

A cost-effective pressurized modular hydrogen
production unit for on-site hydrogen supply

HyOne 300™

www.woniltni.co.kr

가압형 모듈화 고순도 수소생산 스킴드 유닛

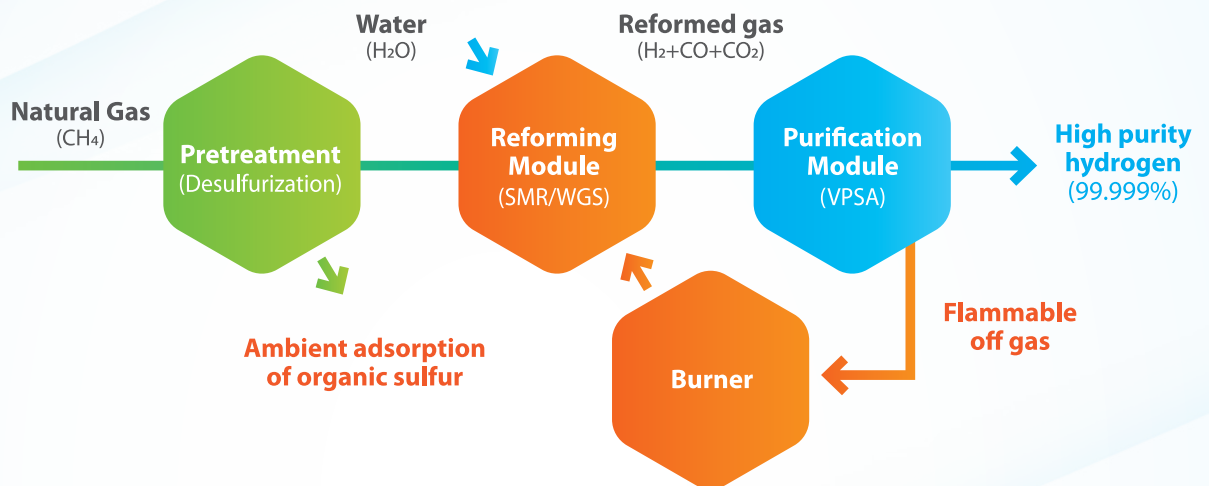


HyOne 300™

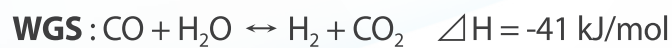
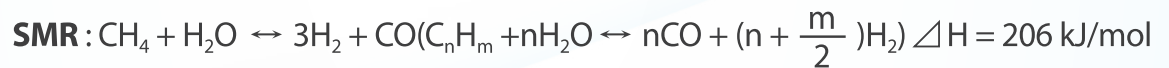


소개 Overview

- 흐름도 simplified PFD



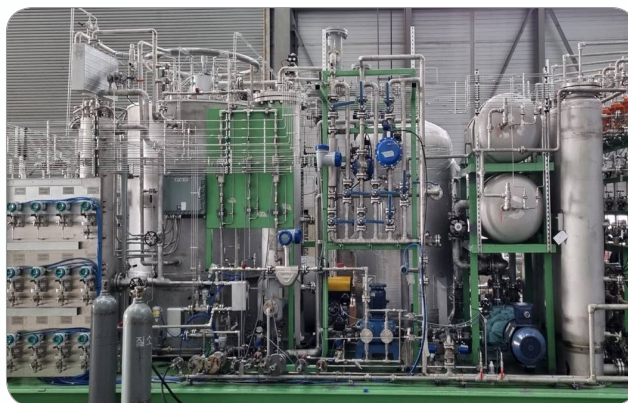
- 반응화학 Reaction Chemistries



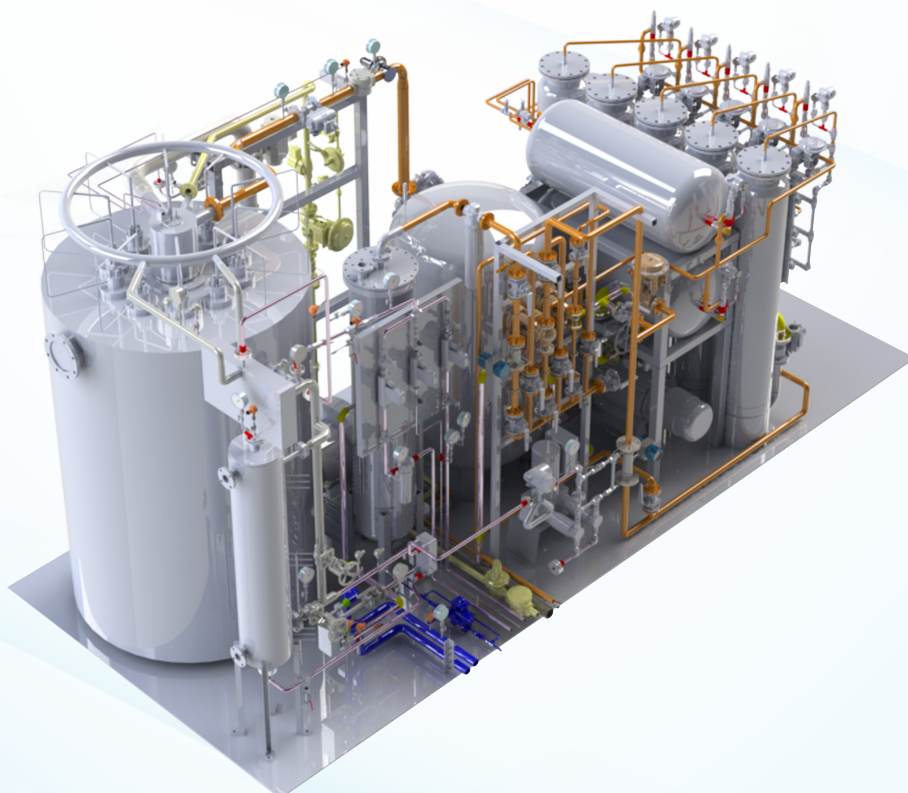
원료 (Feedstock)	도시가스 (City gas)
핵심기술 (Core technology)	수증기 개질 + VPSA 정제 (Steam reforming + VPSA purification)
수소 제조 용량 (Production capacities)	300Nm3/hr
수소 순도 (Purity)	99.999 %, CO < 0.2 ppm (ISO 14687-2)
시스템 효율 (System efficiency)	80% HHV ↑
생산수소 압력 (H2 production pressure)	8기압 (8 atm)
소요공간 (Footprint)	7.5 m (L) X 3.0 m (D) X 3.5 m (H)



Skid



3D Modeling





장점 Benefits

저가 | Cost-effective

- 컴팩트/모듈화 설계 및 과잉스팀이 없기 때문에 초기 시설 투자비용(CAPEX) 최소화 가능
- Minimum capital expenditures due to compact modular design based upon DFMA(design for manufacturing & assembly) principle and no steam export.

고효율 | Highly-efficient

- DFMA 기반의 열 및 시스템 통합 설계(대류전열방식의 열교환 일체형 흡열 리포머 반응기 설계/안정적인 반응용 스팀 내부 생산(=no steam export)/내부 열교환 효율극대화[heat sources (flue gas, reformed gas) vs. sinks (water, NG, air)]/반응물(NG+스팀) 완전혼합 및 균일분배
- Heat & system integrated engineering design based upon DFMA principle(heat exchanger type reformer with convective heat transfer/no steam export during operation/maximization of internal heat exchange efficiency between heat sources, e.g. flue gas and reformed gas from reformer exit, and sinks, e.g. feed water, natural gas and air/complete mixing & uniform distribution of reactants).

모듈화 | Modular

- 리포밍 모듈과 VPSA 모듈 조합의 skid unit 설계를 통한 현장 설치 기간 및 비용의 최소화
- A skid unit design with combination of reforming module and VPSA module, providing easy site installation and erection cost minimization.

안정성 | Reliable

- 공정 제어 및 자동화 시스템 최적화
- Optimization of process control & automation system.



사업 실적 Performance

》 수소추출시설 제작 및 설치

Manufacture & Installation of Hydrogen Production Unit

■ 3,000Nm³/h x 1 set, 300Nm³/h x 1 set

- 발주처 (Owner) : 한국가스기술공사 (KOGAS-Tech)
- 지역 (Location) : 평택 (Pyeongtaek)

■ 300Nm³/h x 3 sets

- 발주처 (Owner) : 안산도시개발 (Ansan Urban Development Inc.)
- 지역 (Location) : 안산 (Ansan)

■ 300Nm³/h x 4 sets

- 발주처 (Owner) : 우석대학교 (Woosuk University), 한국가스기술공사 (KOGAS-Tech)
- 지역 (Location) : 완주 (Wanju)

■ 산업통상자원부 기술개발과제 주관기관 선정 – 수소가격 경쟁력 강화를 위한 1,000Nm³/h급 탄소배출 저감형 고효율 중대형 개질기 기술개발

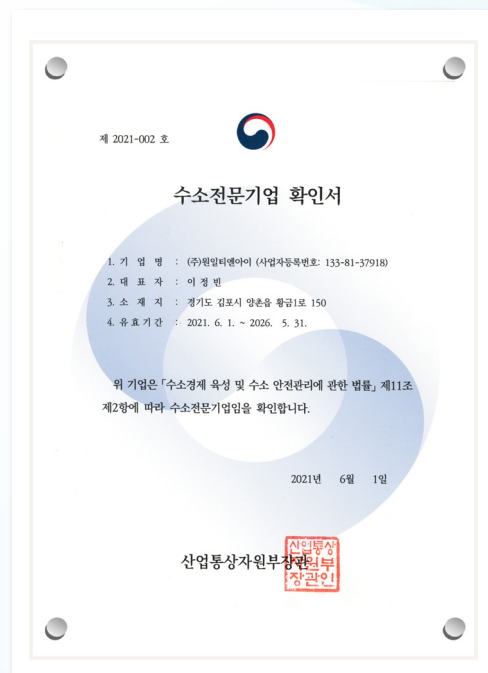
(Cost effective & high-efficiency 1,000Nm³/h class blue hydrogen production unit with CCS (National Project funded by Ministry of Trade and Industry))

》 조달청 혁신시제품 지정

(Nomination of Innovative Prototype hydrogen production unit)
(Public Procurement Service)

》 산업통상자원부 수소전문기업 지정

(Nomination of Hydrogen Specialized Enterprise) (Ministry of Trade and Industry)



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WONIL T&I CO.,LTD.

본사 (HEAD OFFICE & FACTORY)

경기도 김포시 양촌읍 황금1로 150

150, Hwanggeum 1-ro, Yangchon-eup, Gimpo-si, Gyeonggi-do, Republic of Korea

TEL : +82-31-498-0521 FAX : +82-31-498-0525

서울사무소 (SEOUL OFFICE)

서울시 강남구 테헤란로 514길 삼흥2빌딩 13층

13th floor, Samheung 2Building, Teheran-ro 514-gil, Gangnam-gu, Seoul, Republic of Korea

TEL : +82-2-556-9261~4 FAX : +82-2-556-9265