

SEMINAR ON “ACOUSTICS IN AERO ENGINE FACILITIES”

The Seminar on ‘Acoustics in Aero Engine test facilities’ was conducted on 24th April 2018, at MVJCE Seminar Hall - 6.

Ever since the appearance of aircrafts at the beginning of the past century, these machines have been transforming the world. Their capability of travelling at speeds much greater than that of trains or ships, helped the world by facilitating economic trades and helping people to learn about other cultures. The overall performance of a gas turbine can be estimated by knowing the main design parameters. However, this is quite challenging, due to the limited data that the engine manufacturer releases to the general public. Although a turbine manufacturer usually provides data about the turbine interface, the data required to estimate the thermodynamic cycle of a particular gas turbine remains hidden.

A model of the engine capable of estimating that data must then be created. Being a closed domain, the area was chosen for the Seminar for the 8th Semester students and faculty.

The objective of the Seminar was to proffer an understanding of Acoustics and the development of advanced integrated engine control system that uses measurement-based, real-time estimates of inlet airflow distortion, to enhance engine stability and its testing methods. With improved stability and tolerance of inlet airflow distortion, future engine designs may benefit from a reduction in design stall-margin requirements and enhanced reliability, with a corresponding increase in performance and decrease in fuel consumption. The phenomenon of deterioration in gas turbine engines can make their operation uneconomical to airline companies, as well as unsafe and untrustworthy for their clients. That fact leads to the requirement of a proper knowledge of the true state of the gas turbine and its test bed design and testing facilities. Without it, one cannot assess its performance capability, and meet the operational and maintenance contractual requirements.

The knowledge of the behavior of a gas turbine and the test bed design, leads to early detection of the cause of deterioration or failure of its components, which allows appropriate maintenance activity to be undertaken to restore the engine performance and/or ensure safe operation.

Final year Mechanical Engineering students, the faculty of Mechanical Engineering department and research scholars were the participants of this Seminar. The Seminar started at 9:00 a.m. with the welcome of the Resource Person, the Dean and Principal in Seminar Hall - 6 at the MVJ College of Engineering campus. The Head of Department of Mechanical Engineering and staff of the Mechanical Department welcomed the Guests.

The lighting of lamp was done by the Speaker Mr. Bansidar Gouda, Dean Mr. Pasupathy and faculty of Mechanical Engineering department, along with students. This was followed by an invocation song by Ms. Madhuri of first year.



Seminar on Acoustics of Aero Engine: Lighting of lamp by the Speaker Mr. Bansidar Gouda, Dean Mr. Pasupathy, Faculty of Mechanical Engineering Department & Students held at Seminar hall-6 on 24th April 2018.

The Dean addressed the gathering, welcoming the guests, participants and faculty of the Mechanical Engineering Department. He said that the quest for knowledge has been there from the beginning of time, but knowledge becomes valuable only when it is disseminated and applied for the benefit of mankind.

He further hoped that this Seminar will be a platform to gather and propagate the latest knowledge in Mechanical Engineering. Academicians, Students, Researchers and practitioners of Mechanical Engineering will be able to discuss and share new findings and applications of Acoustics and design of test bed facilities in aero engine. It is envisaged that this intellectual discourse will result in future collaborations between universities, research institutions and industry. In particular, it is expected that focus will be given to issues on design, environmental and energy sustainability.

The Guest Speaker Mr. Bansidar Gouda is Manager (Design), Test Bed Design Group, HAL. He emphasized on the design of acoustic features and their performance requirements in an aero engine test facility. He elaborated on how the acoustic features are designed to withstand aerodynamic and thermal loading as well as changing environmental conditions, keeping in view their cost effectiveness.



Seminar on Acoustics on Aero Engine: The resource person Mr. Bansidar Gouda, Manager (Design), Test Bed Design Group, HAL delivering the session at Seminar Hall- 6 on 24th April 2018.

The Speaker emphasized on the engine testing parameters, the maximum possible actual running condition simulations and the parameters measured which are used to assess the airworthiness of the engine. An engine test cell is of complex machinery, instrumentation and services, all of which must work together as a whole. He added that testing and test beds must be well understood, to manage the performance testing of aero-engines more effectively.

The Speaker introduced the participants to many exclusive examples and challenges in the world of Acoustics at large, with reference to different mythologies in Test bed design of Aero Engine. He shared his own experiences on how and why testing is an important and final activity in engine production/repair.

Outcome of the Event:

The Mechanical Engineering students were introduced to the concept of NVH (Noise Vibration and Harshness). The students were exposed to the intricate aspects of design of Acoustics in Aero Engines.

The concept of Acoustics helped them understand the importance of good acoustics comfort in the environment. They were also introduced to the concept of Data Acquisition.

The Final year students gathered basic information related to factors affecting aero engine test facilities. Factors on the implementation of acoustics in different other applications were clarified.

The knowledge of acoustics will lead them to innovate good acoustics in any practical environment. The students have been motivated to take up practical scenario-based projects related to aero engine acoustics.

The students can utilize the knowledge gained, for developing noise-free projects of Mechanical Engineering. The students are expected to implement the knowledge gained for enhancing current project designs.