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Industrial Visit to HAL Helicopter Division

The industrial visit was organized for students from the **Department of Aeronautical and Aerospace Engineering** to provide practical exposure to helicopter manufacturing, assembly, and testing processes carried out at **the HAL Helicopter Division, Bengaluru**. The visit aimed to bridge the gap between theoretical concepts and industrial practices in the aerospace sector.

Schedule of the Event

- **Date:** June 05, 2026
- **Time:** 07:30 AM – 13:00 PM
- **Venue** HAL, Helicopter Division, Bangalore
- **OrganiSed by:** Department of Aeronautical and Aerospace Engineering
- **Number of Students for Visit:** 20,
- **Faculty Coordinators** Dr. R K Mishra and Mr. Gooty Rohan,

Introduction:

The students and faculty coordinators visited the HAL Helicopter Division on **05-06-2026** during the morning session. The visit commenced with an introduction to the organization, its facilities, and its contribution to the aerospace and defense sector.

During the visit, students were taken through the helicopter assembly and testing sections, where they observed various stages of helicopter manufacturing, integration, and quality inspection. The technical experts explained the operational procedures, assembly techniques, safety standards, and testing methodologies followed in the industry.

Mr. Jaykumar, DGM, and Mr. Suviko, Manager, interacted with the students and provided detailed explanations regarding helicopter systems, assembly operations, and testing procedures. They also addressed the students' doubts and shared valuable insights into industrial practices and career opportunities in the aerospace sector.

Objectives of the Industrial Visit Event

The primary objectives of the industrial visit were:

- To provide practical exposure to helicopter manufacturing and assembly processes.
- To enhance students' understanding of aerospace industry operations and testing procedures.
- To bridge the gap between theoretical knowledge and industrial applications.
- To familiarize students with industrial safety standards and quality control practices.
- To create awareness about career opportunities in the aerospace and aviation sectors.
- To encourage interaction between students and industry professionals for technical knowledge sharing.

Overview:

During the industrial visit to the HAL Helicopter Division, students observed various technical aspects of helicopter production, assembly, testing, avionics, and structural systems. The officials explained the complete production workflow carried out in the hangar, starting from system integration to final testing and flight evaluation.

Students learned that helicopters undergo multiple stages of assembly in which avionics systems, electronic components, structural parts, and composite materials are integrated into the base structure. The assembly teams install critical systems such as avionics, gearboxes, and rotor mechanisms, followed by testing and calibration procedures to ensure operational safety and performance.

The officials also explained that the final hangar stage involves extensive flight testing and evaluation of the performance envelope. Test pilots and engineers follow a systematic testing schedule to measure important flight parameters and ensure compliance with operational standards before delivery to customers, including the Army, Navy, and Air Force sectors.

The visit provided insights into advanced helicopter technologies such as:

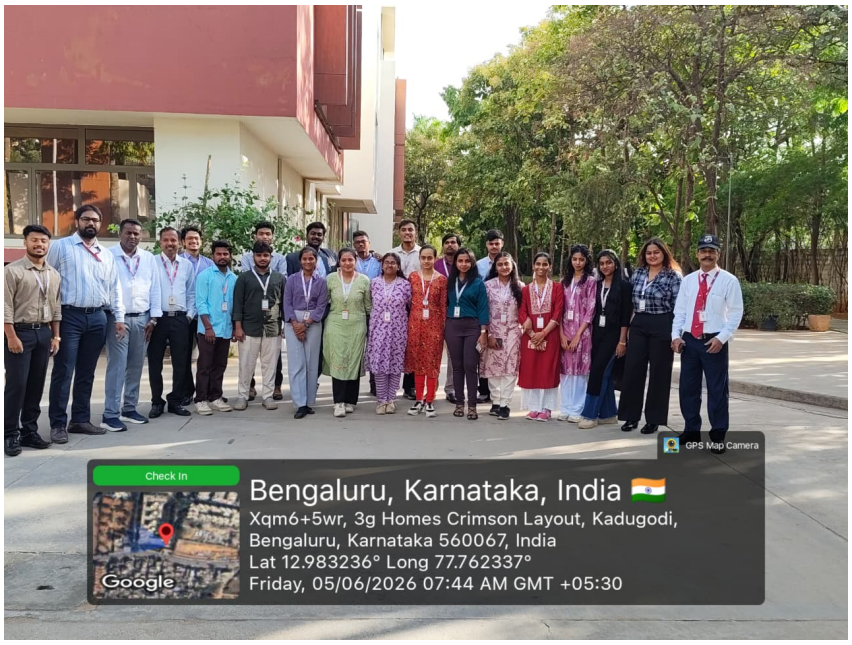

Figure 1: The fourth semester Aeronautical and Aerospace Engineering students boarded the bus at the MVJCE entrance.

- FADEC (Full Authority Digital Engine Control) systems used for throttle and engine management.
- Radio Altimeter systems that use radar technology for altitude measurement.
- IFF (Identify Friend or Foe) systems used for military aircraft identification and communication.
- Emergency battery systems provided in helicopters during total electrical failure conditions.

Students were also introduced to helicopter safety and aerodynamic features including tail rotor operations, stabilizing end plates, rotor blade configurations, and high-speed landing procedures in emergency situations. Structural concepts such as longitudinal bending loads, skin shear loads, riveted joints, and semi-monocoque construction were also discussed during the interaction.

Additionally, students gained knowledge about helicopter rotor dimensions, rotor RPM variations, blade loading conditions, and collective and cyclic pitch control mechanisms used to control helicopter maneuvering and stability.

Figure 2: A group photo taken on the bus on the way to the industrial visit.

Outcome of the Visit:

- Students gained practical exposure to helicopter assembly and testing operations.
- Students understood industrial safety procedures and quality control measures.
- The visit enhanced students' knowledge of real-time aerospace manufacturing practices.
- Students interacted with industry experts and clarified technical doubts.
- The visit helped students understand the applications of theoretical concepts in the aerospace industry.

Conclusions

The industrial visit to the HAL Helicopter Division was highly informative and beneficial for students in Aeronautical and Aerospace Engineering. The visit provided valuable industrial exposure and enhanced the students' understanding of helicopter manufacturing and testing processes. The department expresses sincere gratitude to the HAL officials for their support and guidance during the visit.

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