

Innovative technology solutions for sustainability

# Campus Palmas Altas prevents the emission of more than 1,300 t of CO<sub>2</sub>/year thanks to its air-conditioning system

• It provides energy savings and greater comfort in offices compared to a traditional air-conditioning system based on fan coils.

September 12, 2014 – Abengoa (MCE: ABG.B/P SM /NASDAQ: ABGB), the international company that applies innovative technology solutions for sustainability in the energy and environment sectors, prevents 1,300 tons of  $CO_2$ /year in emissions in Campus Palmas Altas headquarters thanks to its innovative cooling system compared to traditional methods. According to data from the World Bank, each person in Spain generates 5.8 tons of  $CO_2$  per year, on average. However, thanks to this system, we can prevent the  $CO_2$  emissions equivalent to 10% of the workforce at Campus Palmas Altas over a one year period.

The "chilled beam" system consists of radiators installed in office ceilings in the form of beams, through which cold water circulates. This can cool office spaces by means of direct radiation thanks to the higher density of cold air, reducing energy consumption, since it does not require fans or fan coils, even when the outside temperature is 40°C. This technology makes office spaces more comfortable by eliminating the noise and draughts produced by traditional fan coils.

The cold water that circulates through the beams has an approximate temperature of 16°C. It is chilled by a trigeneration system that generates electricity, heat and cold from the same fuel.

The system uses a lithium bromide absorption machine to chill the water, which can occur without using electricity thanks to a passive energy exchange system that makes use of the residual hot water generated by the trigeneration engine.

The system is controlled by a building management system (BMS) that operates and monitors the whole process, relying solely on a personal computer and an internet connection.

The BMS consists of more than 15,000 control points to ensure that users are comfortable in every zone.



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The chilled beam and trigeneration systems are energy efficiency measures installed at Campus Palmas Altas and are examples of Abengoa's commitment to combat climate change and energy savings.

## **About Abengoa**

Abengoa (MCE: ABG.B/P SM /NASDAQ: ABGB) applies innovative technology solutions for sustainability in the energy and environment sectors, generating electricity from renewable resources, converting biomass into biofuels and producing drinking water from sea water. (<a href="https://www.abengoa.com">www.abengoa.com</a>)

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