

## High efficiency CO<sub>2</sub> refrigeration units for warm climates by enEX



enEX has recently added a new family to its range of air-cooled refrigeration systems that is specifically designed for warm environments. The **E5S** units are designed for medium temperature application only, while **E5S-B** is the booster version that combines MT and LT refrigeration. Originally conceived for small supermarkets, the E5S/E5S-B family will soon be available also for larger capacities.



When peak temperatures are reached in warm environments, the new units operate at

a degree of efficiency that is significantly higher (up to 20%) than that obtained with conventional DX CO<sub>2</sub> systems. The high efficiency is not limited to the warmest seasons, but is maintained throughout the year. This improvement has been obtained without the use of water for subcooling or evaporative cooling as these solutions may not be practical and in some countries the use of water for such application is forbidden.

As the “flat” curve of capacity plotted versus temperature of external air indicates, the **E4S/E4S-B family** also encompasses good adaptation of capacity with load in winter and during mid-season, which makes the capacity control easier.

Moreover, a new software tool allows the accurate simulation of performances for any climatic condition and is available for direct demonstration and calculation to interested customers and consultants.

### Adapting the design for warm environments

The concept that was adopted in the development of the **E5S/E5S-B family** is well known at enEX and has been applied to several units that are already operating. However, the basic idea was further optimized for the E5S/E5S-B family by taking into account how the temperature of the air used for cooling of the condenser/gas cooler varies with the different seasons of the year.

“Conventional DX CO<sub>2</sub> refrigeration units are designed for Nordic countries, where high ambient temperatures are never reached”, says Sergio Giroto, founder and president of enEX. “A refrigeration system which was designed for a climate where the yearly average temperature is below 10°C is not the optimal choice in a warmer climate. The fact that, in summer, Italy and many other European countries often experience temperatures close to 36-38°C has always represented a limiting factor for the spread of DX CO<sub>2</sub> eco-friendly technology. Consequently, an adaptation of the design was necessary”.



**enEX** is a pioneer in the field of CO<sub>2</sub> refrigeration. It has gained a valuable experience in the most demanding markets and has produced more than 150 CO<sub>2</sub> refrigeration units, installed in different climatic conditions.

**enEX** specialises in the design and manufacturing of bespoke systems, among which highly optimised heat recovery systems, low pressure receiver units, refrigeration systems for combined MT/LT refrigeration and air-conditioning for small shops. All the products are based on the use of CO<sub>2</sub> as a refrigerant. They are available with 3 different design pressure level suction and liquid receiver side, 45, 60 and 80 bar, while high pressure design is 120 bar as a standard.

A standardized range of booster units was developed jointly with Huurre Group for the Scandinavian market. These units are designed for 2 different pressure levels LP/IP side : 60 bar and 45 bar. The array of products that **enEX** offers, which ranges from few tens of kW up to several hundreds of kW, covers most applications required in refrigeration:

- single stage
- 2-stage internal compound
- cascade
- booster
- chiller

### About enEX

**enEX** is specialized in the design, prototyping and manufacturing of environmentally friendly air-conditioning, ventilation, refrigeration, and heat pumps. It is a pioneer in the field of CO<sub>2</sub> refrigeration and a leading refrigeration racks and heat pumps manufacturer. Due to the big increase in demand **enEX** has recently moved into a new facility, whose larger size will allow a significant increase in its production capacity. Obviously, the heating system for the offices of the new building uses an **enEX** air25 CO<sub>2</sub> heat pump!

### Contact Information

If you would like to contact **enEX** for any enquiries, you may send a request to **Sergio Giroto** directly.

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