

ES1013 501-KB5 to KB5S upgrade

Superior KB5S specification increases power and improves heat rate



Engineered solution purpose

This engineered solution improves the heat rate and increases the output power of the power generation package.

Applicability

501- KB5

Technical description

The 501-KB5 gas turbine is upgraded to 501-KB5S gas turbine specification by replacing the rear turbine bearing support and fourth stage turbine blades.

Benefits

The diffuser shape of the bearing support improves the performance of the turbine. Power output is increased without the need to increase firing temperatures. A power increase of 4% can be expected whilst the heat rate can be improved by up to 6%.

Experience

There are over 20 501-KB5S engines currently operating in the field.

Scope of work

Replace tapered coupling input shaft to reduction gearbox.
 Replace PTO shaft assembly
 Replace extension shaft and bevelled gear set in compressor inlet housing
 Replace first stage compressor wheel
 Replace 14th stage compressor wheel
 Replace compressor coupling



Replace compressor to turbine coupling shaft

Replace turbine coupling

Replace first stage turbine wheel

Replace rear turbine bearing support

Replace fourth stage turbine blades

Modifications to the complete drive train and driven equipment may be required to take advantage of the increased horsepower. Other package upgrades may be required to accommodate these changes.

Bill of materials

Tapered coupling input shaft to reduction gearbox

PTO shaft assembly

Extension shaft and bevelled gear set in compressor inlet housing

First stage compressor wheel

14th stage compressor wheel

Compressor coupling

Compressor to turbine coupling shaft

Turbine coupling

First stage turbine wheel

Rear turbine bearing support

Fourth stage turbine blades

Turbine Outlet Temperature thermocouples and harness

Controls modification or replacement

Undertaken

At overhaul

Bundling opportunities

501 combustion liner upgrade [ES1001]

501 Fuel manifold upgrade [ES1005]

501 pilotless nozzle conversion [ES1006]

501 DLE conversion [ES1003]

Complete package refurbishment [ES6001]