

PRODUCT APPLICATIONS:

Extraction



FIND NEW SOLUTIONS TO YOUR H₂ EXTRACTION PROBLEMS

H₂ extraction can be challenging. But by using Hydrogen Mem-Tech's patented palladium membranes and scalable separators in your plants, you can achieve your decarbonisation goals while lowering your process costs.

Our pioneering technology is highly selective, extracting only H₂ from the feed stream and at high temperatures. This is uniquely useful in hot gas processes where H₂ presence downstream is problematic and increases process cost, or where extracting H₂ can improve process efficiencies.

Our compact and robust separator frames are both space- and cost-efficient and have no moving parts. Our large frame units can be scalably deployed and have a long overhaul interval. Each unit can also be serviced without interrupting production from other separators.

CONDITIONING FEED GASES FOR PROCESS OPTIMISATION

Our customers often find these applications of economic interest:

- Pre-water gas shift reaction H₂ extraction
- Helium purification with H₂ extraction
- Pre-CO₂ capture

PRODUCT APPLICATION EXAMPLES:

PRE-WATER GAS SHIFT REACTION H₂ EXTRACTION

Hydrogen Mem-Tech's unique palladium membrane can de-bottleneck H₂ production processes in existing plants. It can also make new plant designs more efficient by improving the shift reactor performance.

Placing our membranes before the water gas shift reduces the H₂ partial pressure at the shift inlet. This pushes the process equilibrium in favour of a higher CO to H₂ conversion, making it capable of achieving a meaningful increase in the net H₂ production.

The additional H₂ can be used as process gas or as carbon-free H₂ fuel for firing, supporting your decarbonisation objectives. Gas conditioning of the inlet process gas to the separator is generally not required.

Another unique feature of our product is that the temperature required for the shift reactor aligns well with the operating temperature

of the membrane separator. This eliminates heating or cooling duties with only a minor pressure loss for the adjusted syngas.

PRE WATER-GAS SHIFT

SYSTEM PERFORMANCE

Hydrogen production increase?	Yes
Hydrogen purity	up to 99,99 %
Overhaul service interval (at op. temp 320 deg.C.)	up to 10 years

PROCESS CONDITIONS

Design pressure	up to	50	Bar (g)	
		725	psi (g)	
Operating temperature	300	to	400	deg C
	572	to	752	deg F

* Dependent on process parameters and inlet gas composition

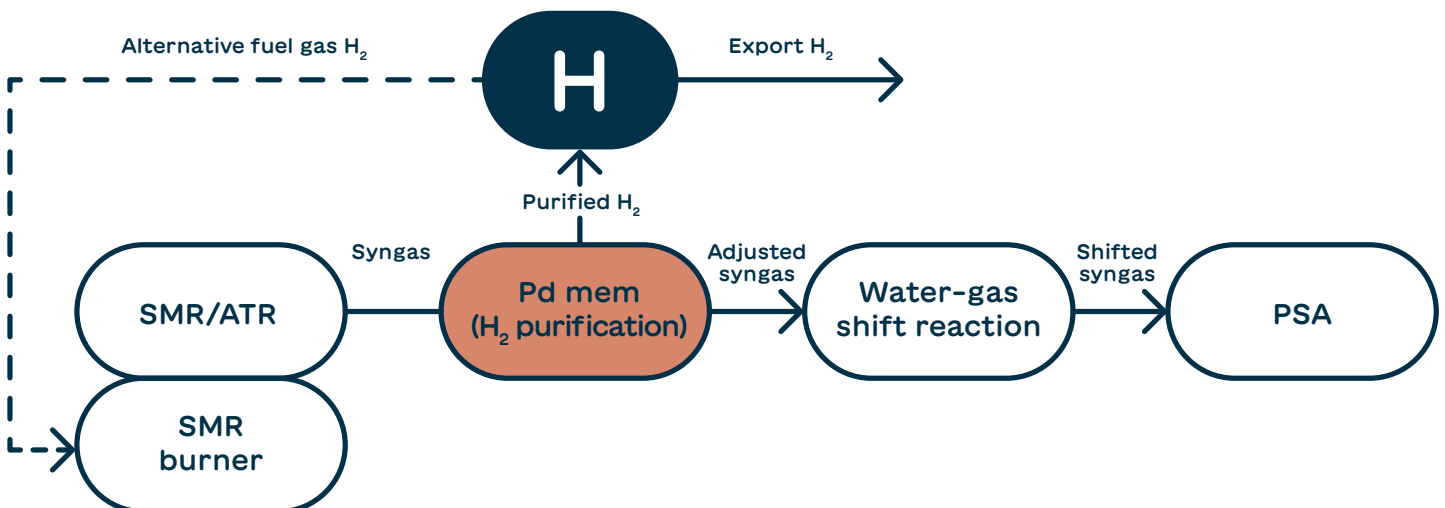
Across membrane

! Industrial purity

DIMENSIONS

Width, depth, height of skid frame	1682 × 2240 × 2599	mm
Footprint	3,8	m ²
Weight	11,2	tonnes

ILLUSTRATION



WHAT PROBLEMS CAN WE HELP YOU SOLVE?

Whether you are a licensor, an EPC or an end user, get in touch with our highly skilled team for more information about our applications.