

# Integration of energy efficiency throughout industrial buildings' life

May 31 2013, by Elena Ledda

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Carlos Bárcena is head of R&D Projects at the Spanish construction Company [DRAGADOS](#). As one of the partners of the DIRECTION project, they have evaluated the effectiveness of the energy efficiency measures implemented, and the potential problems in combining certain systems with others while identifying improvements for equipment and control systems. DRAGADOS have built the CARTIF III showcase building, in Valladolid, Spain One additional DIRECTION showcase building has been built in Munich, Germany, and another one is in planning in Bolzano, Italy. Here, Bárcena shares his views about energy efficiency for industrial applications.

## What types of solutions are being tested for industrial applications?

What is most important when addressing [energy efficiency](#) for industrial applications is the energy and economic returns as well as the users' comfort. We are concentrating on the best way to achieve the former two aspects by integrating the way all the equipment works. From an architectural point of view, it is also important to take into account the buildings' climate, their orientation, the use of glass windows, etc.

All the solutions designed in the three showcase buildings developed under the DIRECTION project had already been used before. These solutions are all exportable to residential buildings even if aspects such as the control and in many cases distribution of heat or cold will be

different for different applications. What is unusual is to find buildings that combine so many active and passive systems aiming at very low [energy consumption](#). The overall objective is to achieve a primary energy consumption lower than 60 kWh/m<sup>2</sup>/year.

## **What are their main advantages of your solutions?**

To answer this question, I would like to give you the example of the district heating system in the Munich showcase building. If you connect an industrial building to the same district heating as a residential building, then the industrial building can act as a heating provider. This is particularly true in winter when residential demand for heating increases while industrial buildings need cooling. This setup improves the energy efficiency of the whole district, in the form of cost reduction for heat generation and energy saving.

## **What are the limitations of your approach?**

The limitations are not connected to the particular solutions themselves. But rather their energy efficiency depends on the climate of the area and on the buildings uses. For example, free cooling is not adapted to highly humid climates, in the intermediate seasons.

Another very important barrier for having buildings consume less is that the sector lack integration. Indeed one person builds, someone else maintains and manages. This is true both in Spain and at global level. What matters the most to who builds is to have cheap construction costs while those who operates and maintain the building care about energy efficiency. This barrier can be overcome by promoting integrated design, construction and maintenance projects. DIRECTION is a good example of how working together benefits and allows savings to all.

## Can we expect a more widespread adoption of these integrated solutions?

I think acceptance will be greater, the closer we get to the energy consumption threshold we are aiming at. In the long run, that would mean saving a lot of money. Of course people should know that a higher initial investment and constant maintenance throughout the building's life is needed. Another important element that I think promotes acceptance is that level of comfort is much higher in these buildings than in traditional ones. This is very important because we spend the vast majority of our time inside buildings.

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