Nabin Nepal BIO

Nabin Nepal experienced Technologist seasoned globally in automotive product development that spans across UK, Germany, Brazil, Japan, India, China & USA on Gasoline, Diesel, Hybrid, Electric, Fuel Cell, CNG, and LPG vehicle and systems development from concept to launch.

The trainer worked in Mahindra & Mahindra Company engineering Project Leader –Hybrid & Electric Vehicles: Developed Hybrid cars for India's largest SUV maker. Developed electric vehicles in joint venture with Mahindra Reva Electric Car Company. Concept to reality projects included world's first 1.5 cylinder seven-seater parallel diesel hybrid SUV, and, five-seater fully electric sedan. Global technology partners include AVL, ZF-Sachs, AISIN, Mercedes Benz Technology (MB-Tech), IDIADA, Samsung, Ricardo, Segula, and Bosch. Key challenges included meeting Indian RWUP (Real World Usage Profile), Optimizing Lithium Ion Battery State of Charge (SOC) for Indian usage, Performance and Drivability, Crash compliance, and High Voltage Functional Safety. Last Project: Mahindra Hybrid XUV-500, Mahindra Verito Electric, Mahindra Maxximo Electric

Also worked in Ford Motor Company; following sustainable leadership responsibilities were at Ford Motor Company and its subsidiaries (Mazda, Lincoln, Mercury, Jaguar, Land Rover, and Volvo) at its R&D Centers in UK, Germany, USA, Brazil, China, Thailand, and Australia

BIRZEIT UNIVERSITY

Faculty of Engineering and Technology

Department of Mechanical and Mechatronics Engineering

Birzeit, P. O. Box 14, Tel: (972) 2 2982115, Fax : (972)2 298 2984

Hybrid vehicles training of trainers

Agenda

First Day: Thursday 7 No. 2019

1Q Introductory Review of Alternate Propulsion Mobility – EV/HEV/PHEV/Solar
Introduction of Hybrid Mobility – Global OEM Scenario & Models
MPG versus eMPG (KMPH versus eKMPH) Analysis

2Q Types of Hybrid Systems in Production
Review of In-Production Hybrid Architecture by OEMs

3Q Study of of Start-Stop Systems
Review of Mild & Full Hybrid Systems

4Q Review of Series, Parallel, BAS Retrofit, Plug-In Systems
Review of Retrofit and Aftermarket Conversion Kits

Media Review	Pictorial Review of Discussion from 1Q to 4Q
	Video Discussion of - from 1Q to 4Q
Wrap Up	Review of the Day/Wrap-Up
	Q & A Session
	Study of Start-Stop Systems
	Review of Mild & Full Hybrid Systems

Day 2: Friday 8 Nov. 2019

1Q Systems Supplier Base Tier-I & II Review – Who Makes What
Picture/Video Review of HCU, MCU, ECU, E-Motor, HV Cable

2Q Architecture/Media Review of Gen-X Hyundai Inoq and Toyota Prius
Drive-Through of Gen-X Hyundai Inoq and Toyota Prius

3Q BU's Hybrid Simulator Literature/Layout Review
Demo/Usage of BU's Hybrid Simulator

4Q Lithium Ion Battery - Chemistry, Cost, Application, Trend Review
Solid State Battery - Chemistry, Cost, Application, Trend Review

Media Review	Pictorial Review of Discussion from 1Q to 4Q
	Video Discussion of - from 1Q to 4Q
Wrap Up	Review of the Day/Wrap-Up
	Assignments for Day-3

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Day 3: Saturday 9 Nov. 2019

1Q	Electric Motors – Types Specs and Usage in EV/HEV/PHEV Applications
	Motor Control Unit (MCU) – Input / Output / Relation to Vehicle Systems & Subsystems
2Q	Hybrid Control Unit (HCU) – I/O Review and Relations to ECU/MCU/TCU
	Discussion on Global Technology Consultants (IAV/FEV/AVL/Johnson) Capabilities
3Q	Hybrid System Safety/Handling/Precautions/R&R Implications
	OBD Diagnostic & Repair Analysis
	Functional Safety Overview & Study of ASIL
4Q	High Voltage & Low Voltage Circuit & Spec. Overview
	Inverter & Converter Overview

Media Review	Pictorial Review of Discussion from 1Q to 4Q
	Video Discussion of - from 1Q to 4Q
Wrap Up	Review of the Day/Wrap-Up
	Assignments for Day-4

Day 4: Sunday 10 Nov. 2019

1Q	Overview of Day-1 to Day-3 Leanings
	NVH, S&R, Vehicle Integration Review of EV/HEV/PHEV/IC Autos
2Q	Apple to Apple Comparison of Driveline of EV/HEV/PHEV/IC Autos
	Ride & Handling of EV/HEV/PHEV/IC
3Q	Plant Assembly Process & Difference of Line Bifurcation to IC Engine Variants
	Cost of Ownership Versus Cost of Driveability Versus Payback of EV/HEV/PHEV/IC
	Highway Driving Versus Stop-N-Go Traffic Efficiency of EV/HEV/PHEV/IC
4Q	Why EV/HEV/PHEV Versus Diesel or Gasoline IC
	What Next After EV/HEV/PHEV ?

Media Review	Pictorial Review of Discussion from 1Q to 4Q
	Video Discussion of - from 1Q to 4Q
Wrap Up	Day-1 to Day-4 Learning's Overview
	Results of Day-2 to Day-4 Assessments