



## ES1017 501-KC to KC5 upgrade

Conversion to KC5 specification provides performance and life improvements



### Engineered solution purpose

This engineered solution increases the power output and durability of the gas turbine.

### Applicability

501-KC

### Technical description

This upgrade requires replacement of the first and second stage turbine blades and vanes. Also, the thrust balance plate and diaphragm will need to be replaced.

### Benefits

Whilst the 501-KC to KC5 upgrade can provide a 14% increase in horsepower on its own, simultaneous upgrading of the power turbine with a superior unit can realise a total power increase of 27%. The heat rate is improved by 2.7% and the improved materials extend hot section life when operating at reduced power requirements.

Further upgrading to 501-KC7 ratings may be possible.

### Experience

This enhancement is the current overhaul standard for all engines.

### Scope of work

Replace first stage turbine blades and vanes

Replace second stage turbine blades and vanes



Replace the Turbine Inlet Temperature thermocouples and harness with Measured Gas Temperature (MGT) thermocouples and harness

Replace thrust balance plate

Replace diaphragm

Modify controls

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

### Bill of materials

1st stage turbine blades, MAR-M247DS, Pt-A

1st stage turbine vanes, MAR-M247, TBC

2nd stage turbine blades, MAR-M247, Pt-Al

2nd stage turbine vanes, MAR-M247LC, Pt-Al

MGT thermocouple conversion

Diaphragm

Thrust balance plate

Controls modification (digital control required)

### Undertaken

At overhaul

### Bundling opportunities

501 combustion liner upgrade [ES1001]

Power turbine upgrade

Compressor re-aero [ES5001]

Dry diaphragm coupling conversion [ES5002]

Complete package refurbishment [ES6001]

Healthcare Evaluation Legacy Programme [ES6002]

Controls upgrade [ES6006]

