This is an advanced level training and will cover detailed discussion of engine design process. The training includes various aspects of each component and sub-system that need to be considered during the engine development.

This training is mostly considered by corporate for a group of its employees to upgrade and impart high end knowledge about engine design. The individual participants are also welcome. The participants are expected to have good knowledge of ICE working:

- Duration - 4 days; 1 session; 8 hrs per day
- Trainer industrial experience - Over 16 years

**Engine Components and Sub-systems:**

- Air filter
- Turbocharger/ Supercharger/ Turbo-compounding
- Intake and exhaust manifold system
- Intake throttle
- EGR system
- Valvetrain system
- Fuel injection & ignition system
- Engine configuration and balancing
- Engine cylinder, block, and head
- Gaskets and seals
- Powertrain system
- Aftertreatment devices
- Acoustics devices
- ECU system
- Journal bearings and bushings
- Lubrication system

**Areas for Each of the above Components and Sub-systems:**

- Thermodynamics
- Working principle
- Features
- Configuration
- Applications
- Effect on engine performance parameters
- Steady state/ Transient behavior
- Advanced technologies
- Design parameters
- Design approach
- Selection
- Manufacturing
- Testing
- Failures
- Case study

![Diagram of engine components and sub-systems](image)

**Engine Speed - rpm**

- Turbocharged
- Turbocharged Downsized Engine
- Naturally aspirated engine
- Downsampled Engine
- Best fuel economy

**Subscription devices**

- Aftertreatment devices
- Exhaust gas recirculation (EGR)
- Particulate matter (PM)
- Nitrogen oxides (NOx)
- Lean exhaust gas (LTE)
- Selective catalytic reduction (SCR)

**Effective Flow Area**

- Region 1: Limited by Valve Seat Area
- Region 2: Limited by Valve Head Region
- Region 3: Limited by Valve Stem Region

**Journal bearing**

- Bearing load
- Oil pressure distribution
- Lubricant temperature
- Wear rate
- Oil film thickness

**Contact**

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