

Success through Service - Rolls-Royce Turbines

Commercial edge with Industry 4.0 and Predictive Analytics

Baseline situation

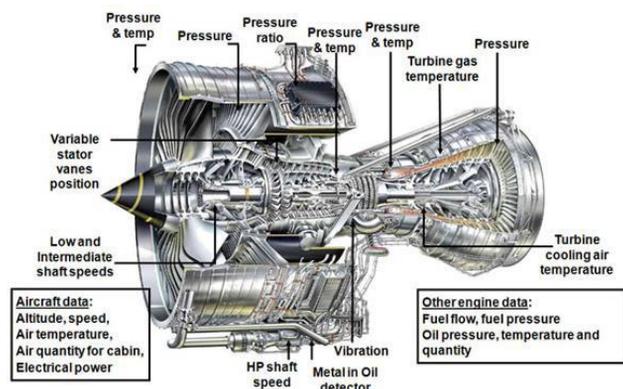
Rolls-Royce is a British turbine manufacturer. Since its bankruptcy and the takeover by the state in 1971, its 8% market share has increased by so much that Rolls-Royce now ranks among the world market leaders. Service business was a major factor in this turnaround which meanwhile accounts for more than 55% of sales.

Project goals

- In order to ensure turbine performance, data is transmitted via satellite to the control center in real-time and evaluated. This means that maintenance times are planned in real-time and dynamically, which increases safety as well as drastically reduces operating costs at the same time.

Benefits to customer

- Maximum aircraft availability.
- High fail-safety for important propulsion elements of the aircraft.
- Analysis of behavior for new turbine developments



Solution

The most important engine parameters - shaft speeds and turbine gas temperature - are used to obtain a clear overview of the overall health of the engine. A number of pressure and temperature sensors are installed in the gas path of the engine to determine the performance of each of the main modules. These sensors are mounted between each shaft so that excessive increases in temperatures are immediately detected.

Vibration sensors provide valuable information on the condition of all rotating components. Other sensors are used to assess the health of the fuel system (pump, metering valve, filter etc). Since engine operation between the flights can vary considerably, data from the aircraft are also used to calibrate thrust adjustment, ambient conditions and state of exhaust ventilation. Please also see [Rolls-Royce](#)

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Industrie 4.0

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