produce considerably more cooling capacity and consumes less electrical energy. Adiabatic pre-cooling system “Smart Cooling™” was installed on the cooling equipment of ice arena: York, and dry cooler Alfa Laval. The aforementioned facilities were located on the roof. Installation of “Smart Cooling™” adiabatic pre-cooling system additionally to air temperature lowering caused by evaporative process ensured condenser shading (protection against direct sun exposure).

RESULTS

Customers’ technical director informed that, after the installation of intelligent adiabatic pre-cooling system “Smart Cooling™”, 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 ($+35^{\circ}\text{C}$ and more). According to monitoring results in average cooling capacity increased by 23% and the electrical energy consumption of equipment decreased by 21%. The return on investment period (ROI) of installed adiabatic pre-cooling system “Smart Cooling™” – 9 months. The operating cycles of equipment have been shortened and the compressors are not overloaded any more.



COOLING CAPACITY INCREASED BY

↑ 23%



ELECTRIC ENERGY CONSUMPTION REDUCED BY

↓ 21%

ROI
9
MONTHS

New intelligent adiabatic pre-cooling system “Smart Cooling™” is state of the art technology ensuring excellent energy saving results.

- Modular system
- Suitable for all type of dry coolers and chillers
- Easy and fast installation
- Certified system and approved by major cooling equipment manufactures
- Minimal maintenance

