

ADVANCE INFORMATION

ISOCOOL™ Isothermal Gas Turbine Compression

ROLLS-ROYCE 501-K AND T-56 ISOCOOL™ STATOR VANE CONVERSION

Increased power output or reduced heat rate and improved thermal life.

ENGINEERING SOLUTION PURPOSE

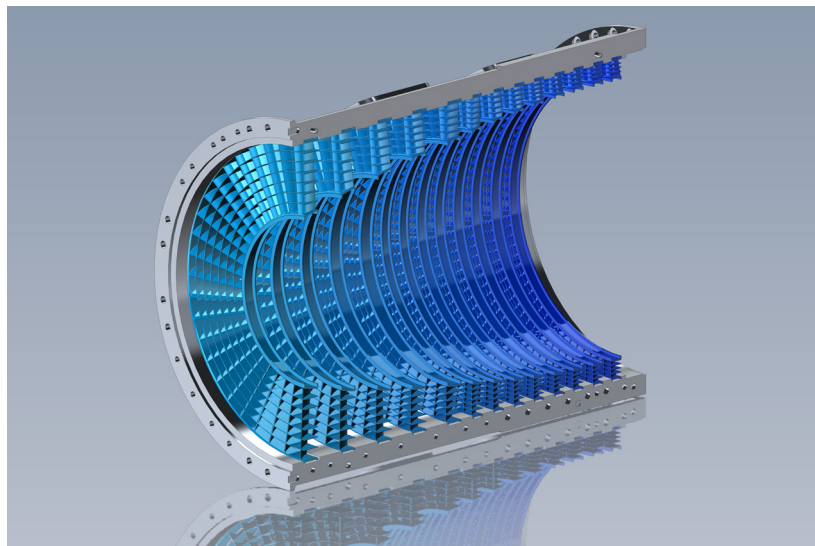
This engineered solution improves power and reduces fuel consumption by water cooling the compressor stator vanes.

APPLICABILITY

All 501-K and T-56 gas turbines

BENEFITS

By reducing the work required to compress the air for combustion output power is increased by 15-23%, depending on turbine, at the same heat rate. Or the heat rate is reduced by 11-15% at the same power output. It's one or the other, or a blend, but not both power and heat rate.



ROLLS-ROYCE MODEL 501-K COMPRESSOR HALF

TECHNICAL DESCRIPTION

De-mineralized water is circulated through the stator vanes to cool each axial stage of the compressor. Heat from the compression process is removed thereby reducing the work required to compress the air before combustion. Higher pressure ratio turbines offer more potential for power increase and reduced heat rate.

Turbine	Turbine Power Improvement	Heat Rate Improvement
501-K & T56	15%	11%
501-KB/H7	23%	15%

Additionally, since the compressor discharge air is cooler the hot turbine temperature will be reduced and the air cooled turbine blades will have a longer life. Optionally, the TIT could be raised to add more power and fuel savings. These calculations are in process and not reflected above.

SCOPE OF WORK

Replace stator vanes and compressor case. Install radiator, pump and plumbing. Test system.

BILL OF MATERIALS

- Install water cooled stator vanes
- Install new compressor case sections
- Install water manifold and necessary plumbing for IsoCool™
- Install radiator, electrical pump and hoses

UNDERTAKEN

At site or at overhaul

ORDER INFORMATION

Orders are being taken for ground based applications of the Rolls-Royce Model 501-K and related turbines. Depending on model the delivery time will vary, but we are typically 16 weeks after receipt of order (ARO).

When full FAA Supplemental type certificate is issued for the T-56 we will be taking orders for that product too.

INTERNATIONAL TRAFFIC IN ARMS REGULATIONS (ITAR)

This document does not contain technical data within the definition contained within ITAR and the Export Administration Regulations (EAR), and as such is releasable by any means to any person whether in the U.S. or abroad.



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