

SGT-800 Performance Enhancement

54 MW rating



- 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

Benefits



Power



Performance



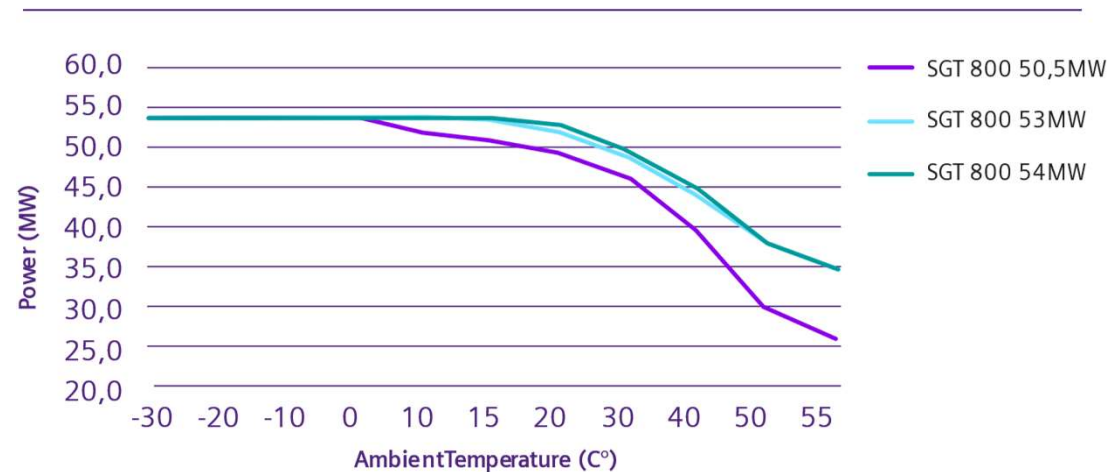
Profitability

- 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*



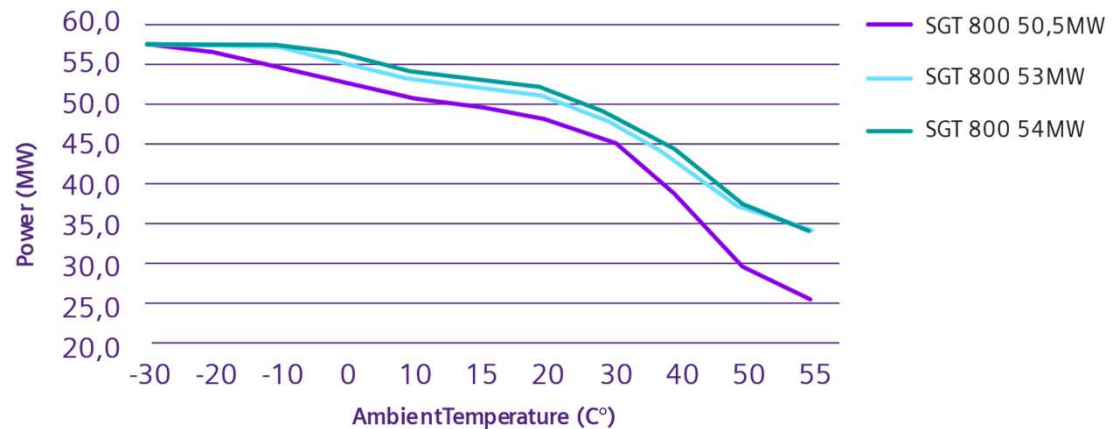
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Comparison SGT-800 with 60MW gear

Output Power (electrical) as function of Ambient Temperature*



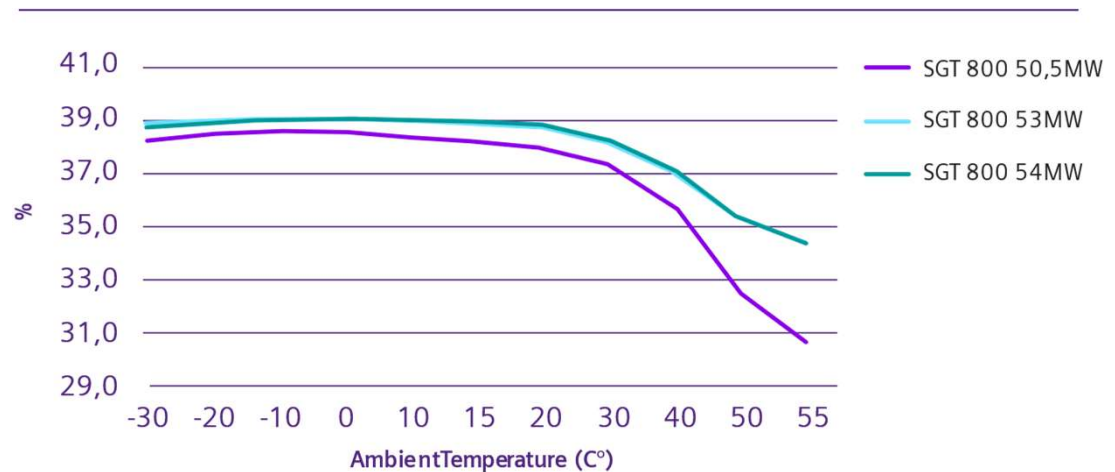
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Comparison SGT-800 with 55MW gear

Thermal efficiency (electrical) as function of Ambient Temperature*



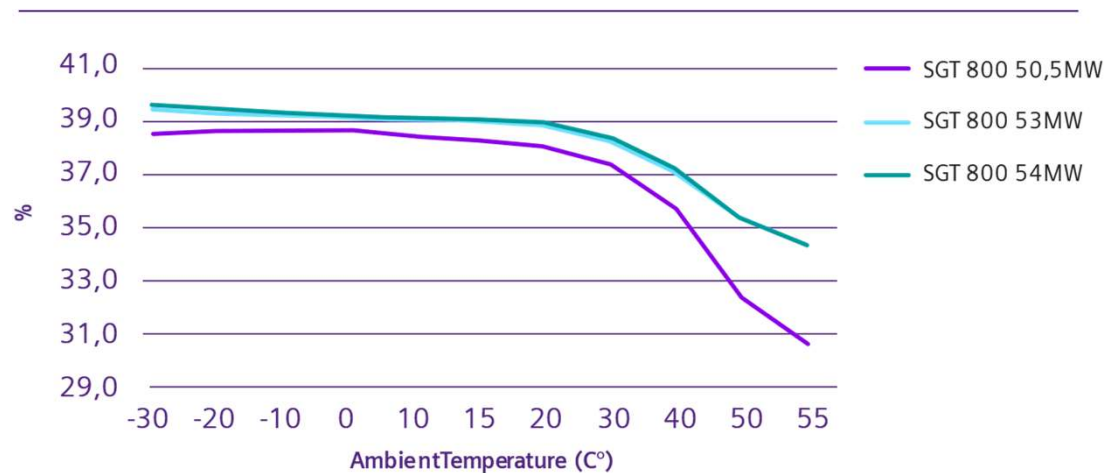
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Thermal efficiency (electrical) as function of Ambient Temperature*

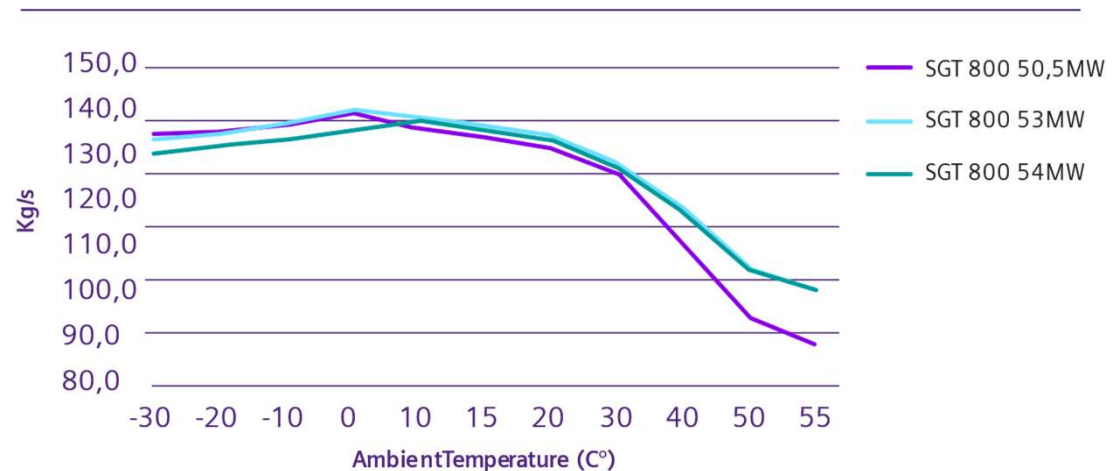


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Comparison SGT-800 with 55MW gear
Mass Flow as function of Ambient Temperature*

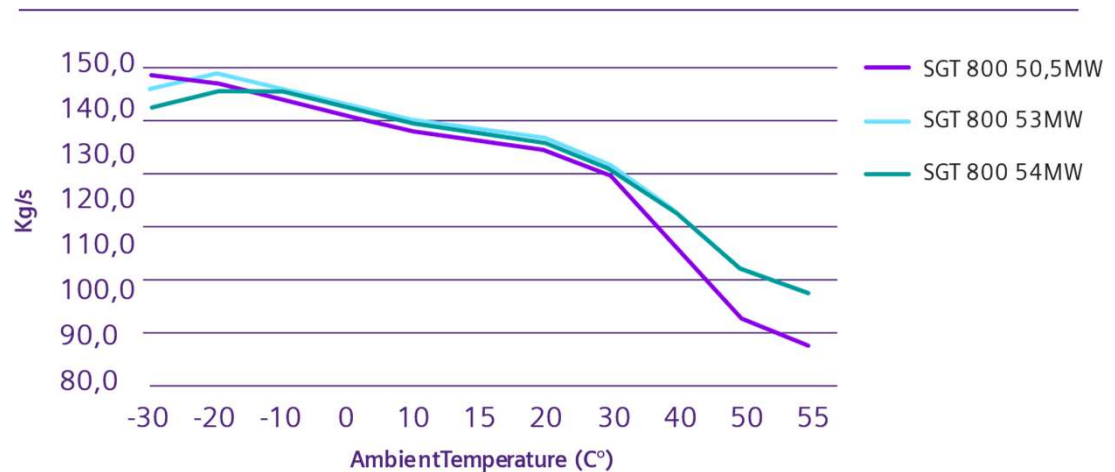


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Mass Flow as function of Ambient Temperature*



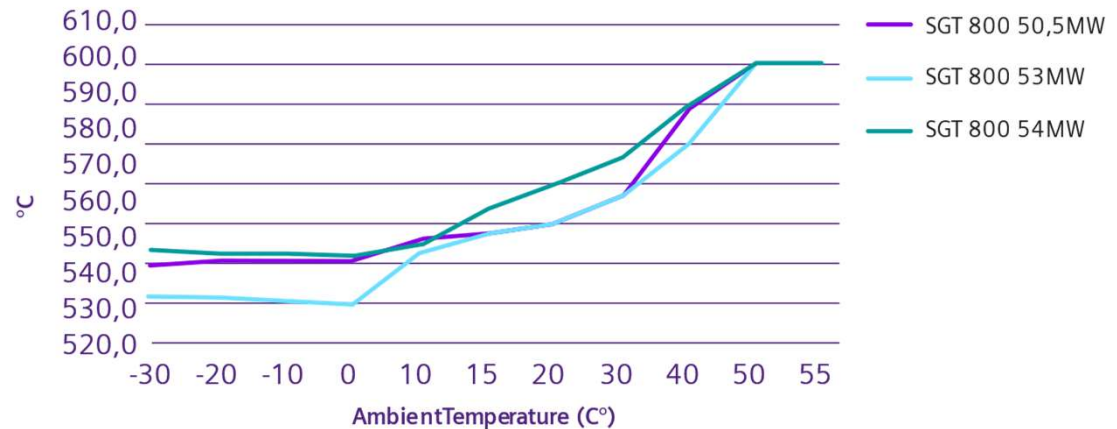
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Outlet Temperature as function of Ambient Temperature*



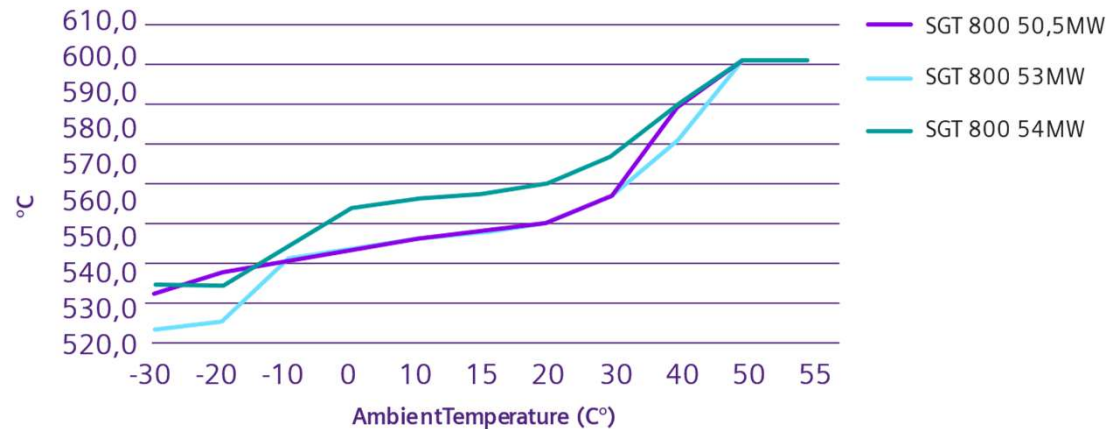
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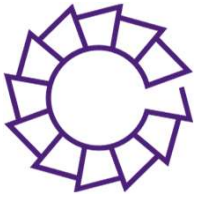
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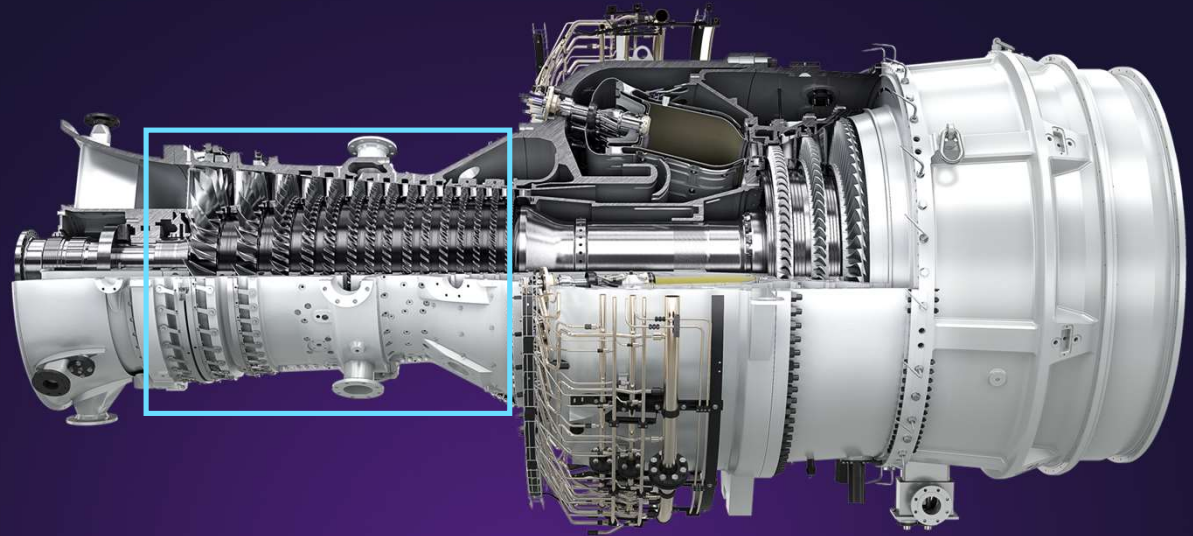
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What is upgraded

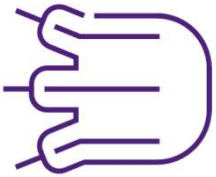


Compressor

Upgraded to increase mass flow and improve efficiency

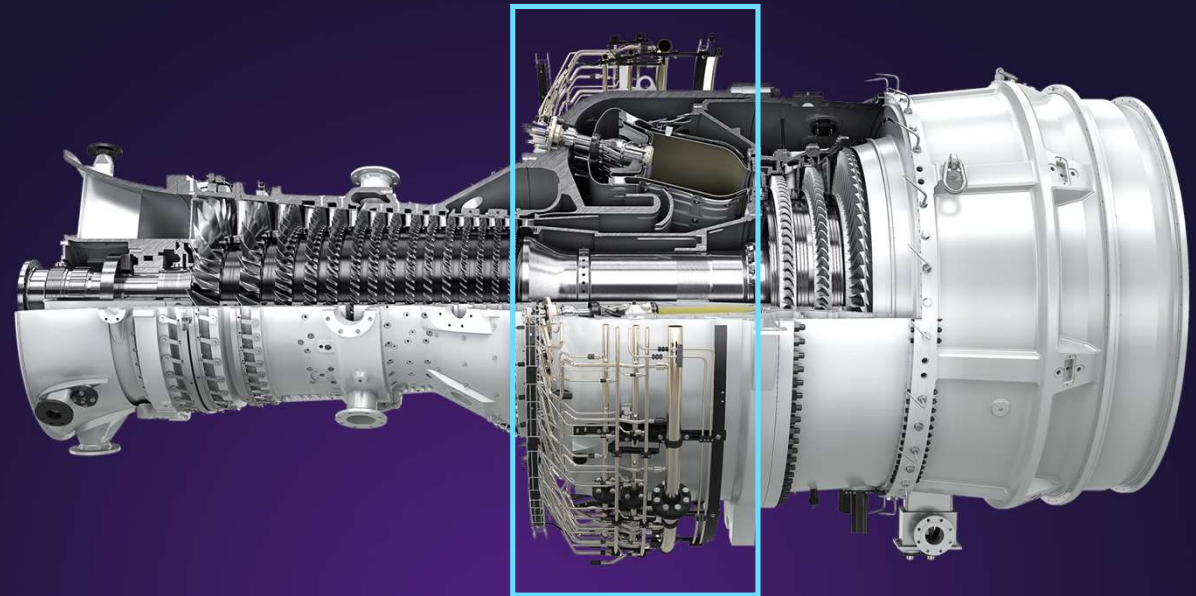


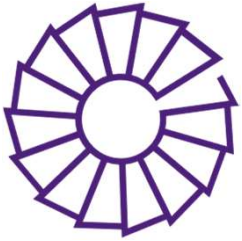
What is upgraded



Combustor

Same reliable system with moderately increased firing temperature



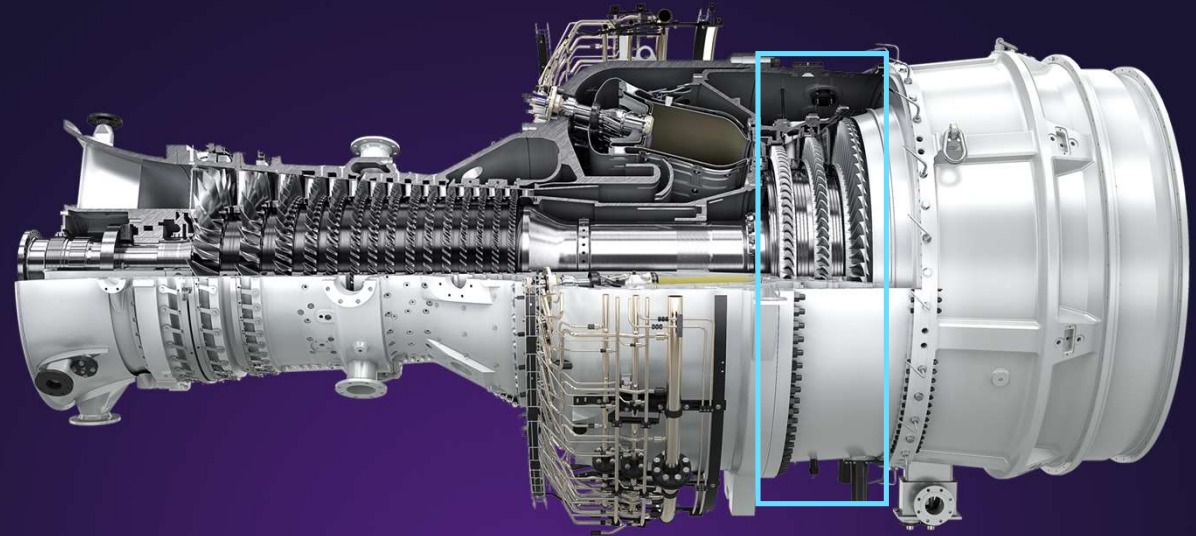


Turbine

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

What is upgraded



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

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