

Where energies make tomorrow ●

Capture up to 99% of
your low-carbon hydrogen
production emissions.

Unleash your full blue potential.

BlueH₂TM
by T.EN



TECHNIP
ENERGIES

Our hydrogen heritage

>30%

Global installed H₂ capacity

60+

Years of extensive H₂ experience

275+

H₂ references

50+

References of carbon capture (CO₂) from H₂ plants

40+

H₂ plants for Air Products plants

40+

H₂ plants w/ pre-reformer for multi-feedstock

14+

H₂ plants with TPR

3+

applications of EARTH[®]

Capture. Now.

BlueH₂ by T.EN™ is part of Capture.Now™, our comprehensive portfolio of CCUS technologies and solutions designed to support clients on their decarbonization journey.

Your complete low-carbon hydrogen solution

Low-carbon hydrogen is key to the energy transition. Offering the opportunity to affordably decarbonize hard-to-abate industries and power as well as heavy transportation at the scale needed to meet growing energy demands.

From technology to design, delivery and beyond, BlueH₂ by T.EN™ combines our proven suite of SMR and ATR technologies with our extensive low-carbon hydrogen experience in a powerful, single-source solution that's tailored to meet your specific decarbonization and performance needs.

BlueH₂ by T.EN™ unleashes value in any type or scale of plant

- **Unleash up to 99%+ carbon emissions capture**
99% reduction in the carbon footprint compared to the traditional hydrogen process, from ~10 down to <0.1 kilogram CO₂ per kilogram H₂.
- **Unleash cost, performance and schedule certainty**
Accurately predict and control costs through fully integrated technology and delivery solutions featuring project, performance and financial guarantees from a top-tier company with more than 60 years experience in the seamless execution of global hydrogen projects.
- **Unleash more than 99% operational reliability**
Our hydrogen plants have proven reliability and demonstrated onstream availability of more than 99% for uninterrupted hydrogen production.
- **Unleash more yield and the best LCOH**
Maximum hydrogen yield, minimum energy demand, and highly efficient carbon avoidance and CCUS techniques to arrive at the lowest levelized cost of (blue) hydrogen.
- **Unleash added value**
Increase your profits with the coproduction of value products, such as steam, synthesis gas, CO, power and derivatives.



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Delivering plants with the highest levels of reliability and efficiency in the industry.”

Unleash the power of ATR and SMR technologies

Proprietary reforming technologies for large-capacity, ultra-blue hydrogen

Auto-thermal reforming (ATR) is a game-changing technology as it breaks the upper capacity limit of traditional hydrogen plants, which were economically constrained by the size of the SMR, and enables large-capacity, ultra-blue hydrogen production with up to 99% carbon capture rate.

Through our partnership with Casale we are serving our clients' needs and reinforcing our position as a global leader in hydrogen by adding ATR technology to our extensive range of proprietary SMR technology solutions.

ATR combined with Technip Parallel Reformer (TPR) and carbon capture is a cost-effective way to produce low-carbon hydrogen at large-scale with zero steam export.



2 GW

Up to 600 kNm³/h in a single train with ATR

Industry-leading SMR technology for small-medium capacity, low-carbon hydrogen

Combined with either Technip Parallel Reformer (TPR) or Enhanced Annular Reforming Tube for Hydrogen (EARTH[®]) and carbon capture, SMR is a cost-effective way to produce low-carbon hydrogen across a wide range of capacities with emissions capture targets of up to 99%.

Our technologies include the LSV[®] Large-Scale Vortex Burner with flameless combustion with ultra-low NOx. Our LSV burner is compatible with a wide range of fuel types and proven with 100% hydrogen firing.

We have unrivaled experience in this area with more than 275 hydrogen plants using our SMR technology and we can deliver top-fired reformers for hydrogen plants up to 300 kNm³/h (1 GW) in a single unit with optimized CAPEX and the lowest plot requirements without compromising OPEX.



1 GW

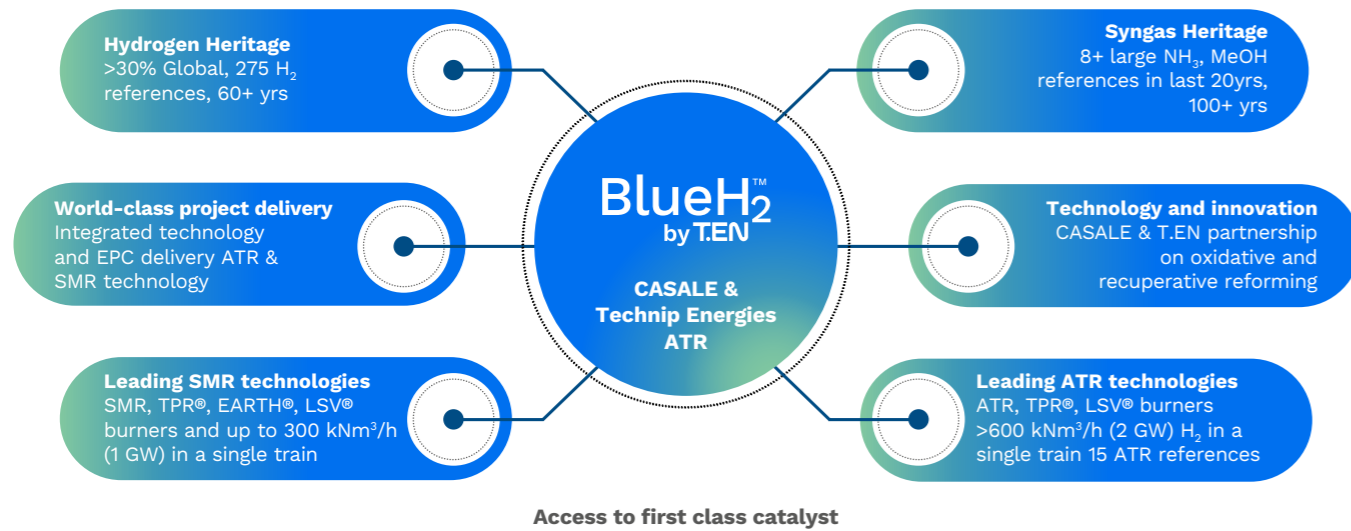
Up to 300 kNm³/h (1 GW) in single train with SMR



The optimal solution for any type or scale or hydrogen application

BlueH₂ by T.EN™ comprises of proven building blocks and validated, real-world flow schemes needed to deliver the optimal low-carbon hydrogen solution, regardless of plant feedstock, reforming type, plant capacity or industrial application.

By combining our proprietary technologies with our extensive hydrogen processing experience and carbon-capture expertise, we design and deliver a fully integrated solution with an optimum flowsheet.

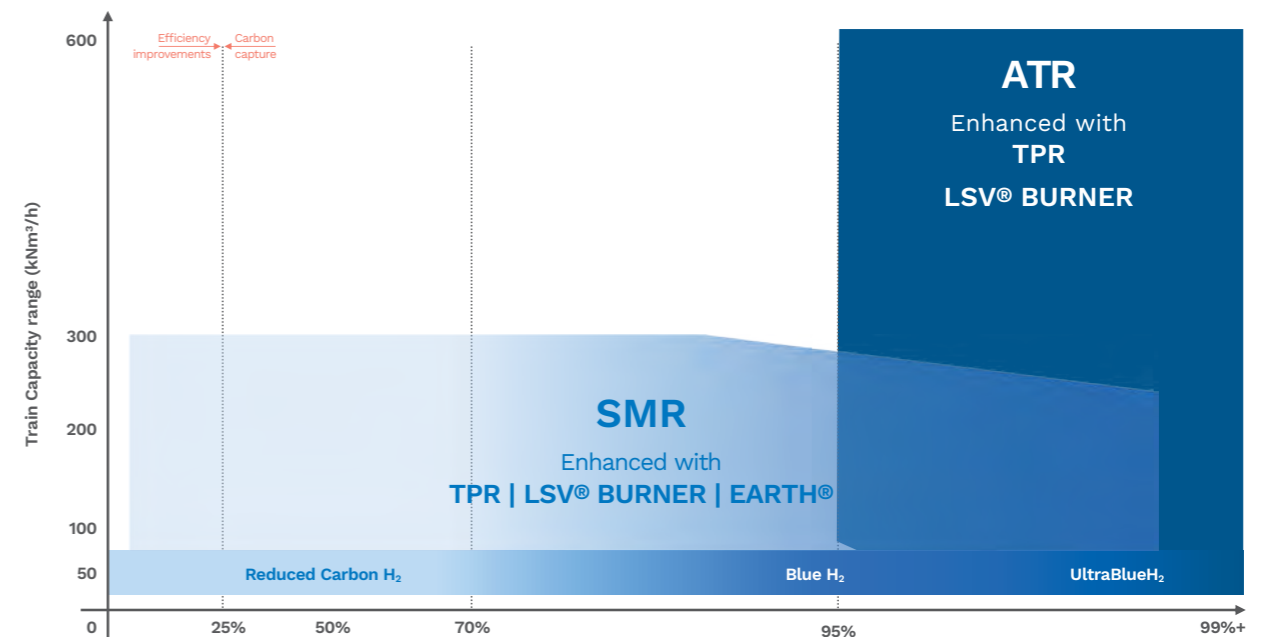


The right shade of blue for you

In addition to serving the traditional grey and blue hydrogen business, we are evolving our technology and its application to refining and chemical manufacturing and to the decarbonization of industries including steel, cement, power, olefins and LNG as well as facilitating clean energy carriers.

From small (10kNm³/h) to mega scale (>1000kNm³/h), find the low-carbon hydrogen solution that fits your energy transition needs with BlueH₂ by T.EN™.

>600 kNm³/h
 CO+H₂ in a single train with ATR



Our performance-enhancing technologies

We combine our core SMR and ATR technologies with our performance optimization technologies and gas processing expertise to design and deliver a fully integrated solution with an optimum flowsheet for any application.



EARTH®: Enhanced Annular Reforming Tube for Hydrogen

Recuperative reforming solution that saves 30% on fuel costs and reduces CO₂ emissions by up to 10%. Fully proven in operation and can be installed in existing and new reformer tubes with simple drop-in (minimum CAPEX).



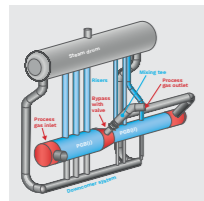
TPR: Technip Energies Parallel Reformer

Our proprietary convective recuperative heat exchange reformer is designed to optimize the high-grade heat cycle, reduce hydrocarbon consumption and increase reforming capacity by up to 30% and reduce CO₂ emissions by up to 20%, successfully operating for over 20 years with installed capacity up to 160 kNm³/h in a single unit and growing.



LSV®: Large-scale Vortex ultra-low NOx burner

Our proprietary ultra-low NOx burner technology delivers flameless combustion and is suitable for a wider range of furnaces and fuels. Recently tested with 100% H₂ firing. Adjustable and uniform flame heat release to enhance furnace performance.



Dual-chamber process gas boiler

Our proprietary dual-chamber process gas boiler enhances cost-effectiveness and improves energy efficiency through extended heat recovery.



CO₂ capture

Hydrogen plants with overall CO₂ capture rate up to 99% are achievable using precombustion process capture with our flowsheet and technology solutions.

3+

applications of EARTH®

14+

H₂ plants with TPR

Alliances and partnerships

- **Casale:** Oxidative ATR technology
- **Air Products:** LSV burner technology
- **Clariant:** Structured catalyst EARTH®
- **BASF:** CO₂ absorption
- **Shell:** CANSOLV capture technology

Top-tier company integrating technology and delivery in a complete low-carbon hydrogen solution.

With BlueH₂ by T.EN™, we have the capabilities to deliver low-carbon hydrogen solutions to meet your decarbonization goals from small (10 kNm³/h) to mega scale (>1,000 kNm³/h), unleashing your full blue potential across any application in new builds or revamps of existing plants.

With the capacity and capability to offer a variety of execution schemes, our methodical, experienced approach will guide you from feasibility studies and technology selection through to turnkey plant delivery and startup.

Cost, performance and schedule certainty

Transparency, visibility and predictability are essential in today's ever-changing world.

From early engagement and technology selection through to final execution we deliver certainty at every stage, taking full responsibility throughout the entire process to derisk your project and give you cost, performance and schedule certainty.

Creating a predictable schedule demands the early integration of many construction elements into the project execution scheme. Our distinctive capabilities for modularization and an optimized local content strategy enable us to define the optimal solution early in the process while our extensive global execution experience assures predictable project delivery.



15

references of ATR

- Casale largest references
- From 30 to >600 kNm³/h in single train (largest worldwide methanol plant ATR reference)
 - 20 years delivering ATR to market
 - 17y+ ATR burner operation
 - ATR + CO₂ capture units references

Take advantage of our main solution benefits:

<p>Plant performance guarantees</p>	<p>Schedule efficiencies by eliminating technology and delivery interface</p>	<p>Improved project costs through early technology and design development</p>	<p>Product approach suitable for the local market</p>	<p>Optimized productivity through asset lifecycle support</p>
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Our key ongoing low-carbon hydrogen references

Leveraging 60 years of proven hydrogen performance, we deliver plants with the highest levels of reliability and efficiency in the industry, constantly pushing boundaries to unleash the full potential of low-carbon hydrogen.





Unleash the opportunity of low-carbon hydrogen

Discover how BlueH₂ by T.EN™ can help you efficiently and affordably achieve your hydrogen decarbonization goals, on any scale, fast.

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