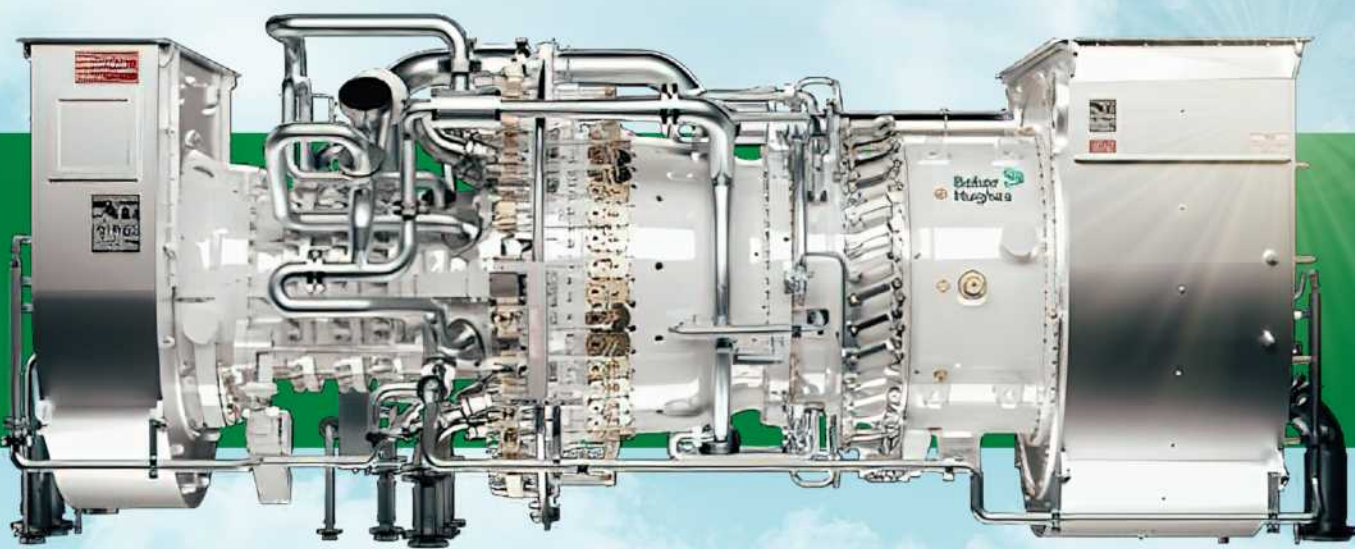





# Hydrogen Gas Turbine

Model :  
**NovaLT™**



## Design to minimize total cost of ownership

- **Availability** > 99%
- **Best in class efficiency**, full and partial load
- **35,000 hours MTBM**
- **Maintainability** : engine swap in 24 hours
- **Remote Operability**

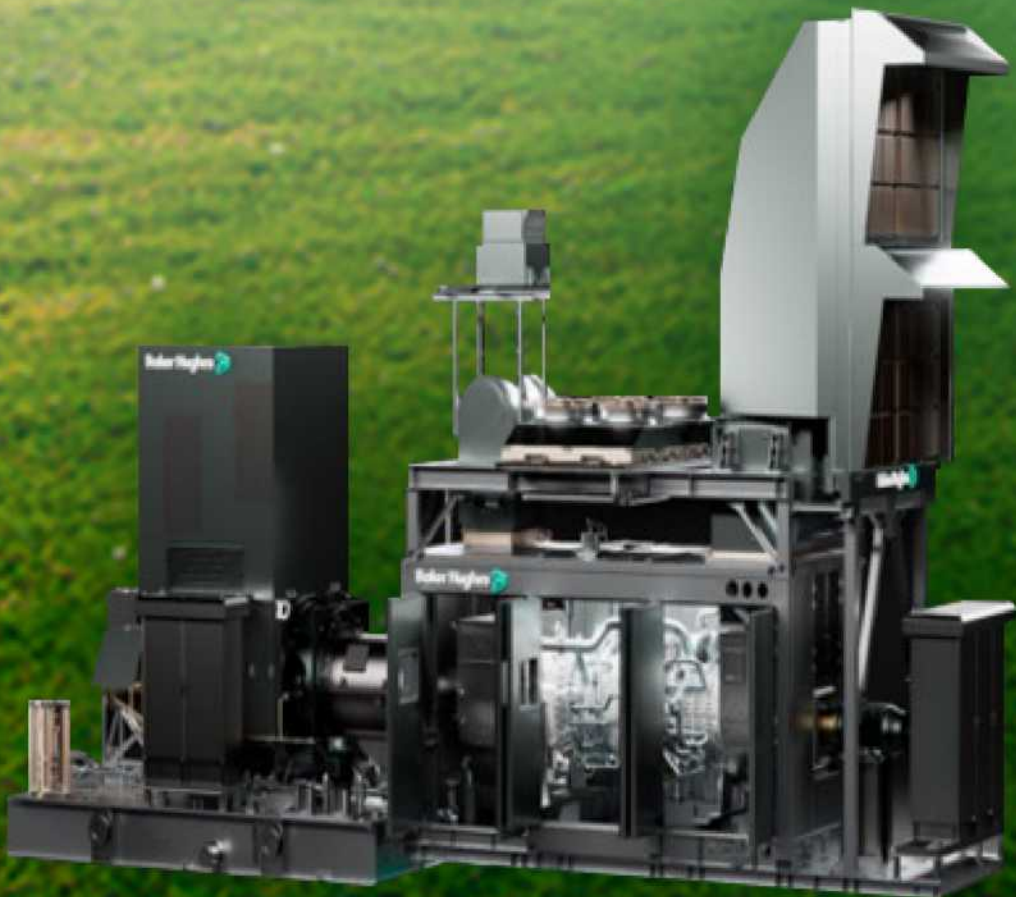
	 <b>LT5</b>	 <b>LT12</b>	 <b>LT16</b>
Shaft Output	5.5MWe	13MW/12.5MWe	17.5MW/16.9MWe
Efficiency @ full load	31.5/30.7%	36.8/35.3%	37.5/36.4%
Efficiency @ 70 % load (feat. VATN LT12/16)	28.3%	32%	33.1%
Shaft nominal speed	16,630 rpm	8,900 rpm	7,800 rpm
MTBM	24,000 fire hours	35,000 fire hours	35,000 fire hours
NOX emissions	15 ppm	15 ppm*	15 ppm*

\*9 ppm available on request

## Case Study : Commercialize in Canada

Equipment : Gas Turbine NovaLT™16

Commissioning : **December, 2024**  
Start up : **Blends up to 100% H2. switch from NG to gas blends up to 100H2 on the fly**



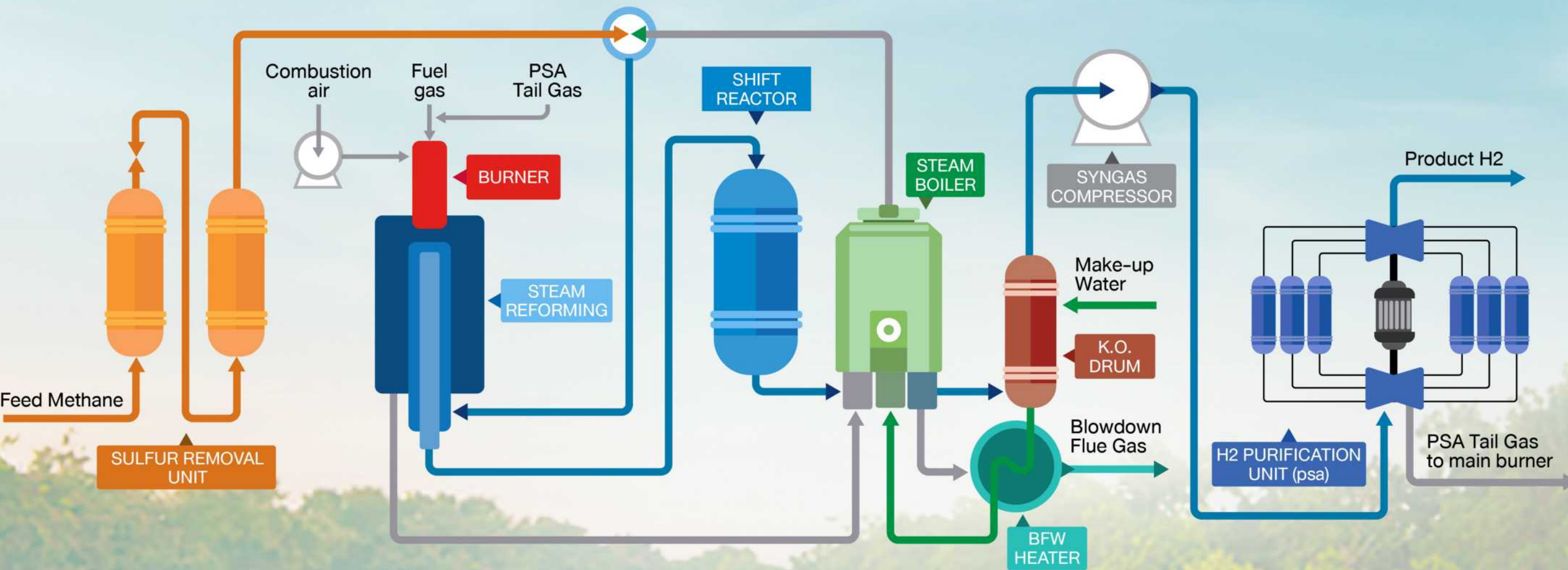
	Capacity	% efficiency
Powergen Simple Cycle	16.9 MWe	36.4% Elect. efficiency
MECH Drive Simple Cycle	17.5 MWe	37.5% Elect. efficiency
Combined Cycle	22.0 MWe	48% Elect. efficiency
Cogeneration (CHP)	31tph Steam output	80% CHP efficiency
Maintenance	35k-70k (FFH)	<ul style="list-style-type: none"><li>• No annual inspection</li><li>• Fast engine exchange</li><li>• Minimized inventory</li></ul>
Nox Emissions	<ul style="list-style-type: none"><li>• 15 ppm with SCR at exhaust (today)</li><li>• 15pp, DLN (From 2026)</li></ul>	



# Blue Hydrogen Generator



**Steam Methane Reforming (SMR) with Carbon Capture and Storage (CCS)** uses innovative and high efficient adsorbent media, producing Hydrogen from natural gas or biomethane while capturing resulting carbon dioxide emissions. Therefore, SMR with CCS is a promising technology for reducing greenhouse gas emissions from Hydrogen production.



## Input Feed & Fuel Specifications

Natural Gas Analysis Pressure : 1 bar(g) ( minimum)	Typical Range	Maximum	Design Case
Methane (vol%)	80-100		95.3
Ethane (vol%)	0-10		2.6
Propanes+ (vol%)	0-1	1.5	0.7
Inerts (Co2, N2) (vol%)	0-10		0.7
Oxygen (vol%)		0.2	
Total Sulfur (ppmv)	0-12	20	5

## Operation Support

Utilities for the Production of 100Nm3/h of H2 the following utilities are require :

Natural gas : **41 Nm3/h**  
Municipal water : **105-140 kg/h**  
Cooling Water : **12.5m3**  
Electricity power : **40kW (400V, 3 phases, 50Hz) for combustion air blower, syngas compressor, air coolers, extractor fan (ventilation system) to purge container , feedwater pump, RO water pump and PSA**

## Output Specifications :

Product Flow : **Standard flow 35-200 Nm3/h net hydrogen (up to 500-1,000 Nm3/h upon request)**  
H2 purify : **Typically 99.95% less than 10ppm CO**  
Delivery Pressure : **Typically 11bar(g), up to 40-50bar(g) upon request.**  
Turndown : **40% of design capacity**  
Thermal Efficiency : **approximately 69% (LHV net H2/LHV feed + fuel) or about 398 LHV Btu feed + fuel/net scf H2**

## Dimension

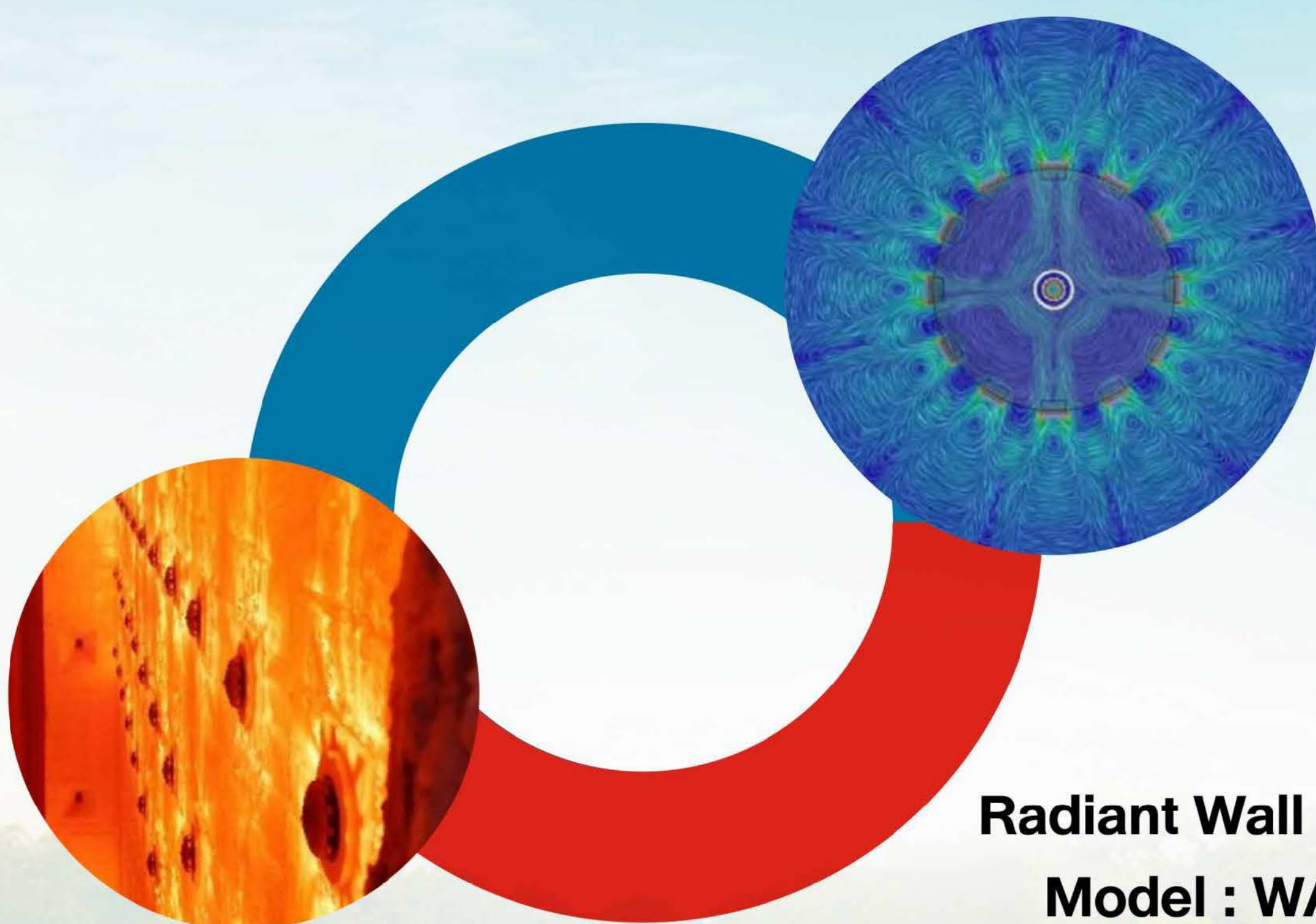
- The system components will be integrated using a high-cube ISO container
- For the production of 50Mn3/h of H2 the container dimensions are 2.44m (wide) x 9m (long) x 2.74m (high)



# Hydrogen Burner

The WALFIRE burner draws upon decades of radiant wall burner experience in reforming and olefins furnaces across the globe to deliver superior performance and benefits.

- +100% No-flashback guarantee, due to diffusion concept
- +The lowest possible NO<sub>x</sub> emission for such applications



**Radiant Wall Burner  
Model : WALFIRE**

## Performance

- Less than 82 dBA noise at 3ft or 1m
- Fuel flexibility including up to 100% hydrogen
- Extremely low gas pressure required <0.5 bar(g) for 0.3MW
- Specifically designed to provide a radial flame that lies flat against the fired wall preventing flame projection into the process coils
- Customizable flame geometry to fit tightest installations
- Very large air ports which are virtually impossible to plug during normal operating conditions (dust/sand)

**Case Study : 100% Hydrogen  
Duct Burner HRSG Plant**