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Design, Fabrication and Testing of Pressure Adaptors and Temperature Sensors for an Aero Engine Health Monitoring

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V UPENDRANATH, S RAMAMURTHY (Hon. Consultant) ,
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R K SATPATHY*, B SAHOO*,
SATISH K YADAV**, SUNIL KUMAR DWARI**, D MANDAL**
Propulsion Division
*RCMA, Koraput
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Author/s: Thennavarajan. S, Brijeshkumar Shah, Soumendu Jana,
V. Upendranath, S. Ramamurthy (Hon. Consultant),
Ashfaque Ahmad Khan, Dileepkumar B Alone, Janaki Rami Reddy
R. K. Satpathy*, B. Sahoo*,
Satish K. Yadav**, Sunil Kumar Dwari**, D. Mandal**

*RCMA, Koraput, **HAL, Koraput

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Abstract:

Engine Health Monitoring (EHM) systems are becoming essential parts of modern aircraft engines to enhance safe and long operation and to reduce down time. Activities initiated to develop EHM for a typical aero engine under NPMASS sponsored project. It is planned to acquire detailed gas path data to evaluate engine performance parameters more accurately. This requires additional sensors to be incorporated in the engine gas path along with the available sensors already mounted by the manufacturer. Consequently, an assignment has been taken under EHM program to mount additional sensors in a typical aero engine with active participation from HAL / RCMA, Koraput. The design, fabrication, assembly and testing of several pressure sensing adaptors and temperature sensors have been discussed in detail in this report. The mechanical design of adaptors / sensors has been made to meet the requirements of high temperature and vibration environment during all the ratings of the engine test. The preliminary trial test for the fabricated sensor components has been carried out in the engine test bed. Satisfactory results of the components have been observed during trial tests.