



DESIGNING INNOVATIVE SOLUTIONS

United Technologies

HOSPITAL SOLUTIONS



Carrier® implemented a Thermal Energy Storage solution to secure the cooling production system and to optimize energy consumption in Martinique, where the electricity supply is critical during peak hours.

Customer

MANGOT VULCIN HOSPITAL

Location

LAMENTIN (MARTINIQUE), FRANCE

Equipment running since

MAY 2010



Installation of Thermal Energy Storage solution to reduce electricity costs and secure cooling production

Project

The Mangot Vulcin Hospital, based in Martinique Island, has very high chilling requirements with continuous air conditioning throughout the year. When the hospital wanted to reduce its energy consumption, they turned to Climate Control Systems Center of Excellence, based in Vence, France. By charging the energy during peak hours, the Carrier Thermal Energy Storage (TES) solution helped the hospital to reduce electricity costs while securing the cooling production.

Project summary

KEY BENEFITS

Reduce electricity power by 50% during peak hours demand

Optimize cooling plant by 20%

Secure cooling production for non-stop hospital activity

Continuous service through monitoring and control system

TECHNOLOGIES

3x Carrier 30GX358 chillers: 1 125 kW each

4x storage tanks filled with AC.00 nodules (Phase Change Material - PCM - solution inside the tanks with high thermal exchange capacity)

Volume of TES: 206 m³

Nominal capacity of the cooling plant: 4 200 kW

TES nominal energy: 11 330 kWh

1 control and monitoring system which manages and optimizes the cooling installation operation



The hospital plant room with 4 storage tanks



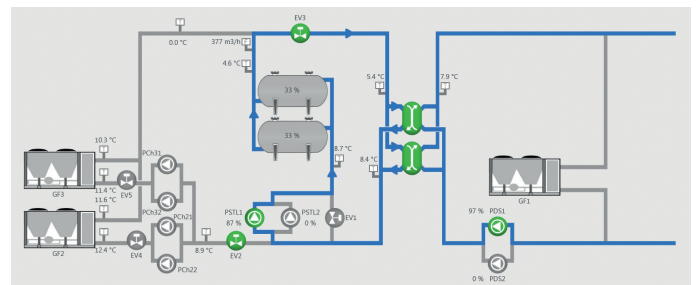
Carrier 30GX358 chillers

Background

In 2010, Mangot Vulcin Hospital chose Carrier solutions to answer its cooling needs. In Martinique, electricity is scarce and expensive at peak hours, making its supply critical for the hospital. The TES associated with chillers and a control and monitoring system secured the cooling requirements.

Technologies

The Thermal Energy Storage solution stores energy during night time i.e off peak hours to benefit from the lowest electricity costs. The energy is discharged during peak electricity period. An advanced control and monitoring system is in place to ensure continuous energy optimization.



Synoptic of the cooling plant with Thermal Energy Storage

Challenges and solutions

The project presented a number of specific challenges and the resulting solution succeeded in:

- Securing the cooling production for hospital activity.
- Reducing electricity power and consumptions during peak hours.
- Reducing energy and operating costs.
- Ensuring continuous optimization of the system operation through control and monitoring system.

Climate Control Systems Center of Excellence

Developing climate control systems for HVAC environment is the key activity at the Vence Center of Excellence. Our engineers focus on developing and offering technical support for smart services and on designing, engineering and implementing HVAC systems with storage solutions. Their know-how is unique and proven with dual cooling/heating and automation in-depth knowledge.

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