Hydrogen Power Plants
Service & Solutions

Serving the entire power generation value chain
We energize society

Find your path to decarbonization with end-to-end solutions that suit all of your existing and new equipment needs

Low- or zero-emission power generation
Reduce CO₂ footprint and energy consumption
Reduce high carbon producers
Utilize excess renewable energy
Grid flexibility and reliable transmission
Partner with innovative technology leaders

Our energy landscape is changing

By 2025, hydrogen strategies will be leading the energy transition.
Serving the entire hydrogen value chain

Our expert in-house competencies can support your goal to be a key player in the energy transition with hydrogen power generation.

Our innovative products support customers in transitioning to a more sustainable world.

Generation
We provide products, solutions and services for conventional power generation with high efficiencies. We reduce carbon emissions from existing assets and develop technologies that will be critical in the future for the decarbonization of power generation applications.

Industrial Applications
We support our customers in oil and gas, as well as other industries, by providing safe, reliable and highly efficient rotating, electrical, automation and digital products, solutions and services.

Transmission
We partner with our customers to build and operate efficient grid infrastructures. We offer reliable products, solutions, and services improved with digital functions to meet the growing demand for sustainable electrification.

New Energy Business
We shape the green hydrogen economy. We develop technologies to couple our economic sectors with renewable sources of power.

Siemens Gamesa Renewable Energy
We provide wind energy technologies and services for a sustainable future. We are one of the world’s leading suppliers of on- and offshore solutions.
H₂ combustion experience built on development across fleets

We rely on steady increases of hydrogen to meet strict reliability standards.

<table>
<thead>
<tr>
<th>Size</th>
<th>e.g. with a gas turbine model and power output range</th>
<th>CO₂ reduction</th>
<th>NOx emissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large</td>
<td>[Diagram showing various sizes and burners]</td>
<td>23% to 47%</td>
<td>Diffusion burner with unabated NOx emissions</td>
</tr>
<tr>
<td>Medium</td>
<td>[Diagram showing various sizes and burners]</td>
<td>11% to 47%</td>
<td>WLE burner</td>
</tr>
<tr>
<td>Small</td>
<td>[Diagram showing various sizes and burners]</td>
<td>11% to 5%</td>
<td>DLE burner</td>
</tr>
</tbody>
</table>

September 2022

<table>
<thead>
<tr>
<th>Model</th>
<th>Power Output (MW)</th>
<th>CO₂ Reduction</th>
<th>NOx Emissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>SGT5-9000HL</td>
<td>593</td>
<td>23%</td>
<td>Diffusion burner with unabated NOx emissions</td>
</tr>
<tr>
<td>SGT5-8000H</td>
<td>450</td>
<td>11%</td>
<td>WLE burner</td>
</tr>
<tr>
<td>SGT6-9000HL</td>
<td>440</td>
<td>11%</td>
<td>DLE burner</td>
</tr>
<tr>
<td>SGT6-8000H</td>
<td>310</td>
<td>11%</td>
<td>-</td>
</tr>
<tr>
<td>SGT6-5000F</td>
<td>215-260</td>
<td>5% - 35%</td>
<td>-</td>
</tr>
<tr>
<td>SGT6-2000E</td>
<td>170</td>
<td>1% - 3%</td>
<td>-</td>
</tr>
<tr>
<td>SGT-800</td>
<td>24/25</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>SGT-400</td>
<td>10/14/11</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>SGT-A05</td>
<td>4 to 6</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

50Hz and 60Hz: Power output in MW at ISO ambient conditions and natural gas. 1) Compared with 100% natural gas operation.
Integrate all aspects of your power generation in one system

Siemens Energy is combining its unique portfolio of gas and steam turbines, electrolyzers, and heat pumps, and turning it into a unique optimized power plant solution with one operating system.

New Hydrogen Ready Turbine
Green power generation can be a valuable addition with a new 100% hydrogen-ready power plant in your decarb journey

Co-Firing Existing Turbines
Existing service units can be upgraded to operate with a hydrogen co-firing mix

Heat Recovery Option
Combining power with heat generation allows for excellent overall efficiency

Hover over to find your decarbonization solution.
Make your plant H₂ ready now and save

H₂ gas turbines can be upgraded to hydrogen at a later date, reducing future retrofit costs.

Upgrade requirement

- Requirement to modify existing gas turbines and combined cycle power plants to burn hydrogen in the future
- Minimization of risk of having future “stranded investments” when deciding today on new GT/CCPP power plant construction projects

Potential future developments

- Hydrogen content in gas pipeline likely to increase in future due to electrolyzers gaining wider acceptance and discharging hydrogen into the gas grid
- Changes in legislation enforcing decarbonization of power sector leading to a requirement to co-burn increasing content of clean hydrogen

Siemens Energy Gas Turbines

As an OEM for key components, we have the experience, technical domain expertise, and standardized approach for co-firing and recommend a collaborative approach to exploring the current capabilities of a facility and establishing a path forward to accomplish optimal hydrogen co-firing milestones.

New Burner Design

100% vol

Smaller modifications and certifications required

-50-70% vol

Limited modifications, commercially available

~30% vol

Minor to no modifications¹

~15% vol

¹Percentage varies from GT model to model and emission limit requirements
Our electrolyzers are proven and efficient

Silyzer 300 enables grid support services with efficient hydrogen yield and maximum dynamics.

More than just an electrolyzer, the Silyzer is a cornerstone to new market design

Optimized portfolio levels depending on solution scope

Designed for fast installation, low cost and maintenance friendliness

Pre-engineered Balance of Plant packages for faster time-to-market and Proof of Sustainability ready

The Silyzer is scalable to meet your electrolysis needs

Silyzer 300 – Full module array, 24 modules. The next paradigm in PEM electrolysis

17.5 MW
plant power demand

>75.5%
plant efficiency

24 modules
to build a full module array

335 kg
hydrogen per hour
Hydrogen Decarbonization Calculator

Realize your potential cost savings through CO₂ reduction with our Hydrogen Decarbonization Calculator

Let us help you reach your decarbonization targets.

Calculate your CO₂ reduction and cost saving potential by running your turbines partly or fully on hydrogen.
Our expert teams are near you

Siemens Energy’s global footprint enables engagement in hydrogen projects anywhere