

# TOPTECH on BALANCE FUEL ECONOMY & COMFORT USING A VEHICLE LEVEL TEST & SIMULATION APPROACH

(Vehicle Energy Management and Thermal Management)

Conducted by  
**Murugadas Kannan**  
**Kiran Voonna**  
**Aravindan Sivasankar**

on  
**28<sup>th</sup> & 29<sup>th</sup> September 2018**



Organized by

**SAEINDIA**  
SOUTHERN SECTION

Event Champion : D.Balaji

## Speakers

### Murugadas Kannan

*Simulation Specialist – Simcenter 1D CoE*

Aero mechanical engineer with science and engineering background. Most of the work involves automotive & subsystems simulation in V&V cycle approach. Responsible for MBSE business across India.

### Kiran Voonna

*PreSales Solutions' Consultant – Simcenter 3D CFD*

Masters from University of New Orleans specialized in CFD

15+ years of experience in Flow and Thermal simulation and methods development Worked with major Automotive OEMs and supported on CFD simulations using STAR-CCM+

### Aravindan Sivasankar

*PreSales Solutions' Consultant - Simcenter TEST*

An automobile enthusiast with Master's degree in Automotive Engineering, specialized in NVH Engineering, Project Management & Solutions Selling. Possess 10 years of domain expertise delivering NVH attribute for vehicle projects at different development phases with a knowledge on attribute balancing & as a Solutions Consultant for tools that NVH teams can rely upon for vehicle development.

## Introduction

Regulators will continue to expect OEMs and the supplier industry to achieve higher fuel economy and significant emission reductions. The incumbents will have to meet these requirements, while maintaining drivability and performance benchmarks. Technological innovations need to be leveraged to comply with such regulations, and to safeguard the balance between vehicle energy management and functional performance in all components, systems and sub-systems.

In fact, vehicle concepts and architectures should be evaluated comprehensively to make design decisions. In other words, detailed design analysis of full vehicle and its sub-components should be undertaken to appraise an integrated systems that comprises of mechanical, thermal, electrical and controls subsystems. Design analysis and engineering processes should be aligned with upcoming regulatory requirements by embracing concepts like vehicle energy management, which integrate green engineering into current product development processes, while continuing to improve vehicle's drivability and performance. Broadly, assessment and analysis of the following attributes need to be done:

- Equilibrium between drivability and fuel economy
- Designing for optimum range and lower energy consumption
- Optimization of energy flows

SAE and Siemens Industry Software invites you to join us for an educative and interactive two-day workshop focused on achieving your fuel economy targets in harmony with conflicting performances.

## Course Outline

- Industry drivers and engineering challenges
- Simulation from subsystem design to vehicle synthesis and controls validation
- Vehicle Energy Management
  - ⇒ Investigating vehicle architectures and strategies using a multi-level approach
  - ⇒ Accurately predicting energy consumption and distribution of full system level
- Vehicle Thermal Management
  - ⇒ On component level: Understanding heat source generation to dissipation through engine block and cooling circuits, Predicting engine warm-up and optimizing cooling performance
  - ⇒ On Full vehicle, vehicle integration level: Steady Conditions and Transient Conditions
  - ⇒ Optimizing the external aero-dynamics
- Emissions
  - ⇒ From In-cylinder to after treatment
  - ⇒ Detailed model of engine (scalability, 1D, emission model...)
  - ⇒ Detailed models: Emission models, Injection strategies, design
- Vehicle Hybridization and Electrification (H/EV)
  - ⇒ Challenges with HEVs / EVs
  - ⇒ Battery characterisation
  - ⇒ 3D Microstructural Electrochemistry
  - ⇒ Cell Modelling – Sensitivity to charging / discharging cycles
  - ⇒ Electric Motor (system modelling - System integration)
- Balancing Fuel Economy, Drivability and NVH
  - ⇒ Testing Drivability & NVH
  - ⇒ Modeling NVH Phenomena using MBSE approach
  - ⇒ MAB - Model scalability to handle different attributes
  - ⇒ Precalibration

## Mode of payment

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Bank Account Number : 32506111653  
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## Registration fees

Rs. 13,000 + 18% GST per delegate for Non-SAEINDIA Member

Rs. 10,000 + 18% GST per delegate for SAE INDIA Member

Rs. 4,000 + 18% GST per faculty Advisor

## Venue

### SAEINDIA Southern Section \*

Block-1, Modules: 29 & 30, SIDCO Electronic Complex ,  
Thiru-Vi-Ka Industrial Estate, Guindy,  
Chennai - 600032



\*Subject to change based on registration

## Applying for membership

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**at**  
**Chennai**

We confirm the following will attend the above Seminar :

Name : .....

Designation: .....

Company: .....

Address: .....

.....

.....

Email: .....

## Signature:

Please email/post the registration form duly filled, on or before 24<sup>th</sup> September 2018 to:

### Programme Executive

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