

# Subcritical CO<sub>2</sub> Cascade Refrigeration System

With this technology, an HFC centralized DX system is used for MT loads and the LT system has a separate circuit that passes through a heat exchanger from the MT circuit. The LT circuit has a low condensation temperature so R-744 (CO<sub>2</sub>) can be applied in subcritical mode without excessive pressures. The challenges are not fundamentally different from systems with conventional refrigerants. The discharge pressure (at around 30 to 35 bar) is still within the normal design limits for refrigeration pipe work and components (typically 40 bar). The temperature difference required to drive the heat transfer across this extra heat exchanger represents a slight loss in energy efficiency compared to a DX system.

## Typical CO<sub>2</sub> Hybrid Cascade System

