

Energy management system to obtain considerable energy savings- Case Study: RCHEP Reyes de Aragón – Zaragoza (Spain)

CIRCE, one of the Spanish partner of the IEE project SAVE AGE, recently has performed a study of energy efficiency and emission reduction of CO₂eq following the implementation of an energy management system in the RCHEP Reyes de Aragón, located in Zaragoza, Spain.

The RCHEP Reyes de Aragón opened in January 2009 and since December 2010 it is a private center within the Aragon Institute of Social Services, Government of Aragon in the "Framework Agreement for service management in residential places for older people in situation of dependency in Aragon."

The center has 269 residential places in which they serve people in order to satisfy all their needs: physical, psychological, social and emotional, with comprehensive assistance. The Residence has multiple spaces distributed in its 11,500 square meters, such as living rooms and dining rooms, medical office and treatment room, pharmacy, gym and spa, therapy room, library and hall, reception rooms, chapel, common terraces distributed in different plants, hairdressing, chiropody, kitchen, laundry and parking for visitors. It is a ten floors building, basement, ground and eight floors high.

Energy and emission saving measures

The energy efficiency study was performed after the implementation of an energy management system in the above mentioned RCHEP. Driving and general maintenance of the system is run by a company specialized in energy services.

The tools used to obtain these savings correspond to two computer software LIDER and CALENER, promoted by the Ministry of Industry, Tourism and Trade through the IDAE, and the Ministry of Housing, which determine the appropriate level of energy efficiency in a building.

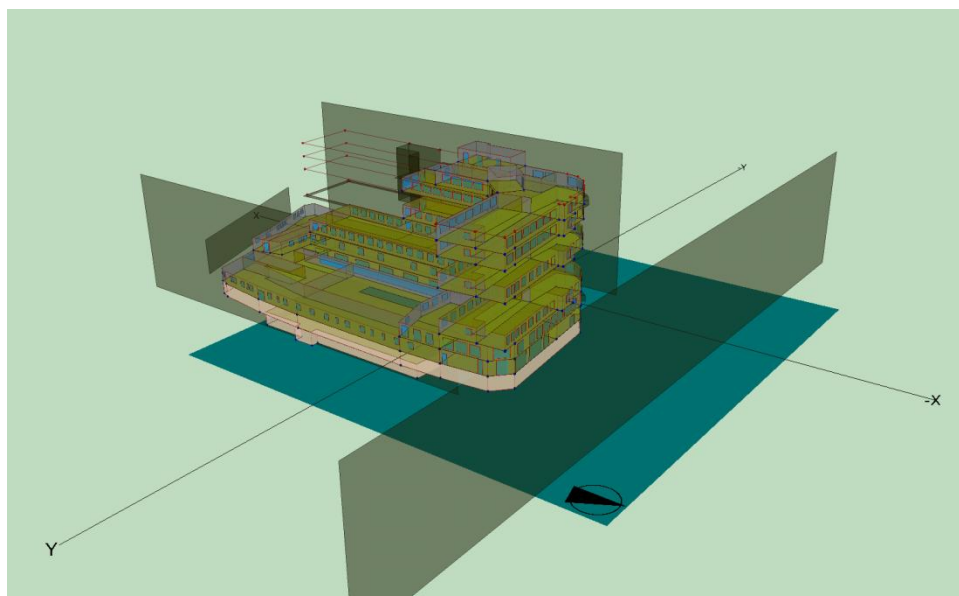


Fig. 1 RCHEP Reyes Aragón's 3D

Through the energy management system they obtained a series of improvements, such as:

- Control of temperature setpoint for each of the rooms in the building, 25 ° C for summer and 22 ° C for winter.
- Improvement of the solar system reaching coverage of 22.6% of annual energy demand for producing hot water.
- Reduction of 5% using the lighting system.
- Optimization of HVAC systems working hours by adapting use hours of the building rooms.

Of the above measures taken substantial savings in terms of CO₂ equivalent emissions have been achieved, such that:

- Considering the first improvement alone would achieve savings of 6.53% of CO₂ equivalent.
- Whereas the first two improvements, would achieve savings of 9.48% CO₂eq.
- Considering the first three improvements would achieve savings of 11.19% of CO₂ equivalent.
- Considering all the measures are achieved savings amounting to 25.51% of CO₂ equivalent.

The results above show that the implementation of an energy management system generates large savings by controlling the temperatures of the rooms, the hours of operation of HVAC and lighting control.