Department of Mechanical Engineering

A.Y 2025-2026, Even Semester

Industry Guest Lecture Report

In view of department activities, Department of Mechanical Engineering conducted an Industry Guest Lecture with **Mr. Dileep Kotte,** working as **Sr. Lead Stress Engineer – Aerospace, Cyient Limited, Hyderabad on 30-01-2026** by Smart manufacturing cohort. He gave lecture from 02:00 P.M to 02:45 P.M on the topic **"Overview of GD&T in an industry perspective"**. In on-line mode, he given presentation in google meet platform in which 57 participants (53 students and 04 faculty) of ME department were participated in blended mode.

With his extensive experience in aerospace engineering and stress analysis, the speaker provided valuable insights into how Geometric Dimensioning and Tolerancing (GD&T) is applied in industry, particularly in high-precision sectors such as aerospace.

The lecture was interactive, application-oriented, and focused on developing clarity among students regarding the interpretation and importance of GD&T symbols in engineering drawings.

Google meet Link:

https://meet.google.com/fdr-capm-wwe

Key points covered during guest lecture session:

Mr. Dileep Kotte began the session with a brief introduction to GD&T, explaining its role as a symbolic language used in engineering drawings to clearly communicate design intent. He emphasized that GD&T is essential for ensuring functional requirements, interchangeability of parts, and quality control in manufacturing.

The speaker highlighted the limitations of conventional plus-minus tolerancing and explained how GD&T overcomes these limitations by providing clear and unambiguous tolerances related to form, orientation, location, and profile.

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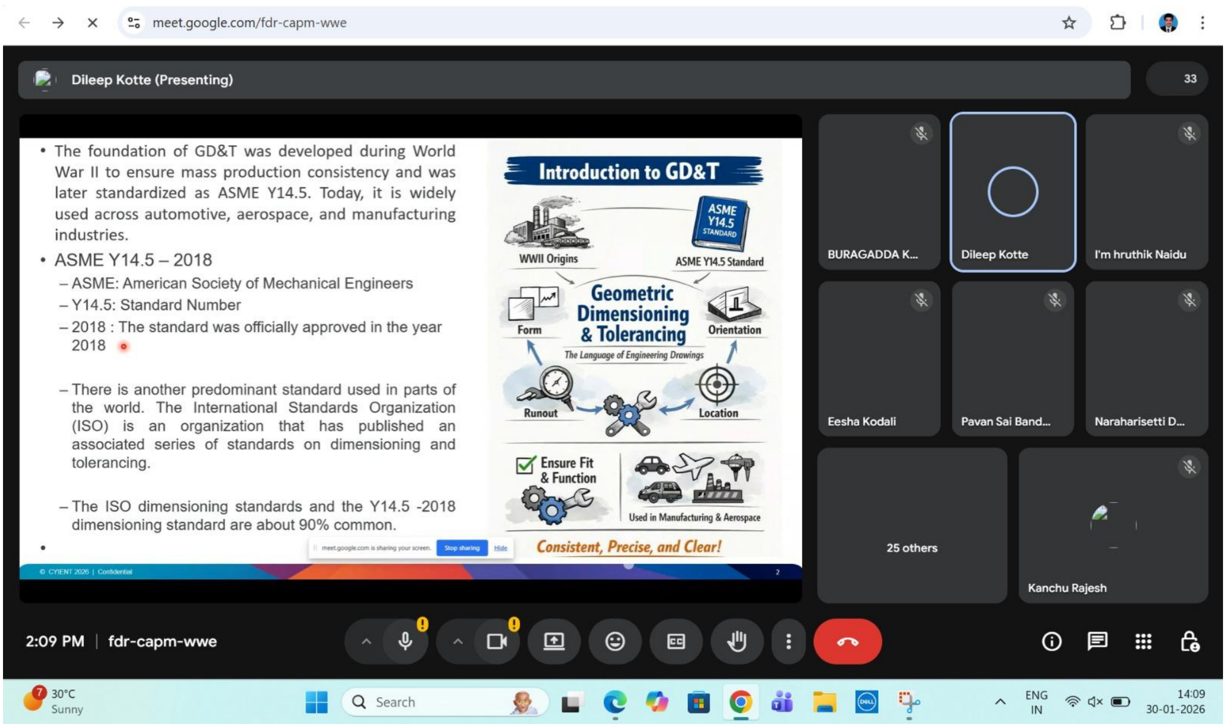
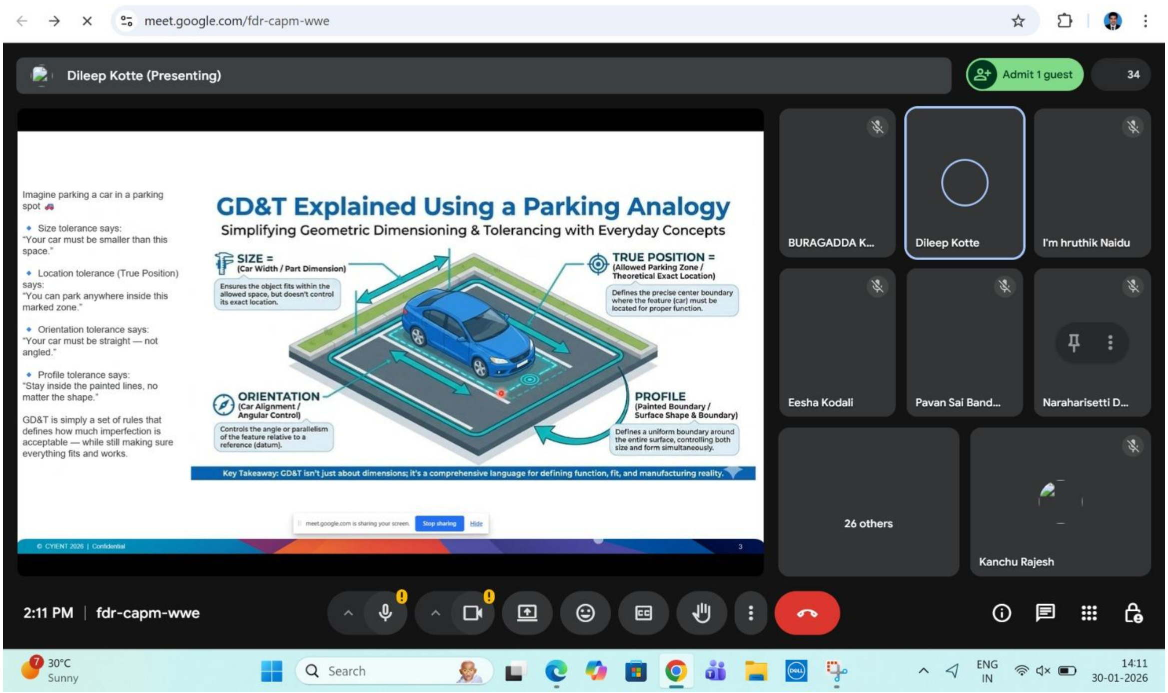


One of the most engaging parts of the lecture was the explanation of GD&T concepts using a *parking analogy*. Mr. Dileep used this simple real-life example to help students understand complex tolerancing concepts intuitively.

He compared vehicle parking constraints such as space limits, alignment within parking lines, and position of the vehicle to GD&T controls applied to machine components. This analogy helped students visualize how tolerance zones work and why proper control of geometry is crucial for functionality and safety.



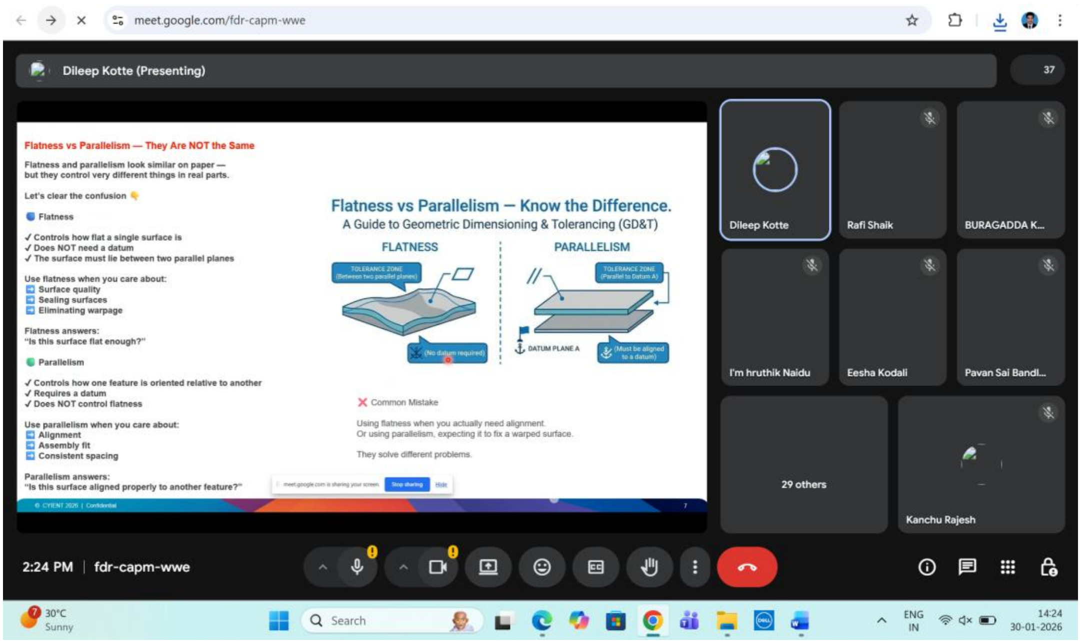
The fundamentals of GD&T were explained using the concept of **SLOF**, which represents:

- **S – Size**
- **L – Location**
- **O – Orientation**
- **F – Form**

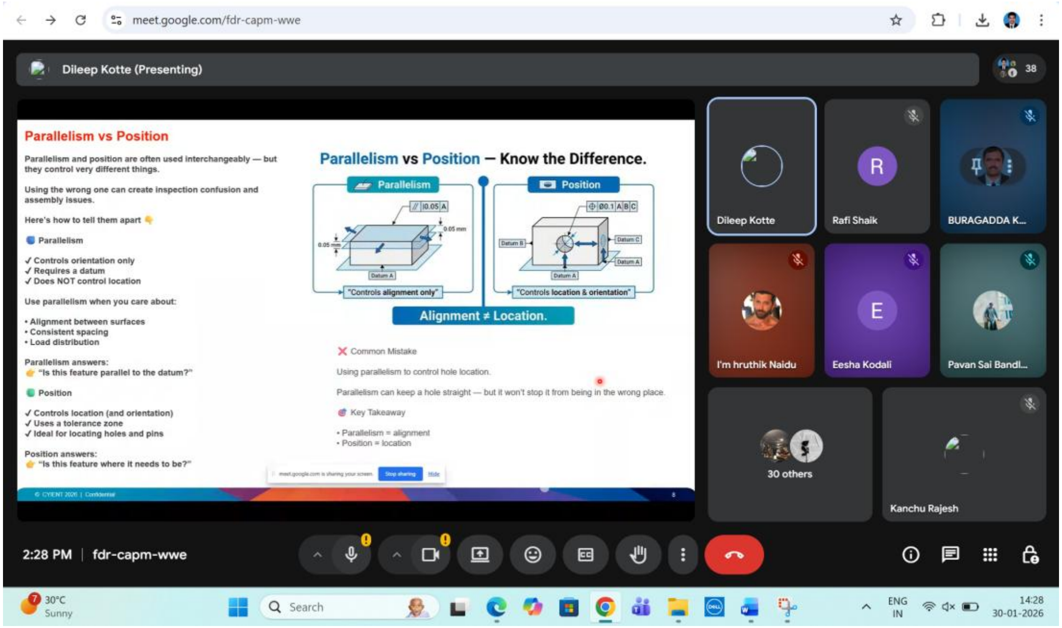
Mr. Dileep explained how each of these aspects plays a critical role in defining the geometry of a component. He clarified that size alone does not guarantee proper assembly or function, and that location, orientation, and form controls are equally important in industrial applications.

The speaker provided a clear comparison between **Flatness** and **Parallelism**, two commonly confused GD&T controls.

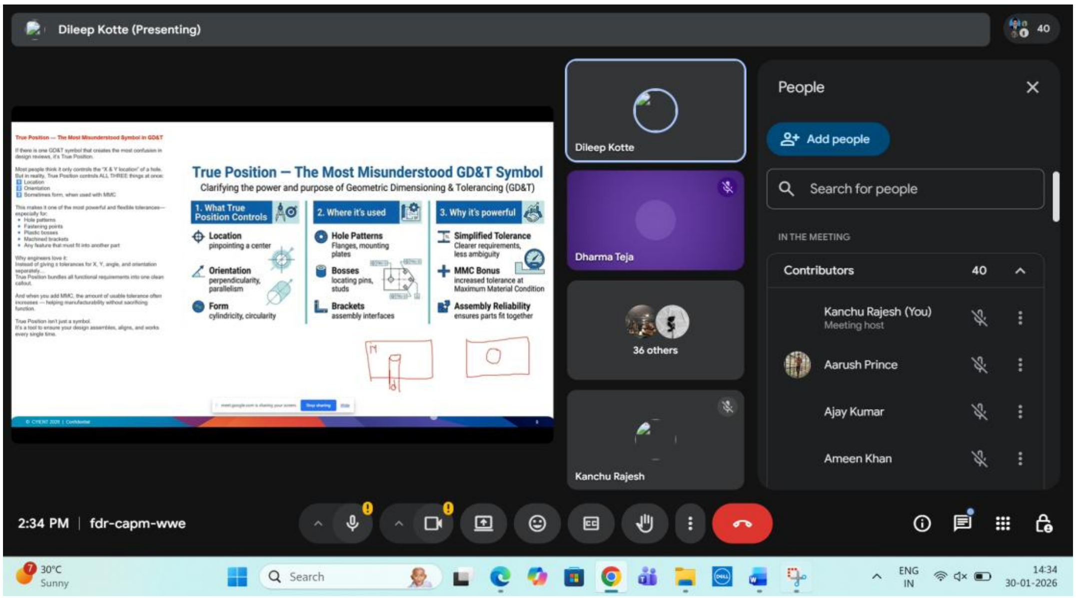
Flatness controls the form of a surface without reference to any datum. **Parallelism** controls the orientation of a surface or axis relative to a datum. Through practical examples, he explained when flatness is sufficient and when parallelism must be specified to ensure correct assembly and performance of components.



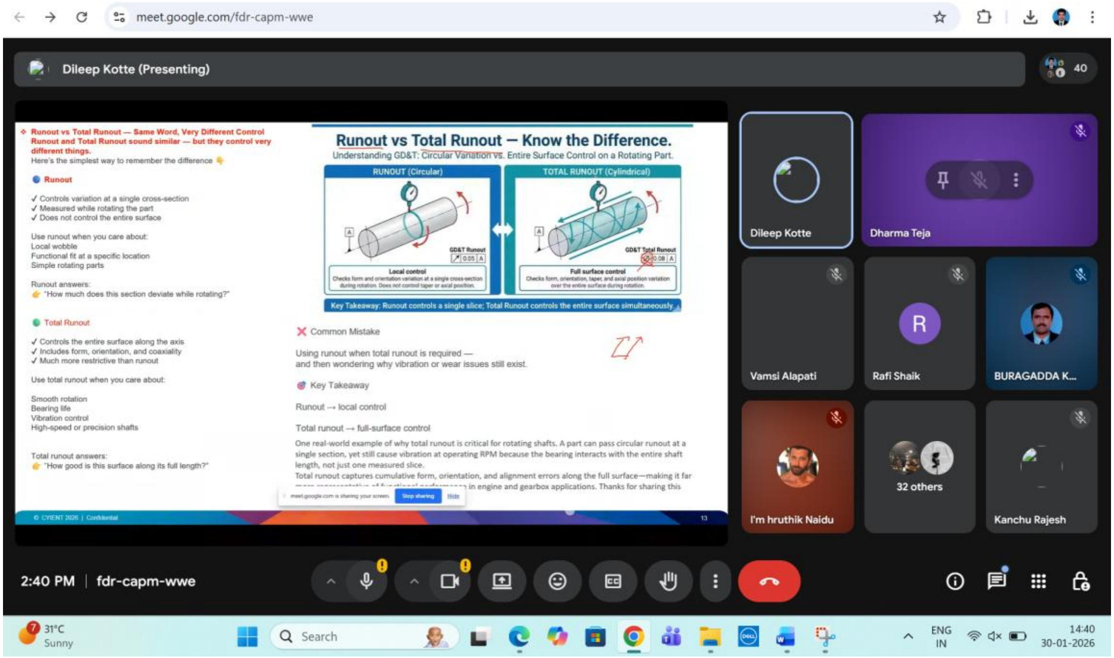
Mr. Dileep further compared **Parallelism** and **Position** tolerances. He explained that while parallelism ensures correct orientation, it does not control the exact location of a feature. **Parallelism** controls orientation only. **Position** controls the exact location of a feature relative to datums. This distinction was explained with industrial examples, highlighting how improper use of these controls can lead to functional issues in assemblies.



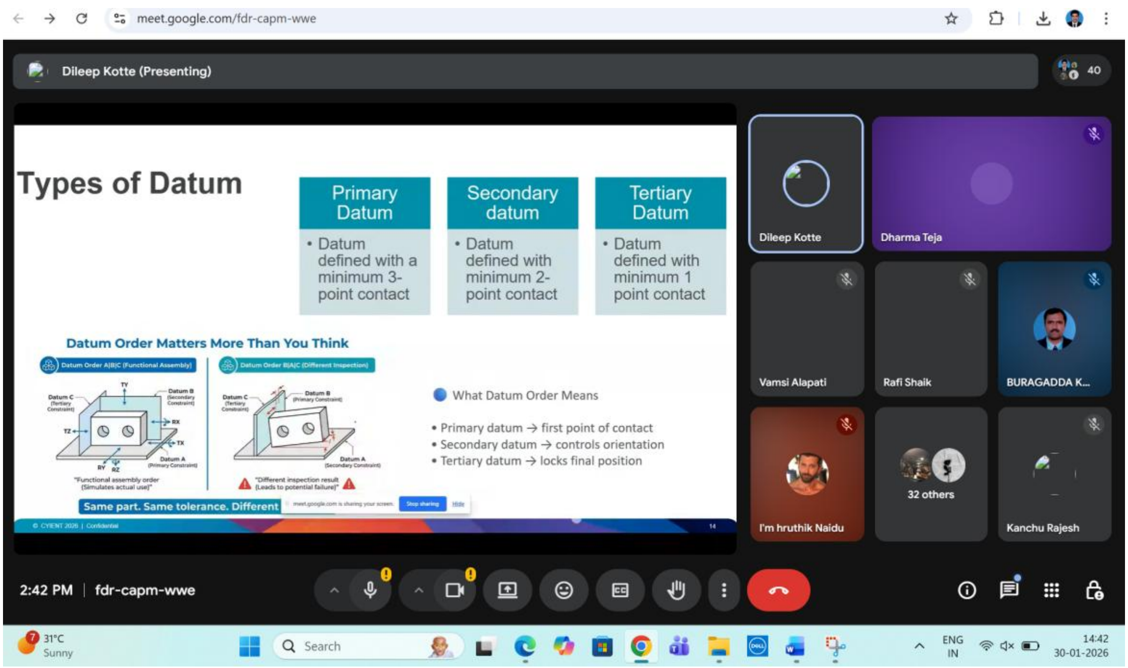
A significant portion of the lecture focused on **True Position**, which Mr. Dileep described as the most misunderstood GD&T symbol. He explained that true position defines a tolerance zone within which the axis or center of a feature must lie. Using diagrams and examples, he clarified common misconceptions and showed how position tolerance helps in ensuring assembly fit, functional alignment, and manufacturing flexibility.



The concepts of **Maximum Material Condition (MMC)** and **Least Material Condition (LMC)** were explained in detail. Mr. Dileep discussed how MMC and LMC are used to allow bonus tolerances and improve manufacturability without compromising functionality. He emphasized their importance in aerospace and precision engineering applications, where both safety and cost optimization are critical.



A **datum feature** is an actual physical feature on a part, such as a surface, hole, or axis, which is used to establish a datum. Datum features are selected based on functional requirements and assembly conditions.



The session concluded with an interactive discussion, where students actively asked questions related to GD&T applications, career relevance, and industry expectations. The lecture helped students:

- Understand GD&T from an industry perspective.
- Interpret GD&T symbols with clarity.
- Relate theoretical concepts to practical applications.
- Appreciate the importance of GD&T in high-precision industries.

The guest lecture on *"Overview of GD&T in an Industry Perspective"* was highly informative and beneficial to B.Tech Mechanical Engineering students. Mr. Dileep Kotte's industry-oriented approach, practical examples, and simple analogies made complex GD&T concepts easy to understand.

The session successfully enhanced students' knowledge and awareness of GD&T practices used in industry and motivated them to develop strong fundamentals essential for careers in manufacturing, design, and aerospace engineering.

Few students asked questions and interacted with speaker and then K. Eesha (2300079018) delivered Vote of Thanks to the speaker.

Prepared by	**Approved by**
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