

SGT-800 Performance Enhancement

54 MW rating



Benefits

- Improved output (MW)
- Improved efficiency (burn less fuel)
- Improved input data for combined cycle operations (higher mass flow & higher temperature)
- Simple to upgrade (core engine part of standard downtime)w



Power



Performance



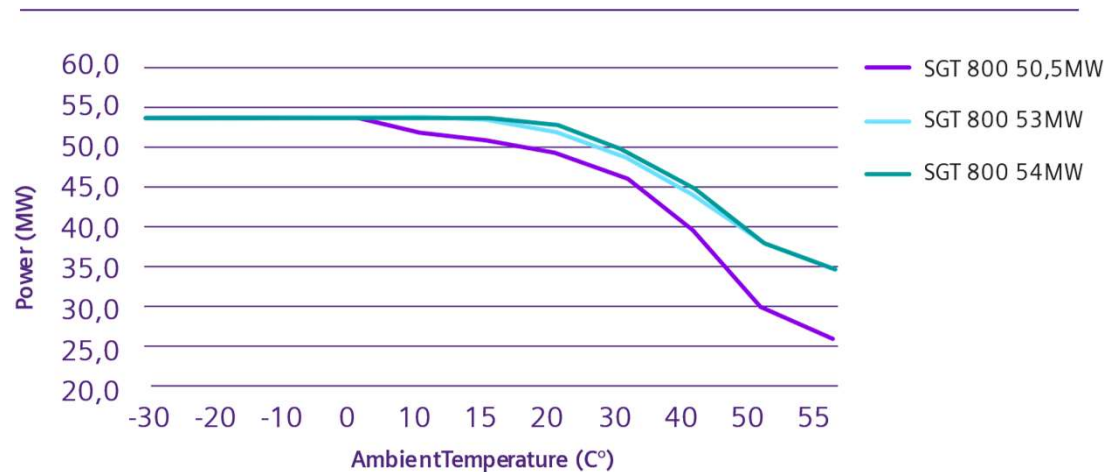
Profitability

- The latest 54MW rated turbine has been available to new customers since 2015
- A performance enhancement is now developed for implementation into the existing fleet
- All SGT-800s of the 50,5MW and 53MW rating are therefore applicable for upgrade to the 54MW core engine rating

Background

Comparison SGT-800 with 55MW gear

Output Power (electrical) as function of Ambient Temperature*



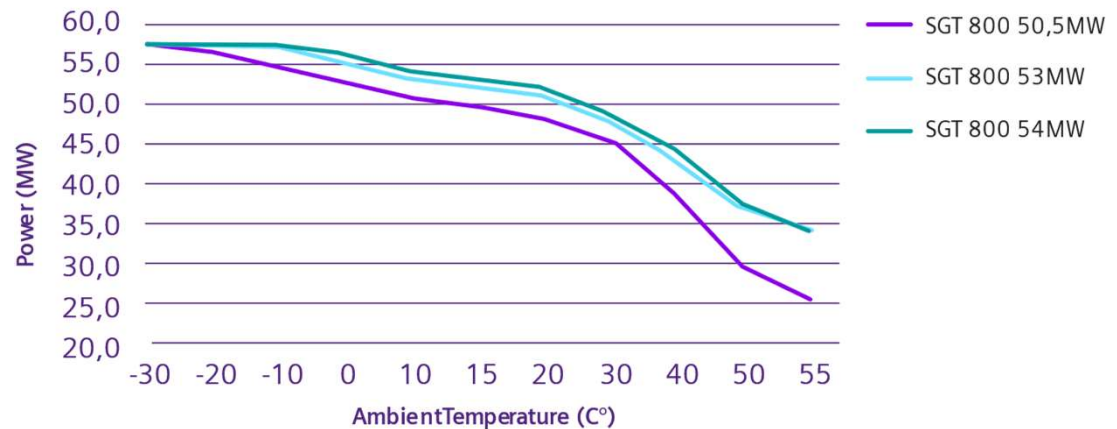
*Normal performance in power generation mode (including AC generator, gas fuel, ISO conditions and normal PT matching)

Background

- The latest 54MW rated turbine has been available to new customers since 2015
- A performance enhancement is now developed for implementation into the existing fleet
- All SGT-800s of the 50,5MW and 53MW rating are therefore applicable for upgrade to the 54MW core engine rating

Comparison SGT-800 with 60MW gear

Output Power (electrical) as function of Ambient Temperature*



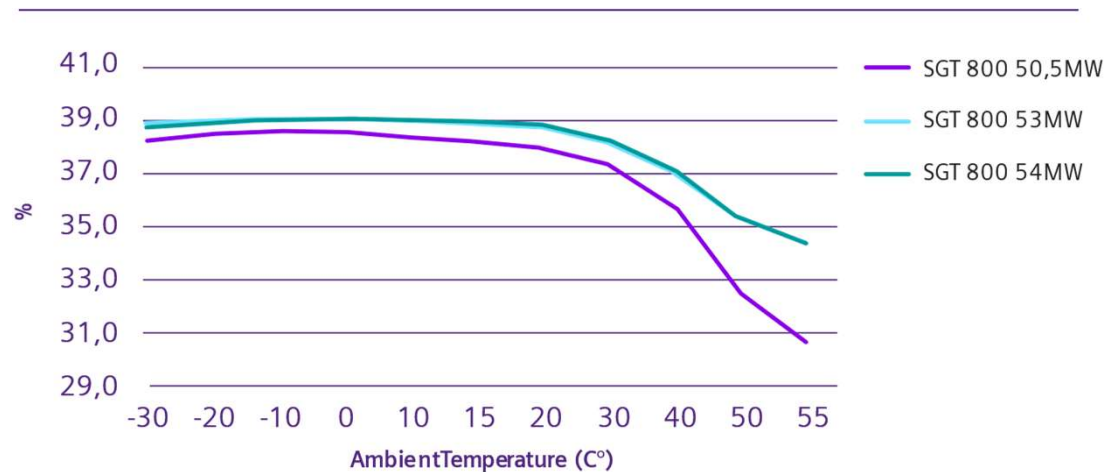
*Normal performance in power generation mode (including AC generator, gas fuel, ISO conditions and normal PT matching)

- The latest 54MW rated turbine has been available to new customers since 2015
- A performance enhancement is now developed for implementation into the existing fleet
- All SGT-800s of the 50,5MW and 53MW rating are therefore applicable for upgrade to the 54MW core engine rating

Background

Comparison SGT-800 with 55MW gear

Thermal efficiency (electrical) as function of Ambient Temperature*



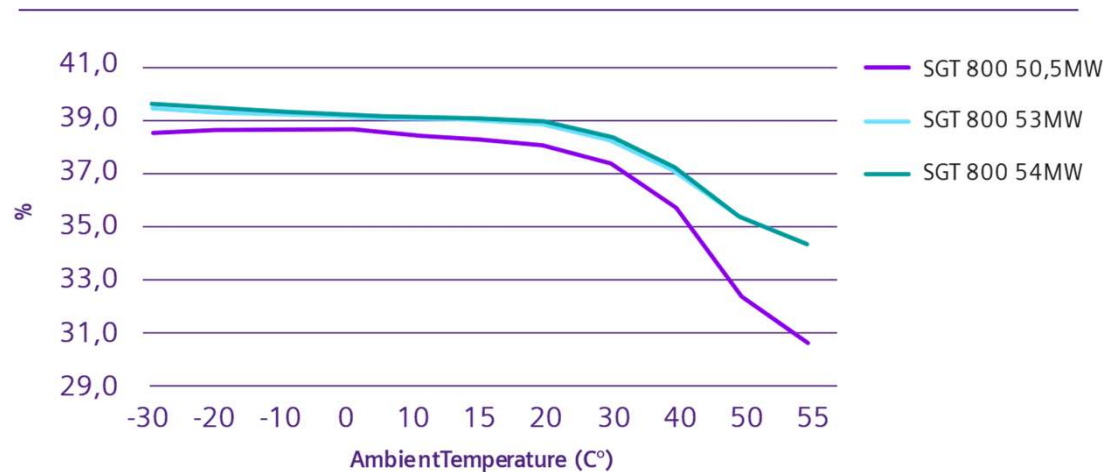
*Normal performance in power generation mode (including AC generator, gas fuel, ISO conditions and normal PT matching)

- The latest 54MW rated turbine has been available to new customers since 2015
- A performance enhancement is now developed for implementation into the existing fleet
- All SGT-800s of the 50,5MW and 53MW rating are therefore applicable for upgrade to the 54MW core engine rating

Background

Comparison SGT-800 with 60MW gear

Thermal efficiency (electrical) as function of Ambient Temperature*

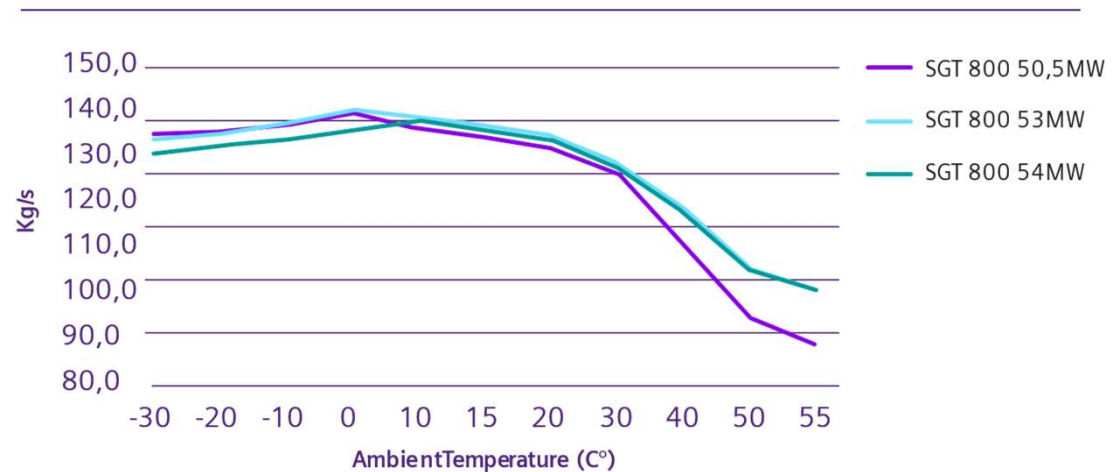


*Normal performance in power generation mode (including AC generator, gas fuel, ISO conditions and normal PT matching)

- The latest 54MW rated turbine has been available to new customers since 2015
- A performance enhancement is now developed for implementation into the existing fleet
- All SGT-800s of the 50,5MW and 53MW rating are therefore applicable for upgrade to the 54MW core engine rating

Background

Comparison SGT-800 with 55MW gear
Mass Flow as function of Ambient Temperature*

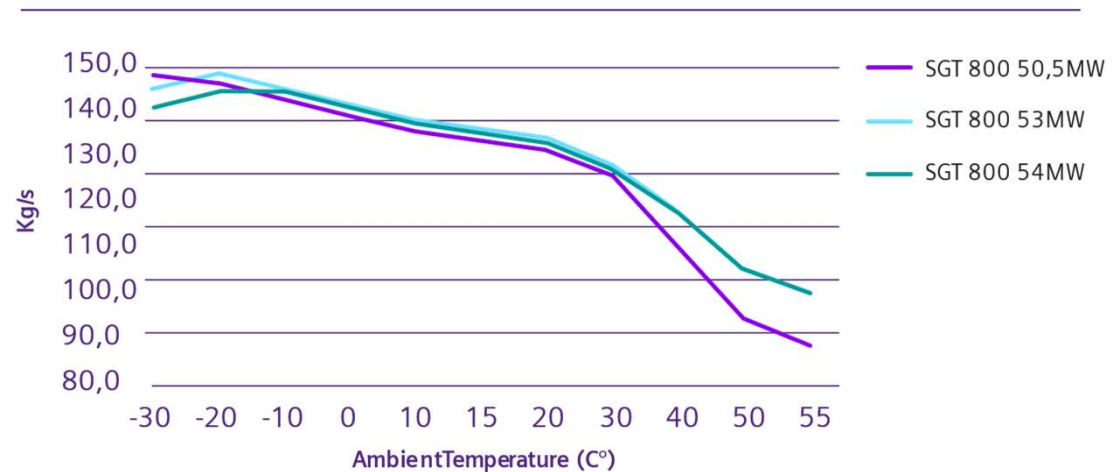


*Normal performance in power generation mode (including AC generator, gas fuel, ISO conditions and normal PT matching)

- The latest 54MW rated turbine has been available to new customers since 2015
- A performance enhancement is now developed for implementation into the existing fleet
- All SGT-800s of the 50,5MW and 53MW rating are therefore applicable for upgrade to the 54MW core engine rating

Background

Comparison SGT-800 with 60MW gear
Mass Flow as function of Ambient Temperature*



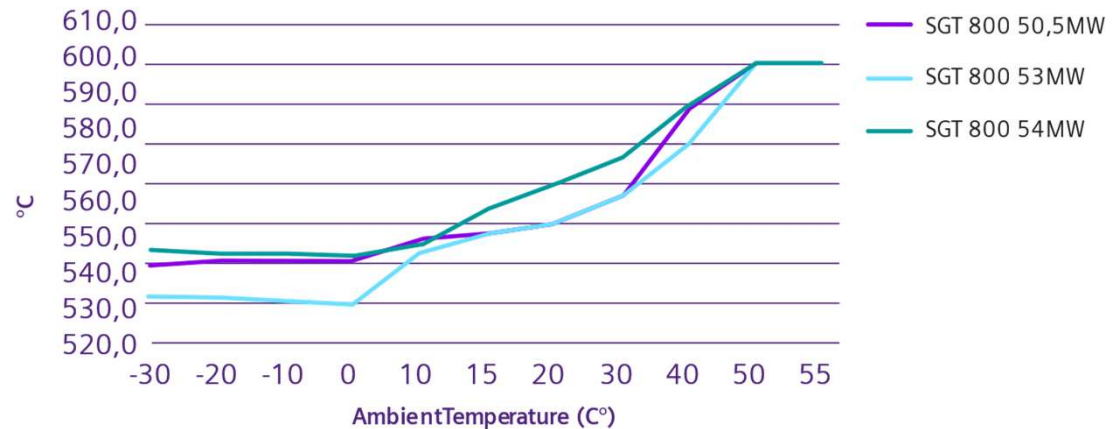
*Normal performance in power generation mode (including AC generator, gas fuel, ISO conditions and normal PT matching)

- The latest 54MW rated turbine has been available to new customers since 2015
- A performance enhancement is now developed for implementation into the existing fleet
- All SGT-800s of the 50,5MW and 53MW rating are therefore applicable for upgrade to the 54MW core engine rating

Background

Comparison SGT-800 with 55MW gear

Outlet Temperature as function of Ambient Temperature*



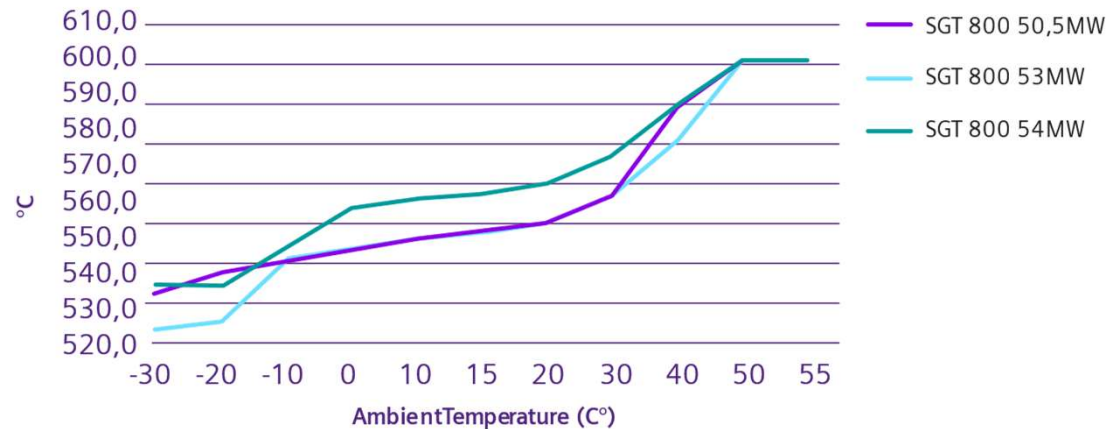
*Normal performance in power generation mode (including AC generator, gas fuel, ISO conditions and normal PT matching)

- The latest 54MW rated turbine has been available to new customers since 2015
- A performance enhancement is now developed for implementation into the existing fleet
- All SGT-800s of the 50,5MW and 53MW rating are therefore applicable for upgrade to the 54MW core engine rating

Background

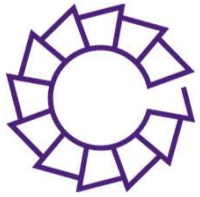
Comparison SGT-800 with 60MW gear

Outlet Temperature as function of Ambient Temperature*



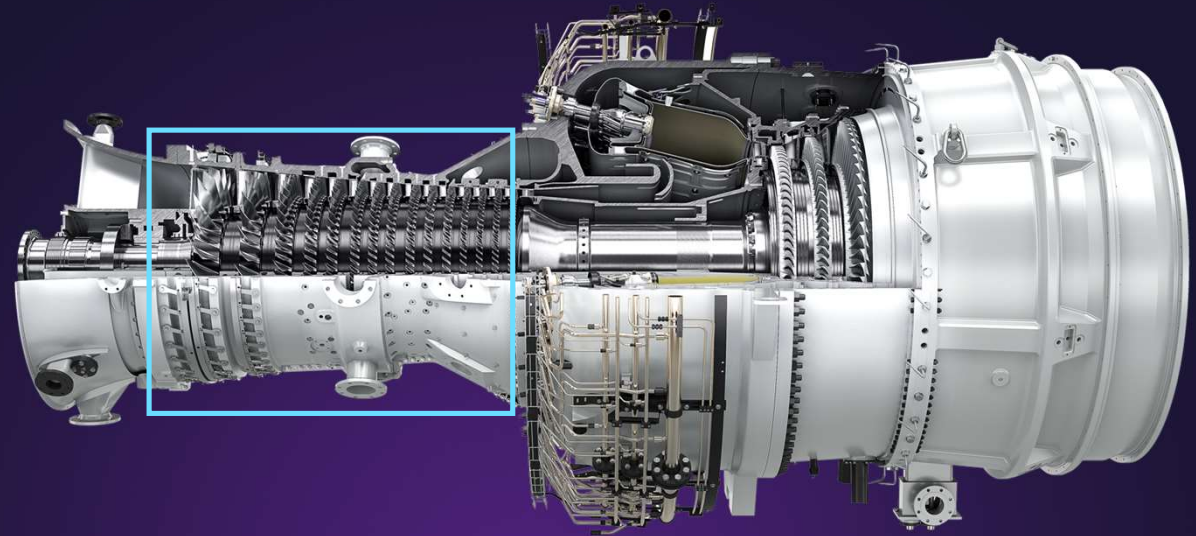
*Normal performance in power generation mode (including AC generator, gas fuel, ISO conditions and normal PT matching)

What is upgraded

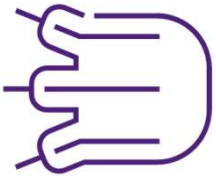


Compressor

Upgraded to increase mass flow and improve efficiency

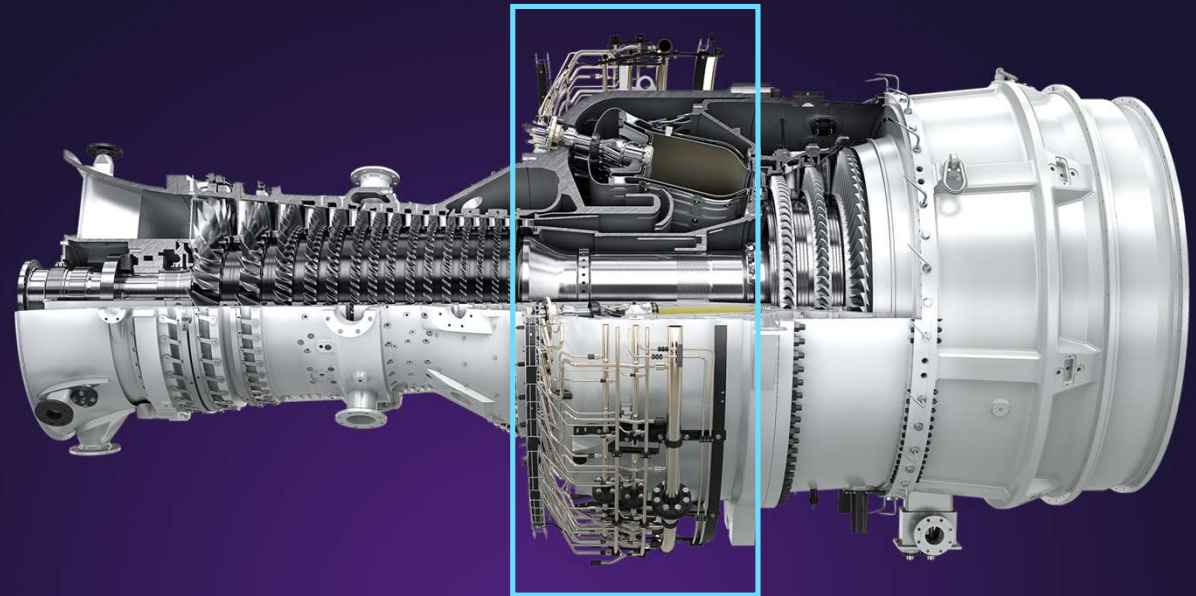


What is upgraded



Combustor

Same reliable system with moderately increased firing temperature



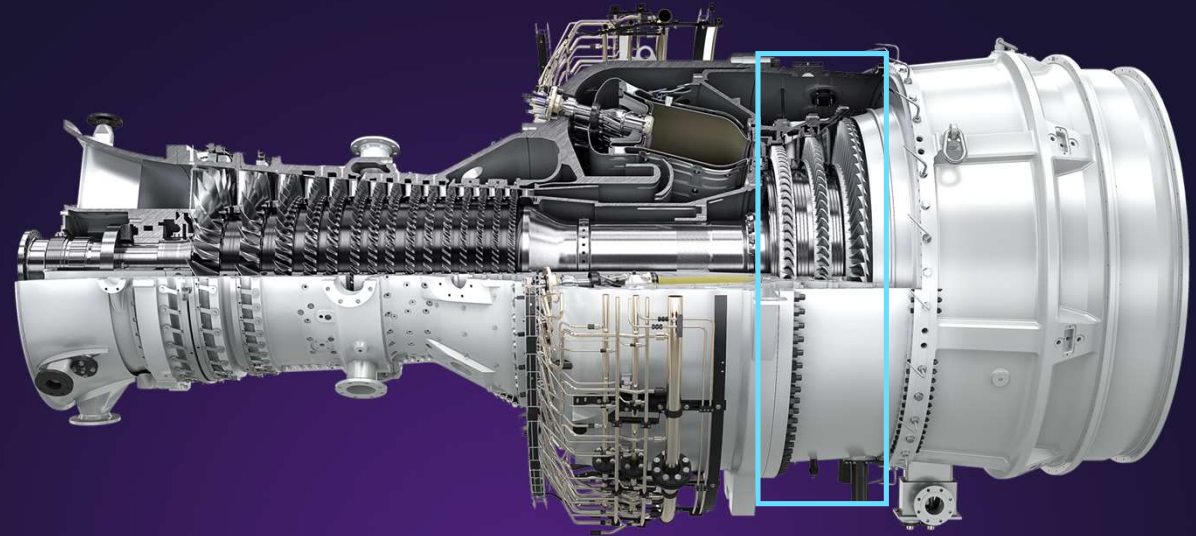
What is upgraded



Turbine

Optimized aerodynamics, mass flow and cooling, with only a moderately increased firing temperature, result in improved power and efficiency

Targeted coating with advanced materials further improves Siemens Energys gold standard reliability



Implementation

Implementation

- Engineering pre-study
- Status determination of GT and expected performance improvement at customer operating conditions
- Check the need of changes on auxiliary systems and driven equipment.
- Downstream equipment

When to perform enhancement

- Recommended at C inspection

Performance evaluation for Power Output

- Either: Based on operating instrumentation before and performance evaluation after
- Or: Performance test before and after for efficiency evaluation



This cost-effective and simple retrofit approach ensures plant down-time is minimized, while performance, power and operator profitability are optimized.

Over the course of a year, a 7% power increase can result in large-scale profit increases, making for a rapid Return On Investment for this upgrade package.

Disclaimer

Subject to change and error. The information given in this document only contains general descriptions and/or performance features which may not always specifically reflect those described, or which may undergo modification in the course of further development of the products. The requested performance features are binding only when they are expressly agreed upon in the concluded contract.

Siemens Energy is a trademark licensed by Siemens AG.

© Siemens Energy 2021