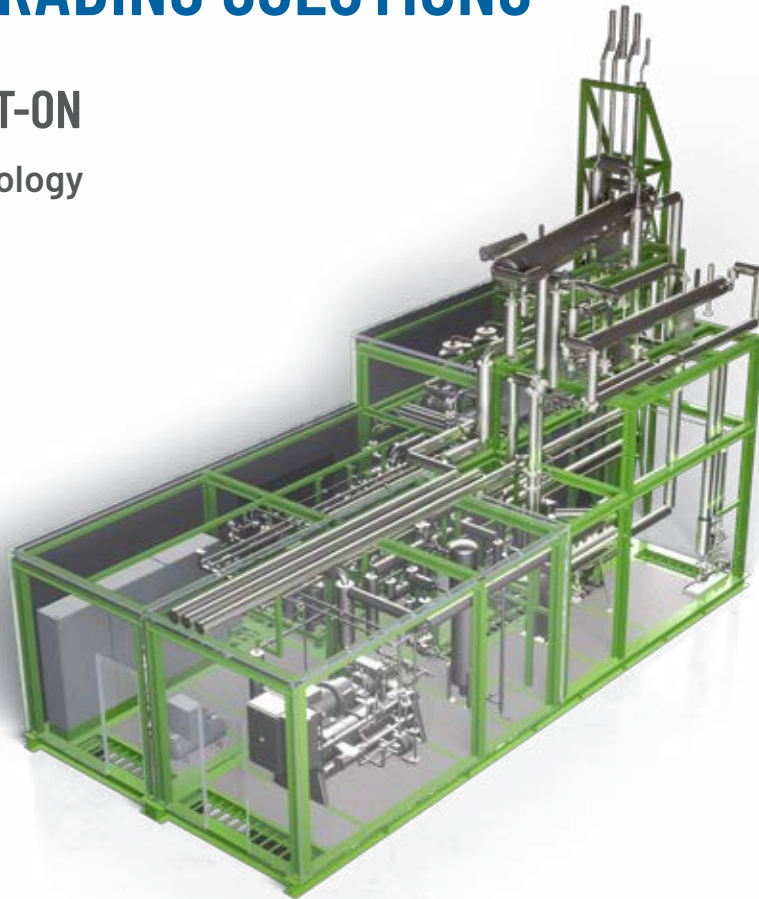


BIOGAS UPGRADING SOLUTIONS

PENTAIR® CO₂BOLT-ON CO₂ Recovery Technology



TURN WASTE INTO VALUE

Capture and recover waste stream by-product CO₂ from the biogas upgrading process with Pentair CO₂Bolt-On. Biogas upgrading vents a highly concentrated flow of CO₂ as a waste stream. Capture this waste by-product and turn it into an economic value stream.

Benefit from the flexibility of Pentair CO₂Bolt-On as it is compatible as an optional add-on to both Pentair and non-Pentair Biogas Upgrading Systems.¹

HOW IT WORKS

The exhaust CO₂ from the biogas upgrading unit is fed into the Pentair CO₂Bolt-On system, where the CO₂ compressor units increase the gas pressure to 18 barg (261 psig) in two stages removing condensate in the process.

Next, trace impurities and moisture are removed. The purified CO₂ gas is led into the cooling system, where the CO₂ is liquefied. The off-gas containing all non-condensable gases (CH₄, O₂, N₂) is purged as an off-gas and can be brought back into the inlet of the upgrading unit.

The purified liquid CO₂ product is fed at 17.5 barg (218 psig) to the onsite storage tank.

BENEFITS

Capitalize on waste

- Create food-grade quality CO₂.
- Turn CO₂ waste stream into commercial opportunity.

Efficient technology

- Recover CO₂ with energy & cost-efficient cryogenic-based technology.
- Modular-based approach for ease of installation.
- Heat recovery capability with no external heat required.

Support

- Service support for the lifetime of the system.

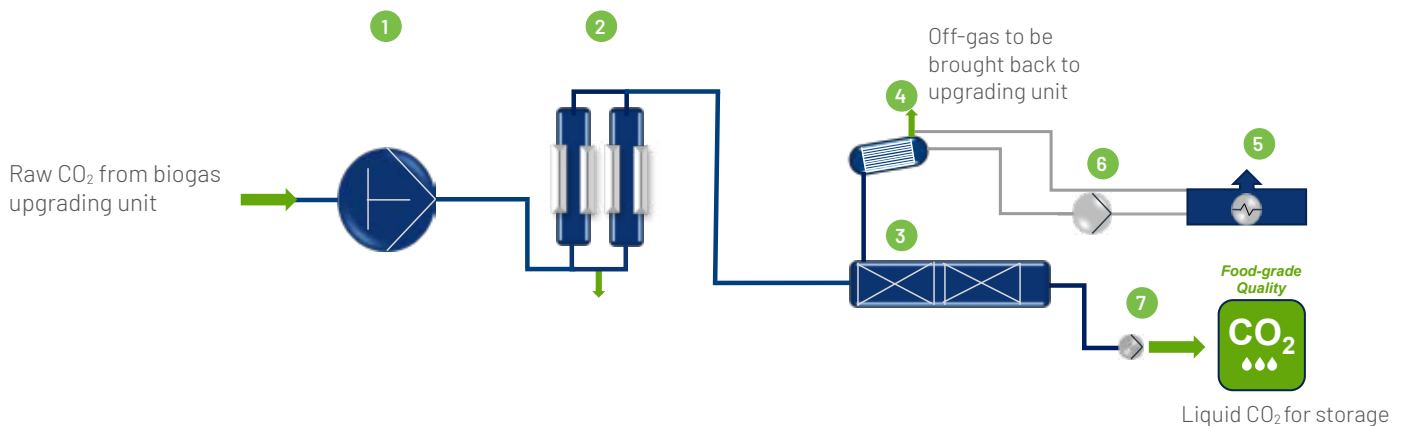
¹It is possible to connect a Pentair CO₂Bolt-On to a non-Pentair Biogas Upgrading System when compatible. To be reviewed on a case-by-case basis.

PENTAIR CO₂BOLT-ON

CO₂ RECOVERY SYSTEM

SCOPE OF SUPPLY

- 1 CO₂ compressor
- 2 Activated carbon filter & drier
- 3 Stripper-reboiler
- 4 Refrigerant cooled CO₂ condenser
- 5 Refrigerant (dry) condenser
- 6 Refrigerant compressor
- 7 Liquid CO₂ pump
- > Main parts skid mounted and controlled by MCC



INLET GAS CO ₂ CAPACITY	TYPICAL INLET GAS CONSUMPTION	FOOTPRINT (LXWXH)	POWER CONSUMPTION	TYPICAL OFF-GAS OUTLET CONDITIONS	LIQUID CO ₂ TO STORAGE TANK
250 – 1800 Nm ³ /h 500 – 3600 Kg/h	< 99% CO ₂ , 0,9% CH ₄ , 0,1% N ₂ /O ₂	12,8 x 10 x 2,8 m	~ 110 Wh/Nm ³ ~ 220 Wh/kg	30% CH ₄ , 3% N ₂ /O ₂ , 67% CO ₂ 45% CH ₄ , 5% N ₂ /O ₂ , 50% CO ₂	CO ₂ > 99,997% EIGA 2018

ABOUT PENTAIR

Pentair designs, builds, installs, and services end-to-end membrane-based Biogas Upgrading Solutions that produce biomethane and cryogenic and amine-based CO₂ Capture and Recovery Systems.

Let's work together to explore your biogas upgrading potential.

Visit biogas.pentair.com to find out more.



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