SIEMENS energy



Siemens Energy

Test Services

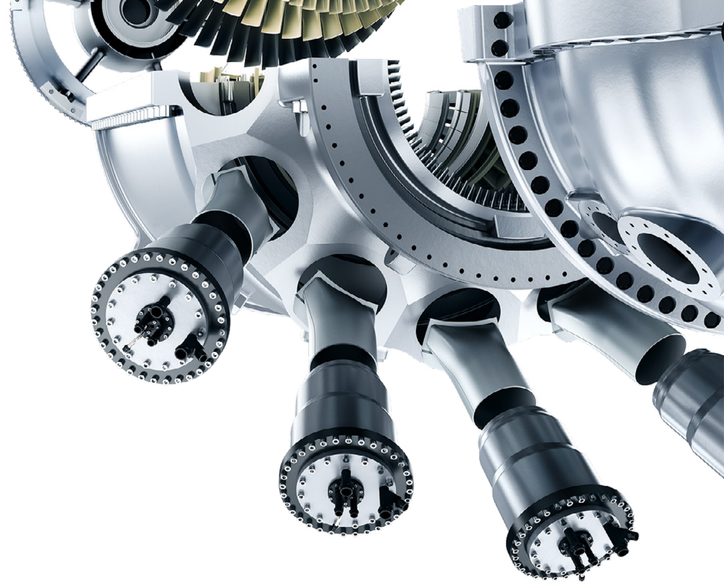
For best viewing experience, please open this interactive PDF in the Acrobat PDF Viewer 10.0 or higher.

Visit our website: siemens-energy.com/gasturbines

What we offer

Our testing expertise is what we offer. 50 years of experience in 7 testing centers worldwide. New technologies are quickly and effectively validated at our own test centers – like at the Clean Energy Center in Ludwigsfelde near Berlin (Germany) and the in-house full scale engine test facility of the Berlin Gas Turbine Plant. Technical innovations in design and development, process engineering, materials and manufacturing as well as assembly processes collectively support Siemens Energy in constantly transforming new customer and environmental requirements into reality.

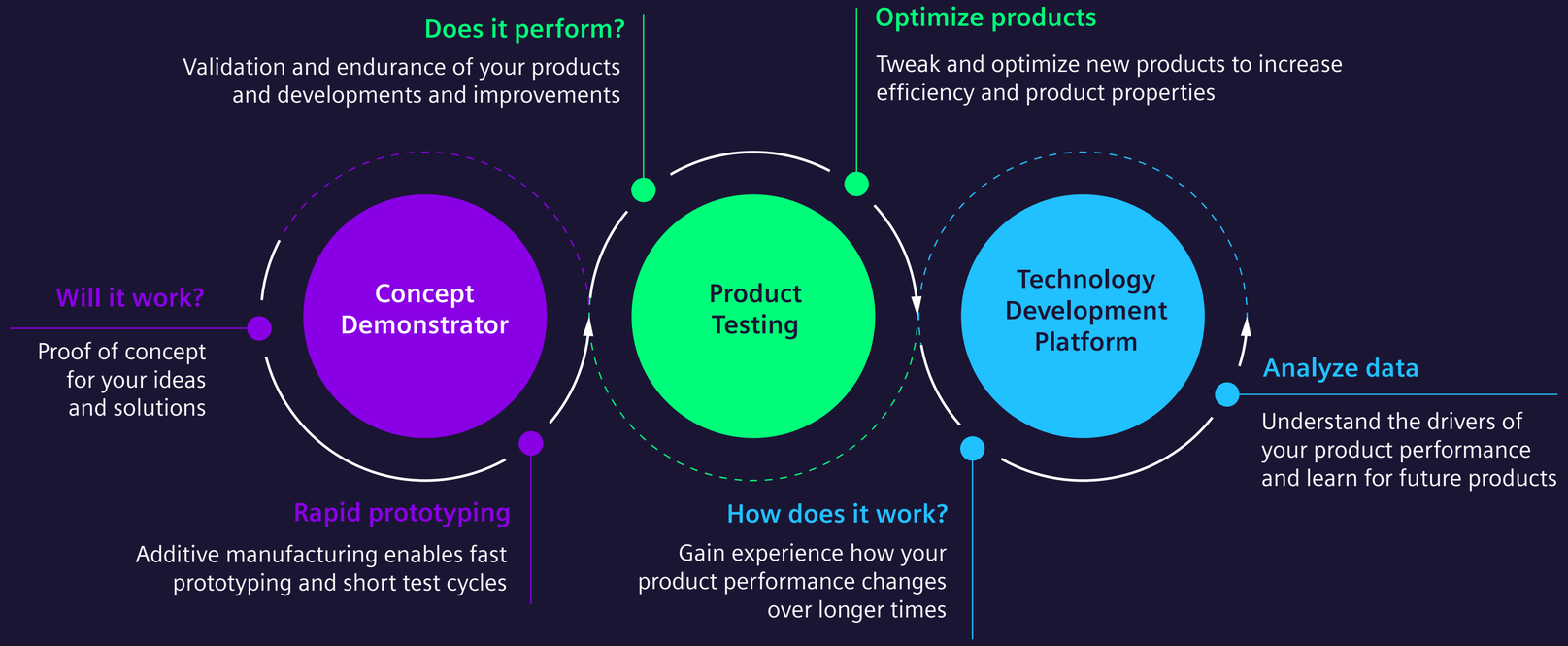
As an integral part of the development process testing & validation was successfully done in the field of combustion with ultralow NO_x premixed combustion system; improvements in Thermal Barrier Coating (TBC) technology as well as innovative manufacturing technologies like Selective Laser Melting (SLM) to mention only a few.



Advising and mentoring	Measurement Techniques	Rigs and facilities	Test Execution

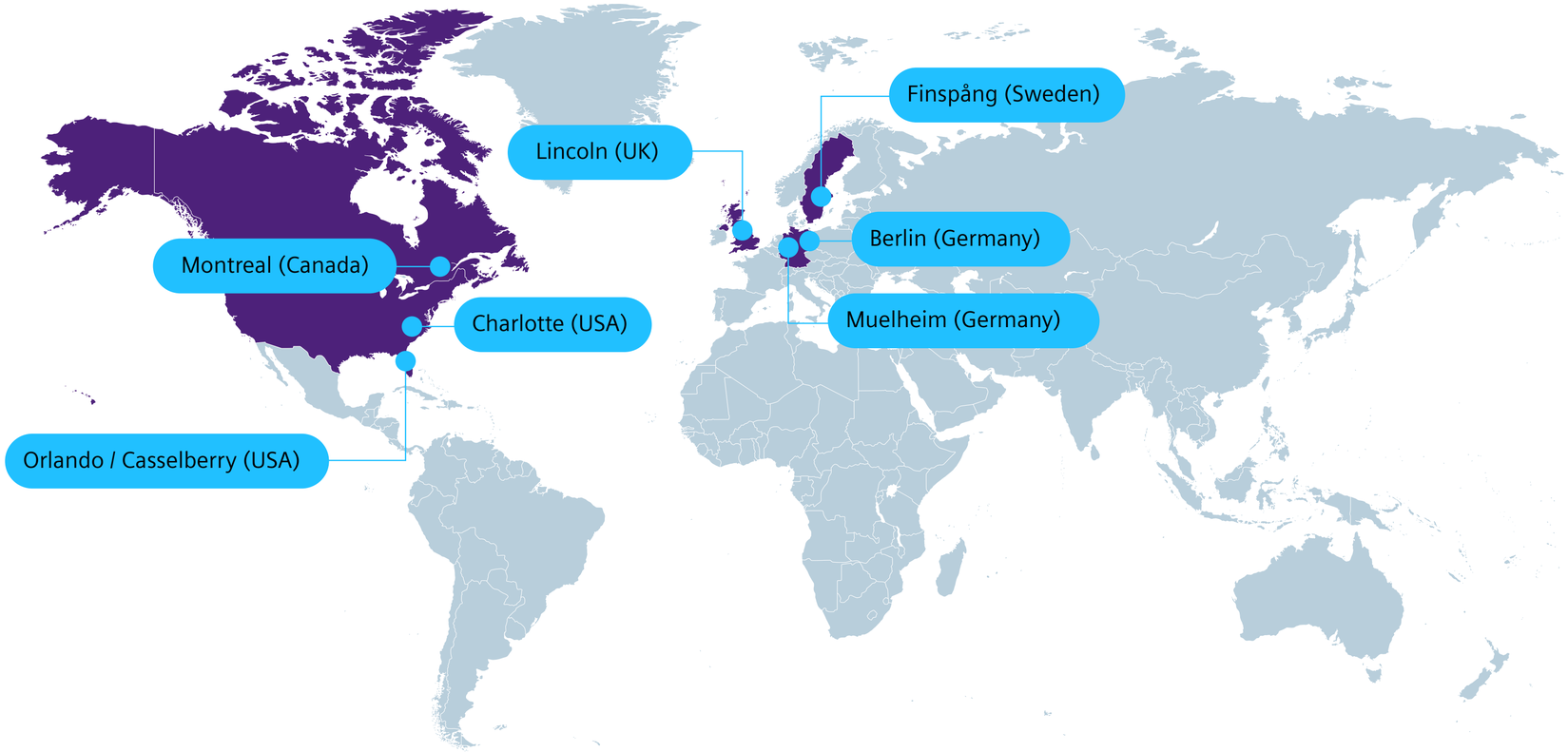
Agile product development process

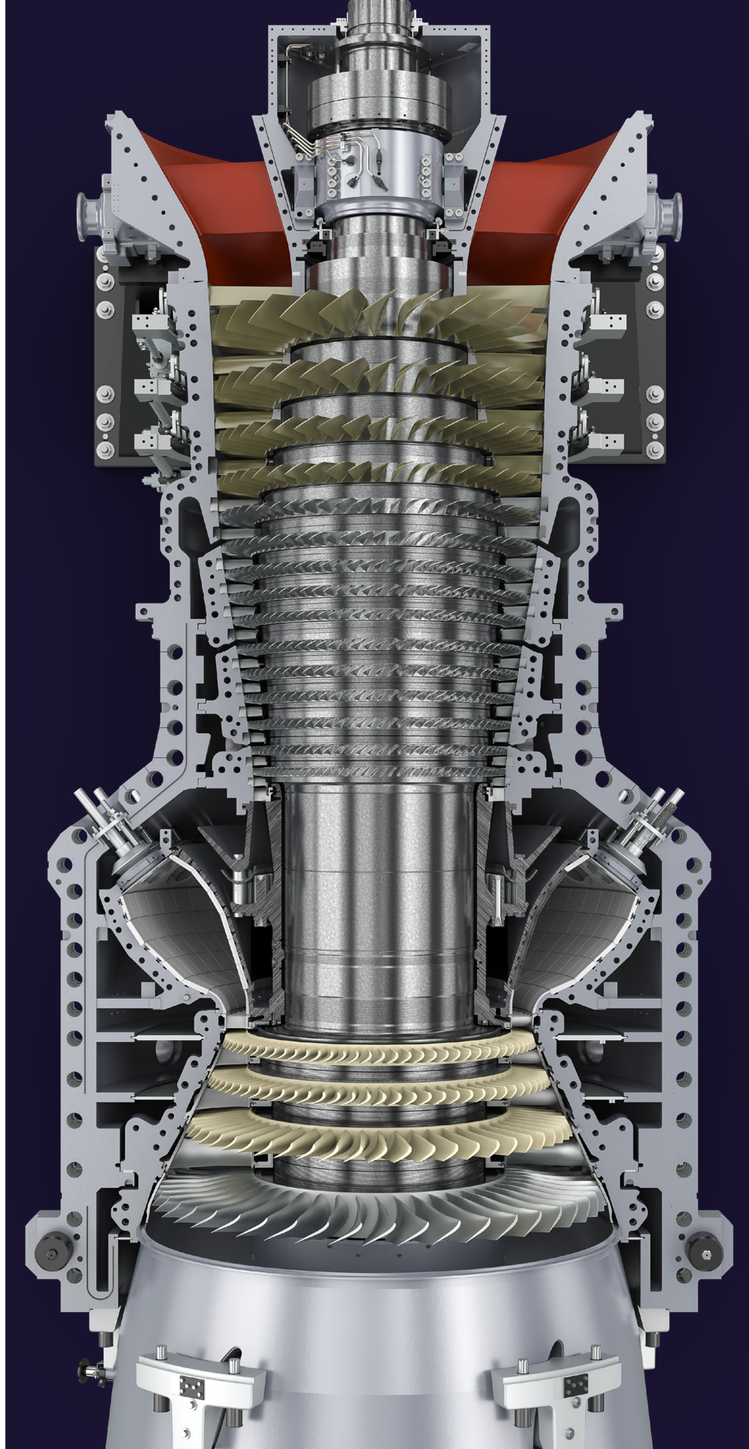
- 50 years of test and validation experience
- Project management for large engine validation
- Reliable cost forecasts
- Feasibility studies for instrumentation
- Test specification
- Sensor and software development



Where we are

Our global testing footprint consists of 8 major testing centers. Our team of specialists also conducts all of the sophisticated measurement tasks and component tests at power plants located around the world.
Our experts are on call around the clock and ready to take prompt action. On site at a customer's plant our experts perform a diverse range of measurement tasks – from installation of instrumentation equipment on the turbine to data acquisition and evaluation of the results. We can record the operating data at power plants worldwide in real time via remote data transmission, and if necessary, provide support to the operator in the form of targeted corrective actions.



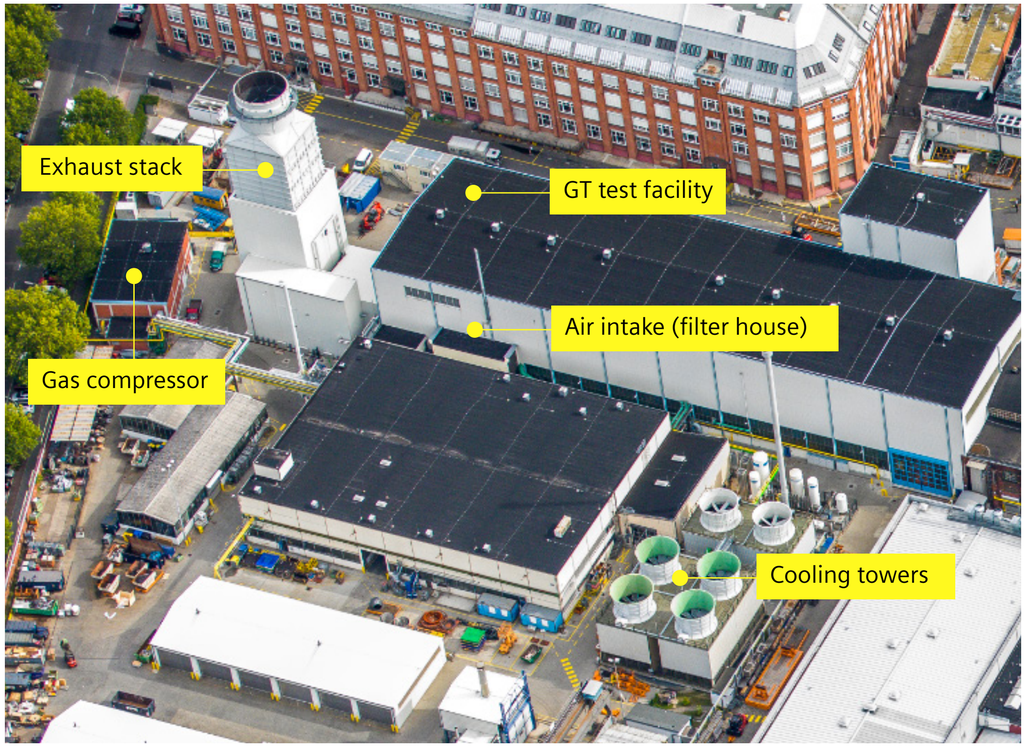


Berlin Test Center (BTC)

The Berlin Test Center has been an integral part of the development of gas turbines by Siemens Energy for more than 30 years.

The center owes its high degree of testing flexibility to the 6-disc hydraulic dynamometer, the world's largest device of its kind. The turbine output in the Berlin Test Center is converted into heat rather than electrical power allowing tests to be run at any time, independent of the power supply network. Our extensive know-how and year-long experience with instrumentation on sophisticated parts enable for effective testing. Tests can be run on 50, 60, and 90 Hz turbines at, above, or below rated speed.

Location | Test Center power train | Facility operation and staff

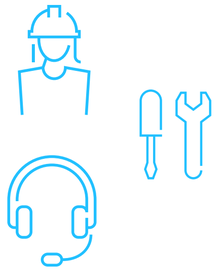


Berlin Test Facility enables testing up to 360 MW of:

- New applications - full engine or component testing
- Over and under speed at any load point (grid independent)
- Compressor, turbine and combustion limits
- Performance and emissions testing
- Load gradients and growth scenarios
- Surge tests
- Hot ambient conditions etc.

Fast access to

- skilled staff
- machining tools
- engineering support



Facility features | Testing potential

Special facility features allow unique testing opportunities

Water Brake

World larges water brake for 50&60Hz operations allows speed variations in the complete load range, e.g. during compressor tests



The facility set up is highly focused on flexibility that new developments can be tested and evaluated efficiently.

Clean Energy Center (CEC)

In 2015, we started operations our state-of-the-art high-pressure test facility for gas turbine combustion and components in Ludwigsfelde, near Berlin.
The Clean Energy Center can test combustion and turbine flows up to 100 MWth. We provide main air, cooling water and cooling air systems, liquid and gaseous fuel and online fuel mixing for high fuel flexibility.

The CEC houses three fully equipped, isolated test cells for combustion system testing: two test cells for the larger test rigs (e.g., large gas turbine burners) and one test cell for the smaller test rigs (e.g., industrial gas turbine burners). due to this setup the Clean Energy Center accurately duplicate almost any customer specifications, testing under realistic high pressure conditions, simulating a specific ambient temperature or creating the precise fuel mixture that will later be applied in the product application.
All relevant key parameters such as output, efficiency, emissions, and flame stability are monitored, measured and analyzed.

Location | Spotlights | Testing examples



Combustion testing meets decarbonization.

At CEC, we perform the first steps into a greener future of power generation.

- Testing capabilities for gas turbine components for distributed energy supply and large power plants
- Cutting-edge measurement and analysis techniques
- High speed data acquisition systems for high dynamic data
- Patented engine live visualization ELVis for real time data streaming to all engineering locations worldwide
- Fast and flexible product development

Capacity of two shift testing for maximum flexibility

High fuel flexibility to adapt to customer needs

Information acc. German Federal law on combating pollution
Information der Öffentlichkeit gemäß § 8a Störfall-Verordnung (12. BImSchV)

Features | Capabilities

Combustion and Rig Testing at the Clean Energy Center (CEC)

Three Test cells

- Testing capabilities for gas turbine components for distributed energy supply and large power plants
- Combustion testing and optimization under real engine conditions
- High fuel flexibility to adapted customer needs
- Special rigs for component testing due to customer needs



Published by
Siemens Energy

Test Services
Test Coordination and Innovation
Huttenstr. 12
10553 Berlin, Germany

For more information, please visit our website:
www.siemens-energy.com

The information given in this document contains only general descriptions of potential features, capabilities and benefits which may or may not apply in each case, which are not warranted or guaranteed, or binding, and are subject to change.

Siemens Energy is a trademark licensed by Siemens AG.

© 2021 Siemens Energy