ENGINE EMISSIONS MEASUREMENT
Monday 24 - Friday 28 June 2019

Revised Programme

MONDAY 24 JUNE 2019
ENGINE TEST BED DIRECT EXHAUST GAS ANALYSIS FOR DEVELOPMENT WORK AND FOR TEST CYCLE MODAL ANALYSIS

08.00 Registration and coffee
08.30 Health hazards of gaseous and particulate emissions – the four regulated pollutants for si and diesel engines
   Professor Gordon Andrews, Energy Research Institute, University of Leeds
10.00 Coffee
10.15 Non-dispersive infra-red exhaust emissions analysis: cold and hot gas
   Rick Spurgeon, HORIBA UK Limited
11.30 Quantum cascade laser infra-red spectroscopic analysis for nitrogen derived components
   Rick Spurgeon, HORIBA UK Limited
12.00 Stoichiometric engine control development and cold start emissions measurement requirements and the need for fast response emissions analysis
   Professor Gordon Andrews, Energy Research Institute, University of Leeds
13.00 Lunch
13.45 Flame ionisation detection of hydrocarbons and chemiluminescent detection of oxides of nitrogen
   Rick Spurgeon, HORIBA UK Limited
14.45 EPA 40-CFR-1065 and CFR-1066 regulations
   Rick Spurgeon, HORIBA UK Limited
15.45 Tea
16.00 Particulate mass direct exhaust measurements
   Professor Gordon Andrews, Energy Research Institute, University of Leeds
16.30 Particle SOF and fuel/lube analysis
   Professor Gordon Andrews, Energy Research Institute, University of Leeds
17.30 End of day one
   Welcome reception Stables Pub, Weetwood Hall

TUESDAY 25 JUNE 2019
PASSENGER CAR EMISSIONS MEASUREMENT - 1

08.15 Registration and coffee
08.30 Transient lube oil consumption measurement and the SO2 technique during emissions testing
   Professor Gordon Andrews, Energy Research Institute, University of Leeds
09.00 Heated sample handling systems for exhaust emissions measurements
   Les Hill, HORIBA UK Limited
10.00 Coffee
10.15 Dilution tunnels
   Professor Gordon Andrews, Energy Research Institute, University of Leeds
11.15 The origins and principles of legislated CVS sampling systems and their relation to modal analysis
   Professor Gordon Andrews, Energy Research Institute, University of Leeds
11.45 MEXA 1370 PM On Line PM mass measurement and speciation
   Yoshinori Otsuki, HORIBA JAPAN
12.15 Lunch
13.00 Legislative chassis dynamometer test procedures
   Rick Spurgeon, HORIBA UK Limited
14.00 On-road in-vehicle direct exhaust sampling for RDE real world driving in congested traffic
   Introduction to the reason for RDE, the RDE cycle limits and impacts of traffic congestion on emissions.
   Professor Gordon Andrews, Energy Research Institute, University of Leeds
15.00 Tea
15.15 On road in – vehicle gaseous emissions analysis
   Yoshinori Otsuki, HORIBA JAPAN
16.30 On road in – particulate emissions analysis
   Yoshinori Otsuki, HORIBA JAPAN
17.30 End of day two
19.00 Course Dinner
WEDNESDAY 26 JUNE 2019

PASSENGER CAR EMISSIONS MEASUREMENT - 2

08.15 Registration and coffee
08.30 Constant volume sampling (CVS) systems for light duty vehicles
Les Hill, HORIBA UK Limited
09.30 Integrated gas analysis systems Part 1 Engine cell applications
Rick Spurgeon, HORIBA UK Limited
10.30 Coffee
10.45 Continuous PM measurement techniques using differential HFIDs and soot particle detection
Yoshinori Otsuki, HORIBA JAPAN
11.30 Emissions measurement procedures for Hybrid Electrical Vehicles on chassis dynamoseters
Les Hill, HORIBA UK Limited
12.30 Lunch
13.15 Integrated gas analysis systems part 2: Chassis cell applications
Rick Spurgeon, HORIBA UK Limited
14.30 Emissions measurement requirements created by engine TWC, catalytic lean NOx control (SCR and NSC), PM traps and GHG legislation
Professor Gordon Andrews, Energy Research Institute, University of Leeds
15.30 Tea
15.45 Measurement problems for particle size and number and mass distribution
Professor Gordon Andrews, Energy Research Institute, University of Leeds
17.00 End of day three

THURSDAY 27 JUNE 2019

HEAVY DUTY DIESEL EMISSIONS MEASUREMENT

08.15 Registration and coffee
08.30 Particle number counting legislative methods
Yoshinori Otsuki, HORIBA JAPAN
09.30 Heavy Duty Diesel (HDD) RDE and PEMs
Dr David Cooper, Volvo Group Trucks Technology
10.45 Coffee
11.00 Legislative engine dynamometer test procedures
Rick Spurgeon, HORIBA UK Limited
11.45 Transient HC, NOx, CO, CO2 and particle measurements in IC engines
Mark Peckham, Cambustion Ltd
12.30 Lunch
13.15 Enhanced CVS and emission analysis for gasoline SULEV / EU Stage 5/6 legislation
Les Hill, HORIBA UK Limited
14.45 Alternative techniques to CVS including direct exhaust volume measurement
Les Hill, HORIBA UK Limited
15.30 Tea
15.45 On-line analysis of non-regulated pollutants using alternative techniques
Les Hill, HORIBA UK Limited
16.30 Experience in using FTIR and mass spectrometry instrumentation
Tony Collier, Powertrain Testing Europe, Ford Motor Company
17.15 End of day four
FRIDAY 28 JUNE 2019
ENGINE VOC AND PAH EMISSIONS
08.15 Registration and Coffee
08.30 Current CVS designs for HD engines/vehicles
    Les Hill, HORIBA UK Limited
09.15 Heavy duty hybrid engine and vehicle testing
    Les Hill, HORIBA UK Limited
10.00 Coffee
10.15 Ultra low emissions from diesel vehicles and engines
    Les Hill, HORIBA UK Limited
11.30 Design principles for partial flow systems for PM mass
    Les Hill, HORIBA UK Limited
12.30 Lunch
13.15 HC speciation and carbonyl analysis for determining reactivity adjusted NMOG,
    including some fuel and engine effects
    Professor Gordon Andrews, Energy Research Institute, University of Leeds
14.15 Tea
14.30 Particulate PAH analysis
    Professor Paul Williams, Energy Research Institute, University of Leeds
15.15 GC-MS in the analysis of PAH, Coupled chromatography methods in the analysis of
    PAH and their derivatives
    Dr Amanda Lea-Langton, School of Mechanical, Aerospace and Civil Engineering
    The University of Manchester
16.00 End of day five and course