

Location:
New Jersey, US

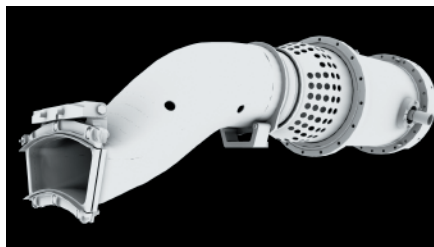
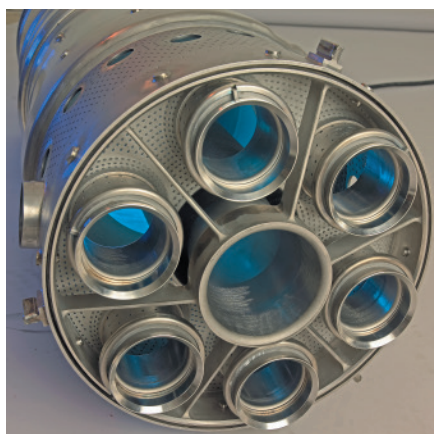
Type of Power Plant:
Peaking Station
4 x Fr 7B GT's
Combined Cycle
(or Simple Cycle with exhaust bypass)

Commercial Operation:
1974



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Case Study Fr7B LEC III™



PSM Achieves First Low Emission Conversion of Fr7B Gas Turbine

Sub 5ppm NOx & CO Capable System

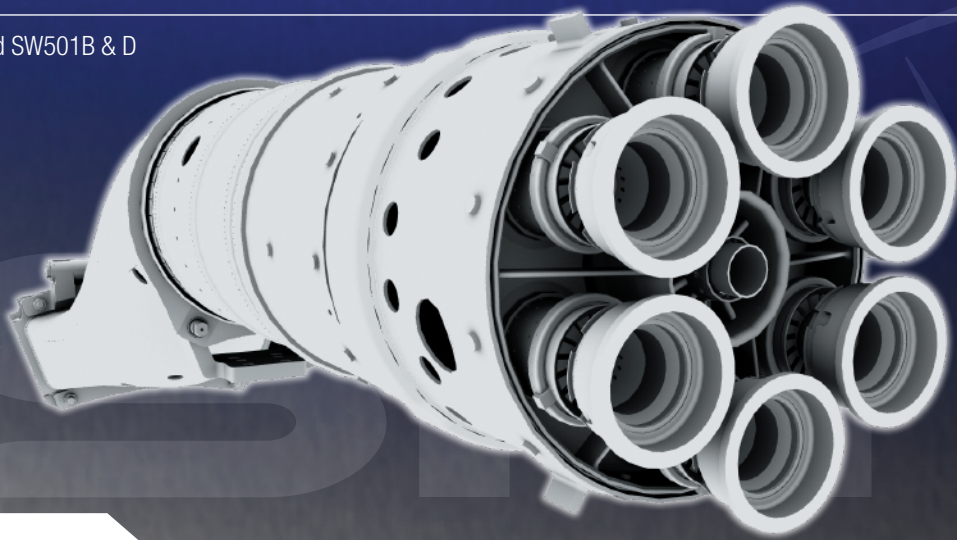
Field conversion of a low-firing Frame 7B gas turbine power plant to ultra-low emission combustion

In 2013, the power plant owner approached PSM with a challenging new application for the LEC III™ ultra-low emissions combustion system. The proposal was to retrofit their 4 x Fr7B gas turbines with a state of the art combustion system, without any major modifications to the GT structure.

Located in the PJM Interconnection region, the plant was seeing increased dispatching due to capacity constraints within the region. At the same time EPA CSAPR & NJ state regulations were mandating forced shut down on the hot summer days the plant was profitable.

LEC III™ Fact File

- + Installed on Fr6B/7E/9E's and SW501B & D using Platform approach
- + Currently installed in over 70 units globally
- + Protected by over 25 patents
- + Now proven for Fr7B & Fr9B without major plant upgrades
- + Fleet Operation:
 - over 1.5 million hours
 - over 18,000 starts

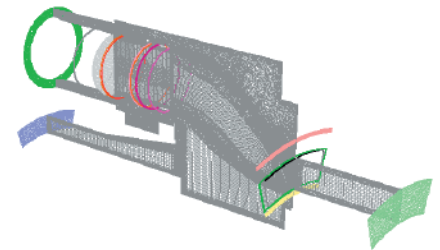
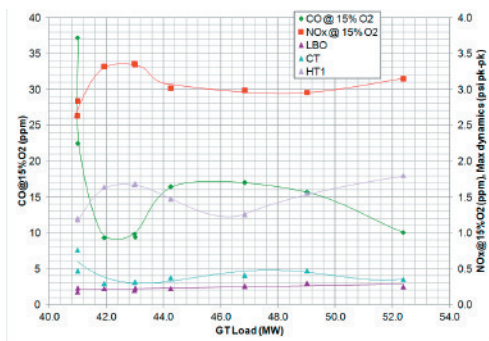


Lower emission combustion systems generally have a higher combustion temperature. Previous retrofit projects of Fr7B GT's had required a complete plant upgrade to the newer Fr7E/EA rating, often including a new turbine casing, turbine rotor, uprated compressor and significantly advanced Hot Gas Path.

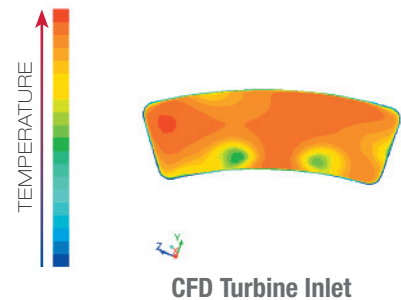
Based on PSM's design and operational experience, a series of Computational Fluid Dynamic (CFD) analyses was carried out to determine how to cool down this flame before it reaches the turbine section through better airflow management.

Conversion duration was aligned to operational requirements and after implementation emissions were reduced by a factor of 12:

NOx: 35ppm → 6ppm CO: 20-100ppm → <3ppm



CFD Mesh Locations



CFD Turbine Inlet