



## Holiday Inn Hotel

### Mozzo (BG), Italy

Environmental responsibility and energy savings are emerging as key factors in the hotel sector. Actually, these were the guidelines for the construction of the new Holiday Inn hotel located just a few miles from Bergamo, in Northern Italy. These efforts have been recognized: the Holiday Inn hotel has received a nomination for the 2008 European Design Award for the remarkable attention to building materials as well as its unique heating and cooling system. The Holiday Inn hotel offers 98

well equipped rooms with air conditioning and an exclusive 130 m<sup>2</sup> meeting room. Stefano Civettini, an experienced HVAC designer of Crs Impianti, was commissioned to design the heating and cooling system of the new hotel. Actually, the plan aimed at reducing energy consumption, even if it meant increasing the initial investment, since energy is by far the most significant expenditure in the hotel sector. "We are committed to reducing energy consumption in comparison to

other similar facilities" Mr. Civettini says. "This requirement has been successfully fulfilled with Robur Gas Absorption Heat Pumps. With Robur systems, the payback period is even quicker, less than 4 years, due to a significant reduction in heating costs of 40% every year". The system consists of four air handling units, equipped with energy recovery units where energy is transferred from the return air stream to the supply air stream. In addition, wall and

ceiling mounted fan coils. The production of domestic hot water is provided by the storage of 10,000 l water in 5 tanks, thus allowing excellent control. The Robur system capabilities are as follows: in heating mode, 400 kW heating capacity, 150 kW heat recovery capability for the production of DHW and 400 kW cooling capacity. Overall requirements are satisfied by five preassembled gas-fired absorption links with reversible cycle heat pumps, chillers for

cooling and chillers with heat recovery. The links have been installed on the roof, thus saving space. Robur units can produce hot water up to 60°C for heating (even at external temperature of -20°C) and chilled water down to 3°C for cooling. In addition, system optimization settings help in the regulation of outlet water temperature at 50°C in winter and at 7°C in summer, while summer heat recovery provides 80 kW heating capacity for free domestic hot water, which satisfies the majority of the hotel's demand. Free domestic hot water is also supplied by Robur preassembled gas fired condensing boiler units and by a solar system, both installed on the roof. The use of Gas Absorption Heat Pumps has reduced both energy consumption and maintenance costs. In winter, the average efficiency of the system, (GUE - Gas Utilization Efficiency), is close to 1.40, this means that Gas Absorption Heat Pumps are over 40% more efficient than condensing boilers. In summer,

the average electrical load is approx. 20 kW only, less than one tenth of what is required by similar electrical systems, resulting in cost savings up to 20,000.00 Euro per year compared to systems with condensing boilers and electric chillers. Due to its high efficiency, Robur Gas Absorption Heat Pumps save the equivalent of 9 Toe/year (Tons of oil equivalent), reducing an equivalent of 289 tons of coal combustion products as well as 26 tons of CO<sub>2</sub>.

High energy efficiency, low electrical load, reduced environmental impact and integration with solar systems: these are the reasons why the Holiday Inn hotel near Bergamo is a remarkable example in the Italian hotel sector. Actually, the Holiday Inn hotel represents the perfect combination of technologically advanced products, the appreciation for well made things with attention to cost savings and environmental awareness.



Unit number and type	2 Robur RTAR - Reversible Gas Absorption Heat Pumps Heating capacity: 263 kW Cooling capacity: 156 kW 1 Robur RTCF HR - Gas-fired Absorption Chiller link for cooling with heat recovery Cooling capacity: 89 kW Heating capacity with recovery: 68 kW 2 Robur RTCF - Gas-fired Absorption Chiller links for cooling Cooling capacity: 161 kW 1 Robur RTY - Gas-fired Condensing Boiler link for heating Heating capacity: 172 kW
Heating capacity	435 kW
Cooling capacity	406 kW
Capacity of recovery unit	68 kW