

ES3001 RB211-24C to 24G upgrade

Provides increased power and heat rate, or extended life



Engineered solution purpose

This upgrade provides the option of increased power and improved heat rate or increased life when operating at -24C ratings

Applicability

All RB211 -24C engines

Technical description

The upgrade replaces the High Pressure [HP] turbine assembly. The components replaced are the HP blades, HP turbine disc and HP Nozzle Guide Vanes [NGVs]. The turbine utilises Directionally Solidified [DS] blades with improved cooling.

The upgraded materials allow higher firing temperatures, which increase power and improve heat rate. If used at the -24C firing temperatures, the materials provide extended component life.

This rating typically provides a 3% power increase when operating a -24G at -24C ratings into a RT56.

To take advantage of the full potential for the increased power of the -24G, the power turbine must be upgraded to the RT62/RT56 G rated turbine [\[ES4013\]](#)



Benefits

The -24G rating provides an expected power increase of 10% and 2.6% heat rate improvement over the -24C.

When operating at -24C ratings, the -24G engine will operate at a firing temperature 14 K cooler than a -24C engine, thereby giving an overall turbine life improvement.

The -24G blades provide a major improvement in creep life, with the potential increase as high as 50%.

For further details please see table showing power comparison of different models in the chart on page 2.

Experience

There are in excess of 240 RB211-24G gas generators in service units with combined operational experience of 4.5 million hours.

20 units have been converted to -24G.

A partial list of customers includes:

Norsk Hydro - 7 units

Exxon Mobil - 2 units

PDVSA - 2 units

Fact sheet

Scope of work

Replace the existing HP turbine assembly with Mod 1212

Control system modification

Bill of materials

HP turbine assembly (Mod 1212)

Thrust piston, if required (Mod 1044)

L5 vent revision, if required (Mod 1135)

Davis Valve (Mod 1136)

IP turbine disc cooling, if required (Mod 1186)

Control system modification or replacement

Undertaken

At overhaul

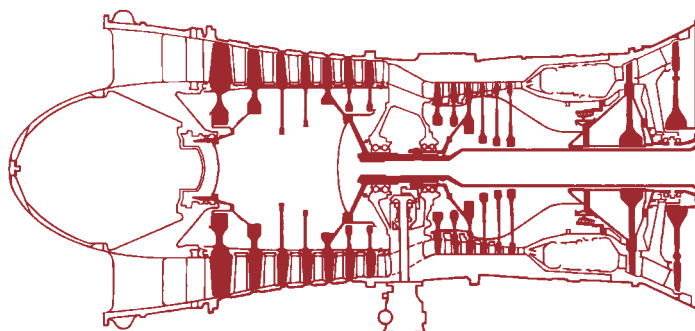
Bundling opportunities

RT62/RT56 RB211-24G rating upgrade [ES4013]

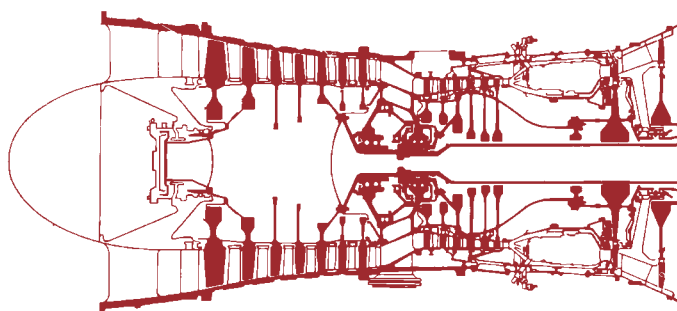
RB211-DLE (Dry Low Emissions) conversion [ES3003]

RB211 T6 Thermocouple conversion [ES3012]

Controls Upgrade [ES6006]



RB211-24C gas generator



RB211-24G gas generator

Nominal performance - Mechanical drive applications

Serial No.	Package	Gas Generator	Power Turbine (PT)	Power BHP	PT Speed (rated) rpm
1	Coberra 6456	RB211-24C	RT56	33,360	4,950
2	Coberra 6556	RB211-24G	RT56	34,900	4,950
3	Coberra 6556	RB211-24G DLE	RT56	33,210	4,950
1	Coberra 6462	RB211-24C	RT62	35,000	4,800
2	Coberra 6562	RB211-24G	RT62	39,600	4,800
3	Coberra 6562	RB211-24G DLE	RT62	37,880	4,800

Imperial units - ISO conditions, base load application, no losses, gaseous fuel.



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