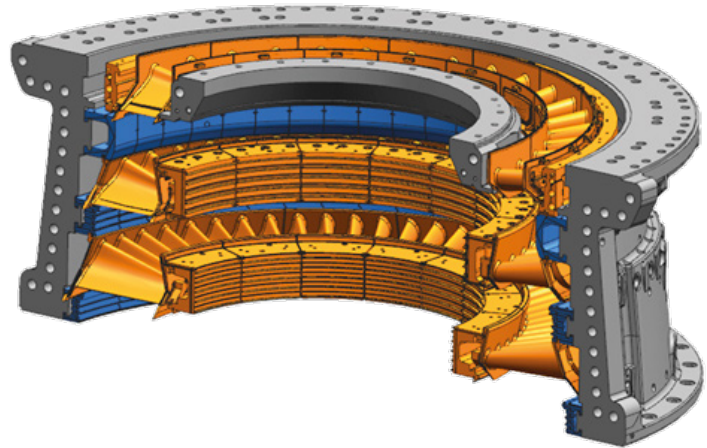


Nozzles equivalent to GE MS9001E

Sulzer provides design and manufacturing of new gas turbine components in both hot and cold sections. We focus on lifetime extension and performance improvement of your equipment. We have unique insight into designing a high-quality product that is compatible and interchangeable with the original equipment. All nozzle kits include installation hardware suitable for installation in PG9171E gas turbines.



1st stage nozzle

The first stage nozzle is manufactured through an investment casting process using the advanced cobalt-based super alloy FSX-414. The first stage nozzle features trailing edge film cooling and internal impingement cooling. Advanced cooling of the shrouds is applied to minimize thermal cycle fatigue effects.

The first stage nozzle is not coated. However, Sulzer can optionally apply a Thermal Barrier Coating (TBC) to prevent the base material from over-heating and to reduce thermal gradients along the hot gas path. This coating will further reduce effects of thermal cycle fatigue and produces a lifetime extension resulting in improved durability.

2nd stage nozzle

The second stage nozzle is manufactured through investment casting using Sulzer's advanced nickel-based super alloy EEQ-222, which has a similar composition to the original GTD-222™. However, the alloy exposes superior corrosion resistance and increased creep life. Therefore, less deflection upon exposure to service conditions is observed.

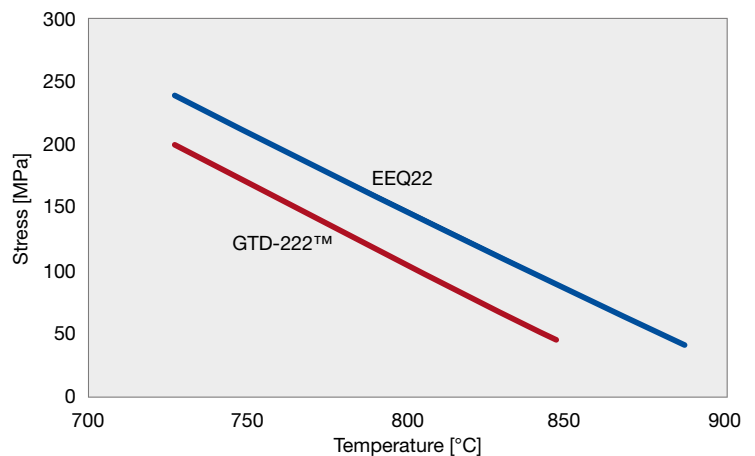
An external aluminum diffusion coating is applied to further optimize corrosion and oxidation resistance.

The Sulzer design contains brush seals, which leads to performance improvements on output and heat rates.

3rd stage nozzle

The third stage nozzle is also manufactured through investment casting using Sulzer's advanced nickel-based super alloy EEQ-222. The third stage nozzle is supplied without protective coatings.

Stress rupture comparison for 100'000 hours life



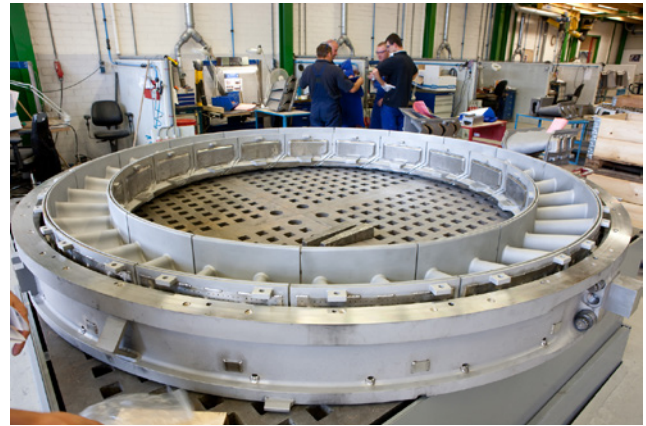
Nozzle stage 1

Firing temperature	Up to 1'124°C (2'055°F)
Design	Two-vane segment
Cooling	Trailing edge film cooling Internal impingement cooling Advanced side-wall cooling
Material	FSX-414
Coating	Non-coated, TBC optional
Sealing	Chordal hinge
Auxiliaries	Locking hardware included



Nozzle stage 2

Firing temperature	Up to 1'124°C (2'055°F)
Design	Long-chord three-vane segment
Cooling	Trailing edge cooling Optimized internal impingement cooling
Material	EEQ-222
Coating	Aluminum diffusion coating
Sealing	Brush seals
Auxiliaries	Locking hardware included



Nozzle stage 3

Firing temperature	Up to 1'124°C (2'055°F)
Design	Four-vane segment
Material	EEQ-222
Auxiliaries	Locking hardware included

Services

- Component refurbishment
- Lifetime extension
- Field service
- New parts manufacturing
- Training programs
- Rotor overhaul and refurbishment
- Long-term service agreements
- Condition monitoring
- Turbine controls
- Engineering support



Sulzer Turbo Services Venlo B.V.
Spikweien 36
NL-5943 AD Lomm, The Netherlands
Phone +31 (0)77 47386 66
Fax +31 (0)77 47327 85
E-mail sulzertsvenlo@sulzer.com

www.sulzer.com

E10258 en 12.2019, Copyright © Sulzer Ltd 2019

This brochure is a general product presentation. It does not provide any warranty or guarantee of any kind. Please, contact us for a description of the warranties and guarantees offered with our products. Directions for use and safety will be given separately. All information herein is subject to change without notice.