

EMBEDDED CONTROLLER · TRANSCRITICAL CO2 · SUPERMARKET RACKS

On CO2, the high-side pressure decides efficiency. Designed to set it right, every hour.

Gas-cooler, receiver and flash-gas pressures, chosen together from a physics model of the rack, with each case's valve and fans.

 **U.S. Patent 12,768,557**
granted Oct. 20, 2026

 **Hardware test published**
US 2024/0295337 A1,
FIGS. 4–7

 **Physics model**
of your machine, on the
machine

 **Not yet run**
on a CO2 machine

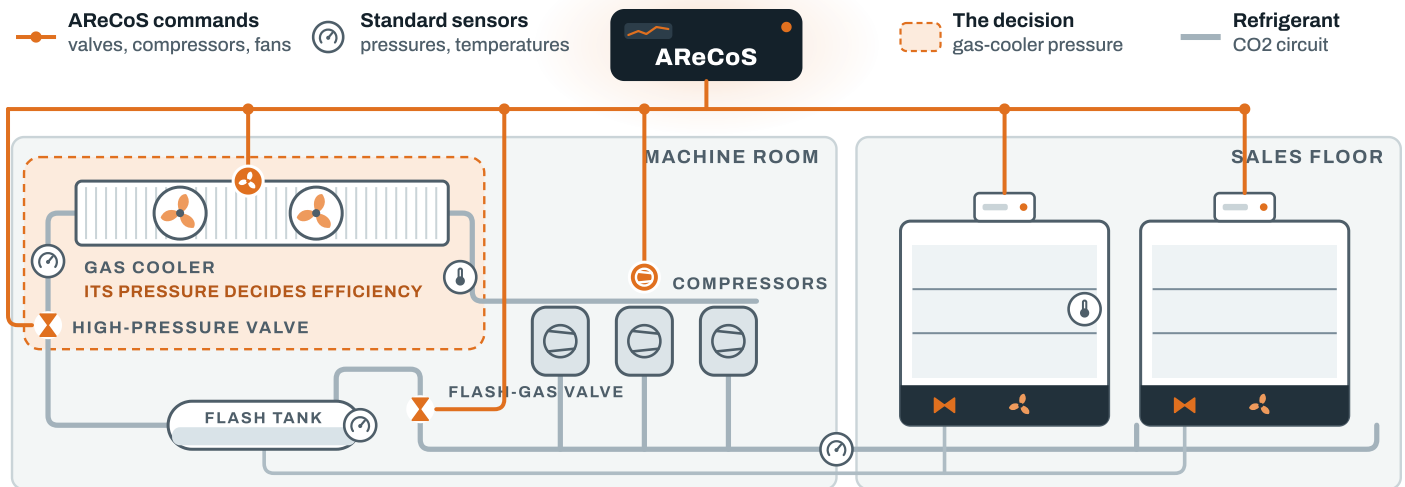
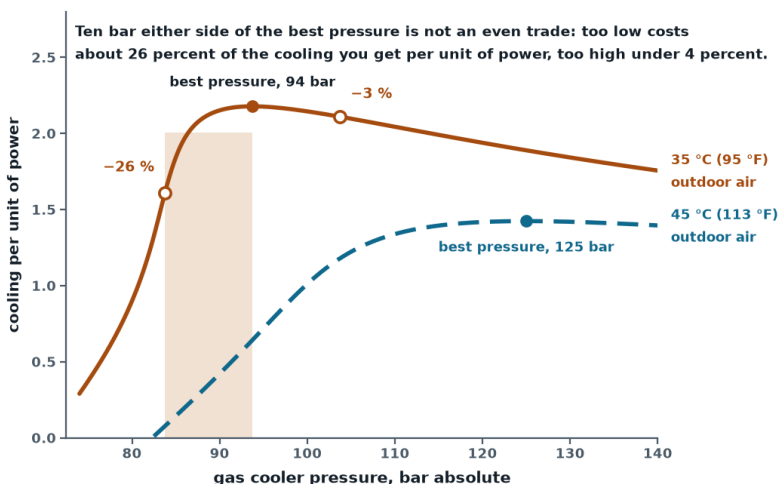
↓ **≈26%**

of CO2 cooling per unit of power, lost ten bar below the best pressure on a 35 °C (95 °F) day: the cost of the wrong pressure, not a saving claim.

✓ **<4%**

lost ten bar above it. Low is the expensive side.

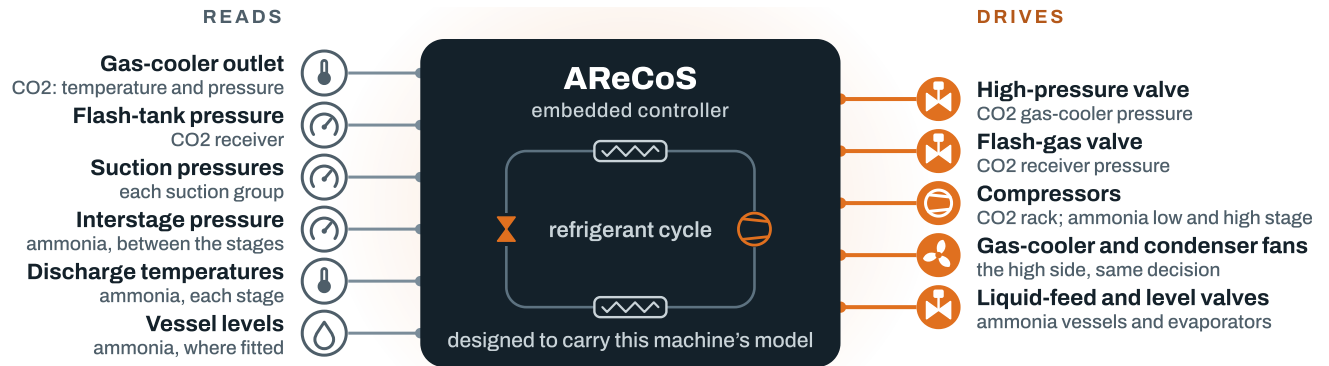
CO2 Three valves, one decision



 **Re-choose it as the weather moves.** Above about 31 °C (88 °F) CO2 does not condense; the pressure comes loose from the temperature.

 **Lean to the forgiving side.** Best near 94 bar at 35 °C, about 125 bar at 45 °C (113 °F).

 **Replace the fixed formula,** fitted to a cycle, with a model of your machine.

What it reads, what it drives


CO₂: tell a hot afternoon from a leak

-  Receiver level predicted; what it misses reads as charge lost.
-  A fouled gas cooler, or a stuck flash-gas valve, named early.

Grid response

-  **Shed for the grid on CO₂** with capacity and suction, never by dropping the high side below its best pressure.



The first step: an evaluation on your machine. AReCoS fits a model to your rack and checks it against your own test data, with a baseline agreed first.
info@arecos.net · arecos.net/controller/evaluation/