FLASHCO_2

CO_2 Recovery from Hydrogen Manufacturing Units

Pentair FlashCO₂ is a patented CO_2 recovery technology designed for hydrogen plants and steam reformers. It uses PSA off-gas with up to 50 % CO_2 concentration, eliminating the need for steam.

By combining chilled methanol absorption with advanced CO_2 liquefaction, FlashCO_2 delivers high-purity, food-grade CO_2 at low cost – without the need for steam stripping. With a recovery rate of 92 %, FlashCO_2 outperforms conventional amine systems while offering unmatched installation flexibility and energy efficiency.

KEY BENEFITS

High Efficiency & Output

- Up to 92 % CO_2 recovery – exceeding industry minimums by 12 %
- Boosts hydrogen production by up to 115%

Low Operating Costs

- No steam consumption – eliminates need for LP steam
- Low energy use – typically 1 GJ/ton CO_2
- No chemical waste or effluent treatment required

Superior CO_2 Quality

- Produces high-purity, food-grade liquid CO_2
- Enables recovery of valuable fuel gas byproducts

Flexible & Scalable Installation

- Stand-alone units possible
- Can be installed outside hydrogen plant fence
- Minimal changes to existing infrastructure

Environmental Impact

- Reduces greenhouse gas emissions
- Supports long-term CO_2 reduction goals

FLASHCO$_2$

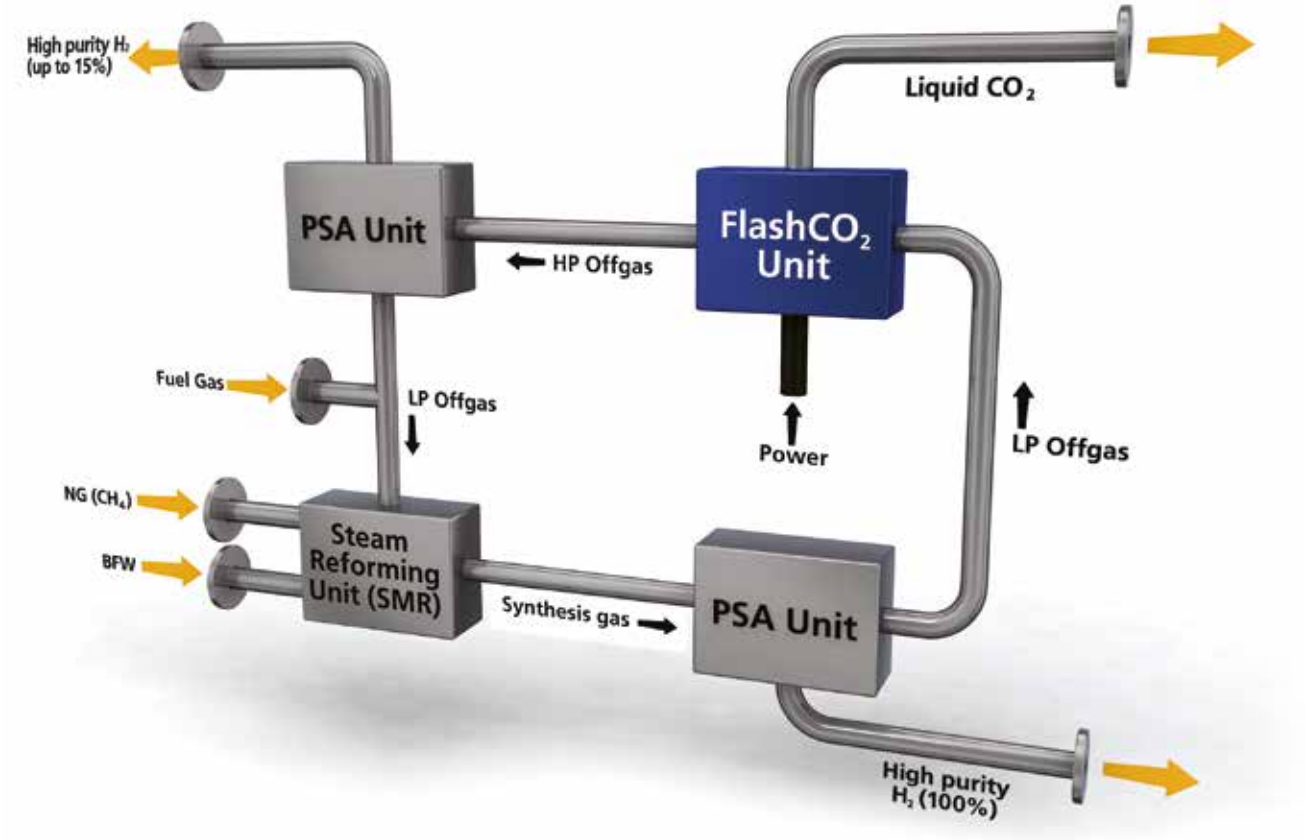
CHALLENGE

Access to low-pressure steam and high operating costs are major challenges for CO_2 recovery using MDEA, which typically consumes 1 ton of steam per ton of liquid CO_2. MDEA systems also require complex modifications to hydrogen plants and installation in ATEX zones, often facing licensing hurdles.

SOLUTION

FlashCO_2 was designed to overcome these issues with a simple, end-of-pipe solution that uses PSA off-gas and requires no steam. The unit can be installed outside the hydrogen plant fence, minimizing disruption. An optional PSA can recover up to 10 % additional high-purity hydrogen. Steam methane reforming remains the leading hydrogen production method, converting methane and steam into syngas, followed by shift conversion and PSA purification to separate hydrogen from CO, CO_2, and CH_4.

CO_2 RECOVERY FROM HYDROGEN PRODUCTION (AND ADDITIONAL H_2 PRODUCTION)



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