INFORMATION

GAS TURBINE RESEARCH

Support Capabilities & Facilities – Gas Turbine Aerodynamics & Combustion

The Gas Turbine Laboratory (GTL) of the NRC Institute for Aerospace Research (NRC Aerospace) possesses a broad spectrum of air moving facilities that are capable of supplying either heated or cooled air to a number of test rigs and test cells via common piping manifolds. This fact sheet documents these facilities and their capabilities.

NRCaerospace.com

| Air Moving Facilities | Air Flow | Maximum Pressure |
|-----------------------|----------|---------------------|
| | lb/s | psia |
| CMP 1 | 7 | 315 |
| CMP 2 | 7 | 315 |
| CMP 3 | 32.5 | 315 |
| M5A 1 Compressor | 5 | 300 |
| M5A 2 Compressors | 10 | 300 |
| 2 MW BB | 10 | 2 |
| 5 MW BB | 27 | 105 |

Table 1 summarizes the air moving facilities at NRCAerospace. CMPs 1 through 3 are new, integrally gearedcompressors, that can be operated either individually organged in parallel to yield a total combined output of46.5 lb/s. The M5A compressors can be run individually

or in parallel and, if necessary, can be ganged with the three CMPs to give a combined mass flow of 56.5 lb/s. In this configuration the maximum pressure is limited to 300 psia. The 2 MW BB facility can only be used as an 'exhauster' while the 5 MW BB facility can be used as an 'exhauster' or a compressor.



The GTL management system has been registered to ISO 9001:2000



Compressors CMP1 and CMP2

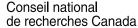
Table 2

| Air Heating Facilities | Air Flow | Pressure | Temperature |
|---------------------------|----------|----------|-------------|
| | lb/s | psia | °F |
| CMP 1 | 7 | 315 | 1200 |
| CMP 2 | 7 | 315 | 1200 |
| CMP 3 | 32.5 | 315 | 1200 |

Table 2 summarizes the air heating facilities at NRC Aerospace. The M10-B air heater is dedicated to a small combustion test cell (Rm 184) located in building M10-B. The two M10-F air heaters are capable of supplying either of two test cells located in building M10-F. These heaters can be run individually or in parallel and, although rated for 20 lb/s each, they can handle additional mass flow but the maximum delivery temperature decreases.

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Combustion or combustion-related test cells

NRC Aerospce has five test cells for combustion or combustion-related tests:

- M10-B 172
- M10-B 174
- M10-B 184
- M10-F STC
- M10-F LTC

Table 3

| | Pressure | Mass Flow |
|---------------------------|--------------|-----------|
| | lb/s | psia |
| Natural Gas Compressor | 565 @ 120 8F | 5400 |
| High Pressure Steam Plant | 0→ 315 | 0→ 5000 |

Table 3 summarizes the performance capabilities andrental rates for additional support facilities at NRC Aero-space. The natural gas compressor only services the twocombustion test cells in building M-10F.

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