This is an advanced level training that gives the participants comprehensive and in-depth knowledge about different aspects of turbocharger, supercharger, and turbo-compounding selection for ICE. These include thermodynamics, working principles, influence of wastegate, variable geometry, EGR on selection, for gas & diesel engines, 2-stage turbo, etc.

This training is considered by corporate for a group of its employees and individual engineers to upgrade and impart advanced level knowledge about turbocharger. The participants are expected to have basic knowledge of ICE working and turbocharger.

- Duration - 2 days; 1 Session; 8 hrs per day
- Trainer industrial experience - Over 16 years

**Introduction to Turbocharger:**
- Purpose
- Working principle
- Features
- Basics of fluids
- Thermodynamics
- Challenges

**Architecture:**
- Single/Two stage
- Sequential turbocharger
- Constant pressure and pulse turbocharger
- FGT, WGT, VGT & VFT
- Supercharger
- Turbo compounding

**Turboshaft:**
- Detailed features
- Shaft Motion
- Balancing
- Field Failures
- Lubrication
- Hot shut down

**Compressor and Turbine Map:**
- Compressor map generation
- Turbine map generation
- Map parameters and its calculation
- Map width enhancement
- Small, large & narrow map
- Smaller & larger turbine casing

**Turbo Matching for Diesel and Gasoline Engine:**
- Breathing line analysis on compressor map
- Compressor map - small, large, narrow
- Turbine casing - smaller, larger
- Turbine swallowing capacity curves
- Engine torque curve characteristics
- Altitude performance
- Single and Twin-Scroll turbine
- FG, WG, VG turbo
- Two-stage turbo matching
- Consideration for gasoline engine
- Transient operation

**EGR Effect on Turbo Matching:**
- EGR fundamentals
- Effect with different percentage of EGR
- Turbine requirements
- Intake & exhaust manifold pressure drop

**Additional Topics:**
- Water cooled TC
- E-Turbo
- Hybrid turbo
- Manufacturer
- Testing
- Manufacturing
- Failure
- Turbocharger for different applications
- Some design aspects of compressor and turbine

**Turbocharger on Engine Performance:**
- Turbocharger and engine performance
- Steady state and transient