

AMITY INSTITUTE OF AEROSPACE ENGINEERING

Guest Lecture Report

A lecture session was organized on 15th October 2020 on the occasion of “**Innovation Day**” to mark the **Birth Anniversary** of **Dr. A. P. J. Abdul Kalam**. The details of the session are given below:-

Topic: “**ENERGY CONCEPT IN AIRPLANE PERFORMANCE**”

Date: 15th October 2020

Place: Online Mode (M.S Team)

Time: 02:30pm – 03:30pm.

Speaker: Dr. Rakesh Kumar.

About the Speaker: Dr. Rakesh Kumar is the M. Tech and Ph. D in Aerospace Engineering from IIT Kanpur. He is currently serving as a professor at Department of Aerospace Engineering, Punjab Engineering College, Chandigarh. His area of interest includes Flight Mechanics, Aerodynamics, Artificial Neural Networks.

Major points covered during the talk: He has covered wide area of Aerodynamics. Broad areas of his discussions are: -

- Energy Concepts in Airplane Performance.
- Aerodynamics Ratio for various flights.
- Energy Climb and Steady Climb.
- Steady Level Flight.
- Gliding (Unpowered) Flight.
- Thrust Required or Drag Curve.
- Thrust and Power Curve.
- Minimum Drag Condition.
- Lift to Drag Ratio.
- Minimum Power Condition.
- Accelerated Rate of Climb.
- Specific Excess Power Contours (for Subsonic Aircraft).
- Variation of Drag Coefficients.
- Rate of Climb and Time to Climb.
- Climb Range for Jet Aircraft and Gliding flights etc.

Students of following batch attended the lecture: Total 46 Students.

1. B. Tech
2017-21 Batch
2018-22 Batch
2019-23 Batch
2020-24 Batch

2. B. Tech+M.Tech
2017-22 Batch
2020-25 Batch

3. M.Tech
2020-22 Batch

Following faculty member also attended the lecture:

1. Dr. Sanjay Singh (Director)
2. Dr. Basant Agarwal
3. Dr. Sharbari Banerjee
4. Mr. Jayanta Sinha
5. Mr. Saquib Reza
6. Prof. J. K. Jain
7. Ms. Soni Gupta

Event Objectives:

- To disseminate the knowledge of the Energy Concept in Airplane Performance.
- To introduce the students with the challenges in the field of Aircraft Design and Performance.

Expected Outcomes:

- Students of B. Tech 3rd, 4th year and M. Tech would get new topic for their research and major projects related to Aerodynamics.
- A knowledge pool will be created in the field of Aircraft Energy and Airplane Performance.
- Publications in the field of Airplane performance can be anticipated.
- Students will be able to understand full concepts of Thrust, Energy climb and steady climb, Rate of Climb and Time to Climb etc.
- Students will be able to understand full concepts of Gliding (Unpowered) Flight.

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Participants (49)

Panelist: 4

- Sanjay Singh Me
- Amity University Host
- Rakesh Kumar
- Jai Kumar ...

Attendee: 45 (0 displayed)

Chat

To: Everyone

Rate of Climb

- maximum rate of climb requires maximum specific excess power $(TV - DV)/W$

jet

prop

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Sanjay Singh (Me) Amity University (Host) Jai Kumar Jain Rakesh Kumar

ENERGY CONCEPTS & AERODYNAMIC RATIOS
&
THEIR RELEVANCE IN AIRCRAFT PERFORMANCE

Dr. Rakesh Kumar
(B.E.P.T.C., M.Sc., Ph.D., Ph.D.(T.K.))
Professor
Aerospace Engineering Department
Punjab Engineering College (Deemed to be University)
Sector 12, Chandigarh - 160012

LECTURE DELIVERED ON 15.10.2020
AMITY UNIVERSITY, NOIDA (U.P.)

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Sanjay Singh (Me) Amity University (Host) Rakesh Kumar Jai Kumar Jain

SPECIFIC EXCESS POWER CONTOURS (FOR SUBSONIC AIRCRAFT)

$h_1 < h_2 < h_3$

Altitude h

Mach number M

$P_e = 200 \text{ ft/s}$

$P_e = 300 \text{ ft/s}$

Participants (50)

Panelist: 4

- Sanjay Singh Me
- Amity University Host
- Rakesh Kumar
- Jai Kumar J...

Attendee: 46 (0 displayed)

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Sanjay Singh (Me) Amity University (Host) Rakesh Kumar Jai Kumar Jain

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Some pics of Guest Lecture

