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The IceBank® Cometh

Durst Organization Reduces Energy Costs With Off-Peak Cooling

Manhattan Commercial Cooling Program—Case Study

Project Profile

Type of space

41-story office building

Project Uniqueness

First Off-Peak Cooling job in Manhattan

Project Objective

Reduce electrical energy costs

Project Benefits

Decrease of peak demand

Substantial electrical cost savings

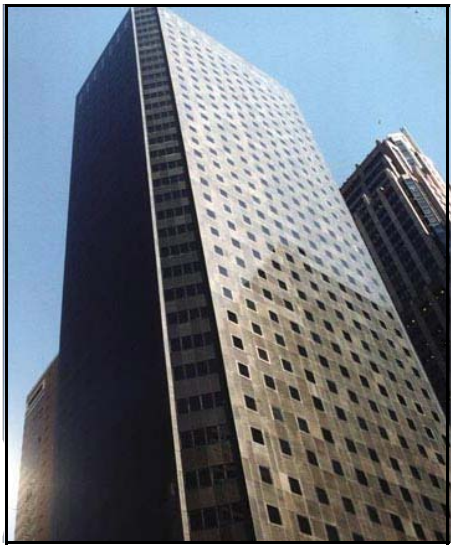
Cleaner environment

The Durst Organization, a major Manhattan commercial property owner known for its environmental concern, has chosen Off-Peak Cooling (OPC) to reduce the overall cost of energy in its 20-year old building on the Avenue of Americas. To deal with the high price and uncertainly of electric power in Manhattan, the Durst Organization at 1155 Avenue of the Americas installed 28 Icebank® tanks in the basement of their 41-story building.

OPC Reduces Costs

OPC uses inexpensive nighttime electricity to produce ice in eight foot storage tanks. The ice is used the following day to cool the building. Shifting the electric load from expensive "on-peak" hours to "off-peak" hours dramatically reduces energy costs since "on-peak" prices are at least double and can be up to ten times the nighttime rate.

IceBank® Off-Peak Cooling tanks located in basement



"Durst chose Calmac to execute the largest OPC operation in Manhattan as an economical and environmental way to trim costs for cooling the Avenue of Americas high-rise building."
-Alliance To Save Energy

Air conditioning systems traditionally work by blowing air past coils containing chilled heat transfer fluids. The fluids are cooled by a chiller, which must operate whenever the air conditioning system is on. Building owners using traditional air conditioning systems thereby not only use a substantial amount of "on-peak" electricity, they incur expensive "peak-demand" rates for that electricity.

In contrast, during the "peak-demand" periods, buildings that rely on OPC technology are cooled simply by using small pumps to move the ice-cooled fluid past fans that blow cool air into the

"Beyond the cost saving aspect of Off-Peak-Cooling, we selected this technology because it reduces peak electrical load on the grid. This, in turn, lowers the need for building new power plants with all the siting issues that accompany them and reduces the need for utilities to bring a dirty, peak-shaving plant on line."

-Jody Durst, Co-President of the Durst Organization

20 of the 28 tanks were put in the existing mechanical room, thereby using very limited rentable space.

Tech Specs

- **Original equipment:**
  - -Two 750 ton centrifugal chillers
- **New equipment:**
  - -One 1000 ton, high efficiency, centrifugal chiller
  - -3200 ton hours of ice storage
  - -One 600 ton, high efficiency, off-peak ice making, centrifugal chiller

building. "The tanks of ice are designed to handle an additional 350 tons of cooling, without consuming any more electricity than is needed to run a few circulation pumps." - *On Avenue of the Americas, the Iceman Cometh*, The New York Times, Sunday March 17, 2002.

OPC is a proven technology, which is widely used in schools, hospitals, office buildings, supermarkets and warehouse outlets in the US and throughout the world. However, the Durst Organization's usage of OPC marks the first time that this technology will cool a Manhattan building. While the ice storage tanks are ordinarily installed outdoors, they can also be buried in the ground, installed on roofs as well as within the building itself.

The Last Word

Every bit of space is valuable in the crowded City of New York. With limited mechanical space the decision on how to cool a building is carefully considered. Off-Peak Cooling is a proven technology, which offers significant power reduction advantages to urban building owners.

The Durst Organization received funding from the New York State Energy Research and Development Authority (NYSERDA) for an ice storage plant feasibility study and was subsequently awarded over $280,000 under the NYSERDA Peak Load Reduction Program for its implementation.

F.Y.I.

The OPC system specified by the Durst Organization was supplied by CALMAC Manufacturing Corporation of Englewood, NJ, a leading developer and supplier of Thermal Energy Storage systems. For more information on Off-Peak Cooling, contact CALMAC at (201) 569-0420, or visit their web site at www.CALMAC.com. To find out how NYSERDA offers incentives to N.Y. businesses visit www.nyserda.org/sclp or call 1-866-NYSERDA.

"[Jody Durst said] the power reduction advantages of ice storage were attractive enough that the company was willing to donate a rentable storeroom in the basement to the project to fit in additional tanks."

- "On Avenue of the Americas, the Iceman Cometh" *New York Times*, Sunday, March 17, 2002