24 Hours ADVANCED Training on

Engine Performance & Design

Advanced Knowledge

Applications

Brief 1D GT-Suite simulation

Your Simulation Partner

IST

IST Pvt Ltd

EV, HEV & Engine Development
Staff Augmentation
Corporate Training

Training Fees

| Category	Training Fees per participant (Rs.)
Company Sponsored	13,000.00
Individual Sponsored	10,000.00

For registration, please contact us:
- E-Mail ID: subir.mandal@integratedsimtech.com
- Contact No.: +91-9763909935

| Integrated Simulation Technology Pvt Ltd, Pune | www.integratedsimtech.com |

Agenda Overview

This advanced level training to cover detailed discussion on design and development of engine from engine performance, fuel economy, and emissions perspective. point view. The participants are expected to have fair knowledge of ICE working.
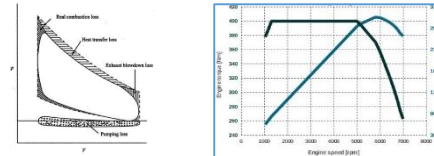
❑ **Engine development strategy and process**
  ✓ Energy conversion
  ✓ Key technologies
  ✓ Factors consideration
  ✓ Concept to prototype
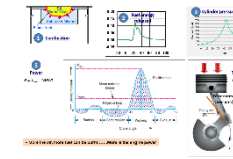
❑ **Engine and its performance characteristics**
  ✓ Fundamental engine performance parameters
  ✓ Engine power-torque curve for various applications
  ✓ Strategy to reduce energy losses
 ✓ Emissions formation (NOx, UHC, CO, PM, etc)

❑ **Engine components, design and failure**
  ✓ Block, head, liner, piston & piston ring, crank shaft, camshaft, ConnRod, gasket, gear train, flywheel
  ✓ Function, features, types, design considerations and design parameters of each of the components
  ✓ Types and causes of engine component failure
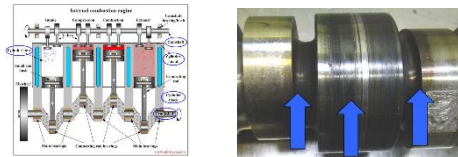
❑ **Engine balancing**
  ✓ Concept of order & frequency
  ✓ Engine firing order determination
  ✓ Sources of unbalance forces
  ✓ Balancing of unbalanced forces and moment
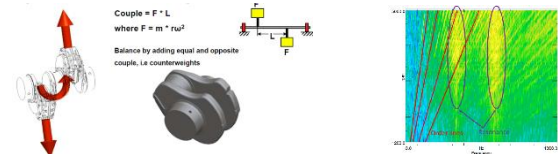
❑ **Engine air handling system**
  ✓ Airfilter, piping, turbocharger, CAC, EGR system, manifold, intake & exhaust valve train, intake & exhaust throttle, bypass valve
  ✓ Function, thermodynamics, working principle, features, configurations, selection and advanced technologies of each of the components
  ✓ Role of each component on engine performance, emissions, and fuel economy
  ✓ Gas exchange processes
  ✓ Part load operation improvement
 ✓ Steady state & transient engine performance

Who Should Attend?

❑ Working professionals/ planning to work in engine domain
❑ Those who are interested to soak advanced knowledge & technologies from actual applications point of view in the industry
❑ OEMs/ Consulting Companies/ Start-ups
❑ Engineering Students/ Professors/ Scholars

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❑ **Fuel injection, combustion, emissions**
  ✓ Electronic fuel injection system components and their function
  ✓ Advantages & disadvantages of different types of fuel injection system
  ✓ Injection process, combustion mechanism, combustion chamber configuration, heat release rate, knock, fuel quality, octane number, cetane number
  ✓ Design variables & strategy of injection system; and combustion chamber design consideration
  ✓ Influence of various injection system parameters and combustion chamber design on engine performance, emissions, and fuel economy
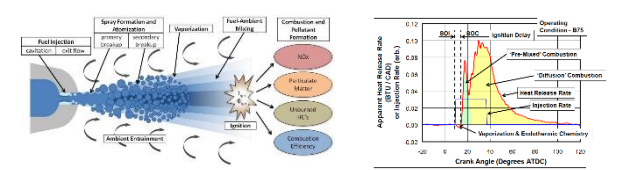
❑ **Emissions control – EAT devices & other technologies**
  ✓ Exhaust aftertreatment – DOC, DPF, SCR, LNT, 3-way catalyst, GPF; and exhaust muffler
  ✓ Features, working principle, requirements, and challenges of exhaust devices
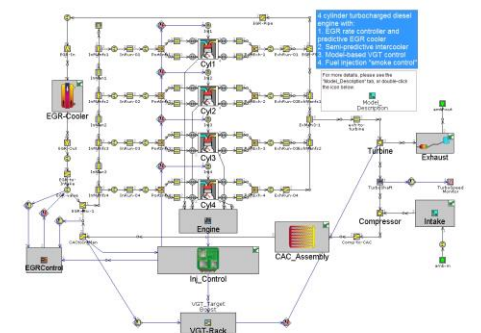 ✓ Influence of exhaust devices on engine performance and fuel economy
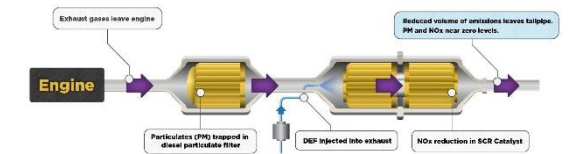
❑ **Emissions standards**
  ✓ Emissions standards and technologies to achieve it
  ✓ Different emissions driving cycle
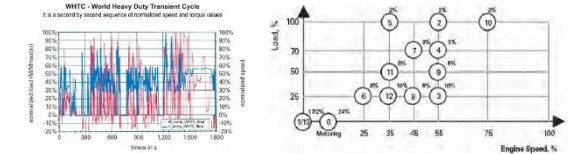
❑ **Brief exposure to 1D GT-SUITE simulation**
  ✓ Brief discussion on engine model build, simulation and result interpretation

Trainer

❑ Over 19 years of industrial experience in diesel, gasoline, gas engines; HEV & EV; and aircraft engines
❑ 1D simulation domain – engine performance, cooling, HVAC, HEV & EV drivetrain, battery, lubrication, acoustics, hydraulics, cranktrain, and valvetrain
❑ Worked with GE, Cummins, ESI, MTU (Rolls-Royce), IST
❑ Conducting training for 10 years
❑ GT-SUITE user for 14 years
❑ M.Tech. from IIT Kharagpur