

NEWSLETTER

International Regulatory Developments

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Pablo Mendoza-Villafuerte joined AECC

On 1 September 2019, Dr. Pablo Mendoza-Villafuerte joined AECC as our new AECC EU Technical Affairs Manager.

Pablo holds a PhD in Engineering by the University of Sussex, United Kingdom, specialized in engine combustion. He has wide-ranging experience on European legislation for Light-duty, Heavy-duty and Non-Road Mobile Machinery.



He has worked for various companies in different roles mainly related to engine and vehicle development and emissions, the most relevant are Delphi, Ford Motor Company (Dunton Technical Centre, UK) and the EC's Joint Research Centre (Ispra, Italy). His previous appointment

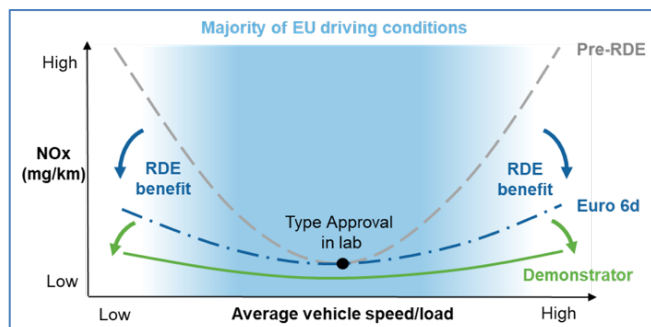
was with CNH Industrial as Responsible of On-road Vehicle Government Affairs. He served on OICA and ACEA committees.

Pablo has contributed to a range of peer reviewed articles and technical reports on emissions regulatory framework in Europe and participates in expert groups on CO₂ and pollutant emissions, both in Brussels and in Geneva.

Pablo's contact details at AECC are available from www.aecc.eu/about-aecc.

New Diesel Car Engineering Achieves 'Near-Zero' Emissions

A new article has been added to the AECC's Diesel Information Hub, highlighting development work being carried out to reduce emissions of nitrogen oxides (NO_x) from diesel cars to 'near-zero' levels. These achievements were presented by AECC, Bosch and FEV at the 40th International Motor Symposium in Vienna earlier this year.



The three research programmes took different routes to address the issue. All have shown that it is realistic to expect

further improvements in emissions from modern diesel vehicles beyond what we know is coming to our roads over the next few years.

The article can be found on the Diesel Information Hub dieselinformation.aecc.eu/new-diesel-car-engineering-achieves-near-zero-emissions.

EUROPE

New Heavy-Duty Vehicle Emissions Regulation Enters into Force

On 14 August 2019, new rules setting average CO₂ emission limits for newly registered heavy-duty vehicles entered into force.

Under regulation (EU) 2019/1242, the Commission is required to present a report reviewing the scope, targets and incentive mechanism of this regulation by 2023. In this timeframe it is required to evaluate the possibility of developing a common Union methodology for the data reporting of the full life-cycle CO₂ emissions. The Commission is also expected to adopt an implementing act on the methodology for the assessment of reference CO₂ emissions of new heavy-duty vehicles.

The Regulation is available at eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2019.198.01.0202.01.ENG&toc=OJ:L:2019:198:TOC.

Public Consultation on Implementing Regulation on Car CO₂ Emissions

On 22 August 2019, the European Commission launched a four-week consultation on the draft Implementing Regulation on the calculation of CO₂ emissions for cars. Stakeholders have until 10 September 2019 to submit comments.

The Implementing Regulation would amend Regulation (EU) 2017/1153 as regards the reporting CO₂ measurement results of Worldwide Harmonised Light Vehicle Test Procedure (WLTP) for certain categories of new passenger car for calendar year 2020.

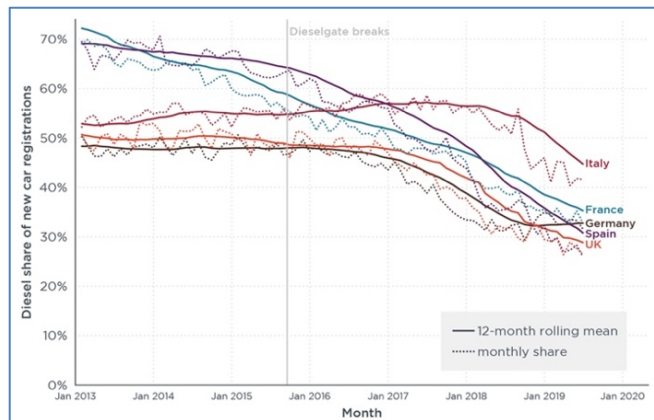
In particular, the measure would specify how measured CO₂ emission values are to be determined, with reference to Not-Off-Vehicle Charging Hybrid Electric Vehicles (NOVC-HEV) and Off-Vehicle Charging Hybrid Electric Vehicles (OVC-HEV).

Amongst the proposals is that the determination of the New European Driving Cycle (NEDC) CO₂ values of these vehicles will have to be performed on the basis of physical vehicle tests instead of correlation tool simulations.

The consultation is available for review at ec.europa.eu/info/law/better-regulation/initiatives/ares-2019-5226135_en.

ICCT publishes Article on Diesel Market Trends in Germany

On 1 August 2019, the International Council on Clean Transportation (ICCT) published an article considering whether the market for diesel cars in Germany is really rebounding (in contrast to the other major European markets), or whether the recent upturn in diesel share is likely to be temporary.



It concludes that the increase in diesel car sales results largely from Volkswagen (which supplies more than one third of the German market) overcoming certification problems experienced after the introduction of the Worldwide Harmonised Light Vehicle Test Procedure (WLTP). This mainly affected VW's gasoline vehicles and ICCT says that 'once Volkswagen finishes delivering the remaining parked vehicles from its end of 2018 certification-stream-clutter, the diesel share of the company, and therefore the entire German diesel share, is likely to return to sub-30% levels'.

The full article is available to read at theicct.org/blog/staff/diesel-revival-german-economy-20190801.

ICCT Report on CO₂ Emissions from New Passenger Cars in the EU

On 7 August 2019, following provisional data from the European Environment Agency (see AECC News 28 June 2019), the International Council on Clean Transportation (ICCT) published its own analysis giving details of manufacturer performance in terms of CO₂ emissions reduction, fuel and technology trends, and market share.

With CO₂ from new cars increasing in the last two years, fleet-average CO₂ emissions will have to decline by 7.6% per year to comply with the 2021 target.

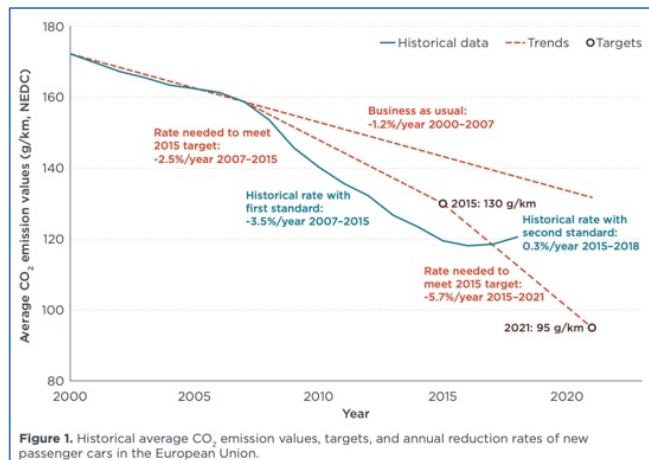
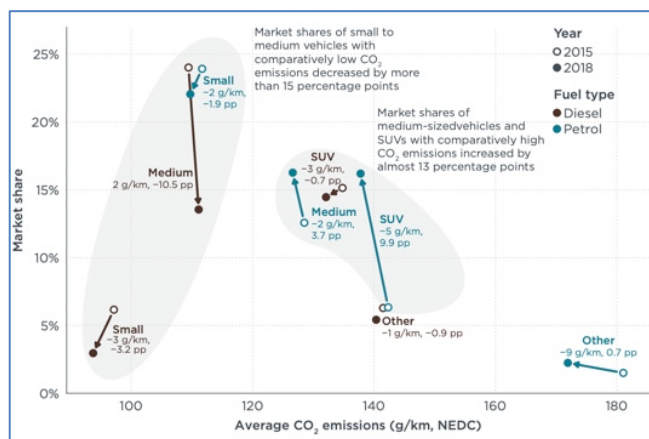


Figure 1. Historical average CO₂ emission values, targets, and annual reduction rates of new passenger cars in the European Union.

ICCT examined the change in market shares and average CO₂ emission values by vehicle segment and fuel type. The figure below shows that only small to medium-sized vehicles recorded notable losses in market shares. These relatively small vehicles were replaced by sales of medium-sized petrol vehicles and petrol sport utility vehicles (SUVs).



There are significant differences between the performance of manufacturers, with the Toyota-Mazda 'pool' being closest to the 2021 target and Hyundai furthest away.

The report concludes that 'unprecedented reduction rates will have to be achieved in the coming years, but a broad range of technical options and flexible compliance mechanisms are available to manufacturers.'

It is available to read at theicct.org/sites/default/files/publications/ICCT_CO2_emissions_pv_EU_2018_20190806.pdf.

German Emergency Clean Air Programme on Bus Retrofit Funding

On 29 July 2019, the Federal Ministry of Transport and Digital Infrastructure (BMVI) in Germany announced that it is providing €107 million to retrofit diesel buses. The funding directive came into force on 29 March 2018 and is part of the "Clean Air 2017-2020" programme. Approval has now been

given by the European Commission to provide higher levels of state funding for public transport retrofit.

On 14 November 2018, the European Commission approved a notified version of the directive on the promotion of diesel bus upgrading with an increased production quota. The first call for funding was published at the same time as the amended directive and has been in force since 3 December 2018. There are up to four calls a year.

From now on, 80% of the costs of diesel bus retrofit will be covered. With additional support from the state, up to 95% of the conversion costs will be covered. The maximum subsidy per bus also increases from €15 000 to €20 000.

According to Federal Minister Andreas Scheuer, the government's stated goal is to have no general driving bans in German cities. This programme will support retrofit of Euro III, IV, V and EEV public transport vehicles, particularly in areas most affected by nitrogen dioxide limit value exceedances.

The Clean Air Programme provides €1 billion, covering electrification of urban transport and the construction of charging infrastructure, digitisation of transport systems and retrofitting of diesel buses in public transport with exhaust aftertreatment systems. All measures should be effective by 2020.

Full details (in German) can be found at www.bmvi.de/SharedDocs/DE/Dossier/Hardware-Nachruestungen/top-4-nachruestung-technische-vorgaben.html.

Permits issued for Light-Duty Retrofit Systems in Germany

On 15 August 2019, the German KBA (Motor Transport Authority) issued permits for Baumot to supply retrofit systems for reducing nitrogen oxides (NOx) for certain Volkswagen Group vehicles. It has also recently issued permits for Dr Pley SCR Technology GmbH to supply systems for specified Volvo and Mercedes cars.

Systems are required to have 'high reduction performance' to maintain an emission value of less than 270 mg/km NOx for compression-ignition engines.

More details are available at www.kba.de/DE/Typgenehmigung/Typgenehmigungen/Typgenehmigungserteilung/ABE_NOx/ABE_NOx_node.html.

NORTH-AMERICA

CARB Workshop on Advanced Clean Trucks Regulation

On 21 August 2019, the California Air Resource Board (CARB) held a public workshop to discuss the latest updates to the agency's Advanced Clean Trucks regulation. During the meeting, CARB staff presented updated details on the proposed manufacturer requirements affecting vehicles sold

in California beginning with the 2024 model year, as well as updated information on banking and trading of zero-emission credits generated from their sale. Staff also presented updated details on the proposed reporting requirement for large entities. The proposed regulation has two components: a manufacturer sales requirement and a reporting requirement. Current proposal applies to model years 2024 to 2030.

The staff report for the Advanced Clean Trucks regulation, including the final draft regulatory language, is scheduled to be released in October. The CARB Board plans to consider initial approval of the regulation at the December 2019 Board hearing, with a final decision expected at a second hearing in mid-2020.

More information on the workshop is at ww2.arb.ca.gov/our-work/programs/advanced-clean-trucks/act-meetings-workshops

EPA Requires VW Group to Correct Fuel Economy Labels

On 30 August 2019, the U.S. Environmental Protection Agency (EPA) announced that it is revising fuel economy estimates for a number of 2013-2017 Audi, Bentley, Porsche and Volkswagen vehicles to ensure consumers are given accurate values. EPA is also requiring the Volkswagen Group to forfeit emissions credits under the greenhouse gas (GHG) emissions standards for light duty vehicles to account for under-reporting emissions.

In the course of the investigation concerning defeat devices in Volkswagen's diesel vehicles, the EPA and the California Air Resources Board discovered that the company employed software to manage vehicle transmissions in gasoline vehicles. This software causes the transmission to shift gears during the EPA-prescribed emissions test in a manner that sometimes optimizes fuel economy and greenhouse gas (GHG) emissions during the test, but not under normal driving conditions. The company employed this software in roughly one million gasoline, light-duty vehicles from model years 2013 through 2017 sold by Volkswagen in the United States under the brand names Volkswagen, Audi, Porsche, and Bentley.

More information is at www.epa.gov/recalls/fuel-economy-label-updates.

Mid-Atlantic Diesel Collaborative Webinar on Tampering/Defeat Devices

On 13 August 2019, the Mid-Atlantic Diesel Collaborative held a webinar to discuss engine tampering and defeat devices.

Evidence from recent EPA investigations on tampering concerning diesel pickup trucks is said to show that approximately 10% of all trucks are affected, meaning that 400 000+ tons of excess NOx is being emitted from

tampered trucks; an air quality impact equivalent to adding 7 million trucks on the road.

EPA investigations have also found tampering and aftermarket defeat devices for heavy-duty trucks, light-duty cars, agriculture equipment, forestry equipment, construction equipment, and more.

More information on the Mid-Atlantic Diesel Collaborative can be found at dieselmidatlantic.org.

CENTRAL & SOUTH AMERICA

P4G announces 'Clean Fleets, Clean Cities' Partnership for Mexico

On 8 August 2019, P4G, the Partnering for Green Growth and the Global Goals 2030 Initiative, announced 13 public-private partnerships to receive start-up funding for projects in five Sustainable Development Goal areas—food and agriculture, water, energy, cities and circular economy.

One of these is 'Clean Fleets, Clean Cities'. Led by the International Council on Clean Transportation, with support from FedEx Mexico and WRI (World Resources Institute) Mexico, this partnership will work with private industry and local and federal governments in Mexico to design and implement programmes that lead to cleaner fleet vehicles. The partnership will incentivise the use of new electric vehicles or existing vehicles retrofitted with newer technologies.

For full details, visit p4gpartnerships.org/partnership/clean-fleets-clean-cities.

ASIA PACIFIC

PRC Considering No Go Zone for Gasoline Vehicles

On 21 August 2019 PRC state media reported that the Ministry of Industry and Information Technology (MIIT) released a document which stated that it is considering testing a ban on gasoline-powered vehicles in some parts of the country and may set a timetable to eventually phase out such vehicles.

The government has encouraged sales of electric vehicles as part of a crackdown on pollution, but auto industry officials doubt it will completely phase out traditional internal combustion engines given regional differences in climate and environment. Authorities must first analyse factors such as market demand and emission levels to decide whether to test no go zones for gasoline-fueled vehicles, according to the MIIT document.

The document was issued in response to a proposal from China's parliament on 16 July 2019. The ministry may formulate a timetable to phase out gasoline-fueled vehicles, according to the document, but did not say if it would be specific to certain parts of the country or a nationwide phase

out. China's southern province of Hainan said in March 2019 that it plans to stop selling gasoline vehicles by 2030.

China is accelerating the move towards all-electric transportation across the country in a bid to control pollution from vehicles, while also aiming to become a world leader in technology innovation with an upscale EV industry. China's state council said they are committed to tackling pollution issues with the release of a three-year action plan back in July 2018, which stated all public buses in major capital cities and economic hubs should be replaced with electric models by 2020, when overall carbon emission will be reduced by at least 15% than five years ago.

AFRICA

UNEP Report on Southern African Development Community Meeting

On 8 August 2019, the United Nations Environment Programme (UNEP) reported on a Southern African Development Community (SADC) meeting in Johannesburg, South Africa, held on 6-7 June 2019. The meeting was held to discuss regional harmonisation of cleaner fuels and vehicle emission standards within the SADC region. The workshop, funded by the Climate and Clean Air Coalition, was co-organised by the Air Pollution Information Network for Africa (APINA) through the Institute of Environmental Studies of Zimbabwe, UNEP and the International Council for Clean Transportation (ICCT). Over 40 participants from national and local governments, the oil and vehicle industry, non-governmental organisations, and academia attended the two-day meeting.

SADC countries agreed to reduce sulphur levels in fuels to 50 ppm or less by the end of 2022 for importing countries and 2025 for refining countries and to 10 ppm from 2025 to 2030 for all countries. Participating countries also recommended the development of a refinery investment plan between the governments and private sector by the end of 2020 for refining countries as well as harmonisation of fuel standards and practices by 2022 through the coordination of the SADC Secretariat.

To clean up the vehicle fleet in the region, the countries proposed the introduction of legislation requiring at least Euro 4/IV equivalent vehicle emission standards by 2022 for new and used vehicles in line with improvements in the fuel quality, and an age limit of five years for imported used vehicles by 2024. Additionally, the region proposed harmonisation of vehicle emission standards by 2022 for the different categories of motor vehicles as well as periodic vehicle emission testing programmes in major cities by 2025. Participants also recommended the introduction of fiscal incentives to promote importation and manufacturing of cleaner/soot-free vehicles including buses and expressed the need for the region to explore and adopt best available technologies for low-emissions mobility.

For more information on the meeting, go to www.unenvironment.org/events/workshop/sadc-regional-framework-harmonisation-low-sulphur-fuels-and-vehicle-emission.

RESEARCH SUMMARY

Effects of Emissions and Pollution

Secondary particles formed from the exhaust of vehicles using ethanol-gasoline blends increase the production of pulmonary and cardiac reactive oxygen species and induce pulmonary inflammation, Talita Silva, et al.; *Environmental Research* (October 2019), Vol. 177, 108661, doi: [10.1016/j.envres.2019.108661](https://doi.org/10.1016/j.envres.2019.108661).

Cardio-respiratory health effects of exposure to traffic-related air pollutants while exercising outdoors: A systematic review, Joana Madureira, et al.; *Environmental Research* (in press), doi: [10.1016/j.envres.2019.108647](https://doi.org/10.1016/j.envres.2019.108647).

Pulmonary inflammation induced by low dose particulate matter exposure in mice, Yik Lung Chan, et al.; *American Journal of Physiology*, doi: [org/10.1152/ajplung.00232.2019](https://doi.org/10.1152/ajplung.00232.2019).

Health impacts of active commuters' exposure to traffic-related air pollution in Stockholm, Sweden, Emma Engström and Bertil Forsberg; *Journal of Transport & Health* (September 2019), Vol. 14, 100601, doi: [10.1016/j.jth.2019.100601](https://doi.org/10.1016/j.jth.2019.100601).

Long-term effects of traffic exposures on mortality in a Chinese cohort, Thuan-Quoc Thach, et al.; *Journal of Transport & Health* (September 2019), Vol. 14, 100609, doi: [10.1016/j.jth.2019.100609](https://doi.org/10.1016/j.jth.2019.100609).

Air Quality, Sources and Exposure

European guide on air pollution source apportionment with receptor models, Claudio Belis, et al.; *Publications Office of the European Union*, doi: [org/10.2760/439106](https://doi.org/10.2760/439106).

Review of sensors for air quality modelling, Federico Karagulian, et al.; *EUR – Scientific and Technical Research Reports*, doi: [10.2760/568261](https://doi.org/10.2760/568261).

Emissions Measurements and Modelling

On-road emissions of passenger cars beyond the boundary conditions of the real-driving emissions test, Ricardo Suarez-Bertoa, et al.; *Environmental Research* (September 2019), Vol. 176 108572, doi: [org/10.1016/j.envres.2019.108572](https://doi.org/10.1016/j.envres.2019.108572).

A remote sensing emissions monitoring programme reduces emissions of gasoline and LPG vehicles, Bruce Organ, et al.; *Environmental Research* (October 2019), Vol. 177, 108614, doi: [10.1016/j.envres.2019.108614](https://doi.org/10.1016/j.envres.2019.108614).

Effects of fuel properties on particulate emissions of diesel cars equipped with diesel particulate filters, A. Kontses, et al.; *Fuel* (November 2019), Vol. 255, 115879, doi: [10.1016/j.fuel.2019.115879](https://doi.org/10.1016/j.fuel.2019.115879).

FORTHCOMING CONFERENCES

14th International Conference on Engines & Vehicles

15-19 September 2019, Capri, Italy

www.sae-na.it

Topics of the conference include engine modelling and diagnostics; engine combustion; new engines, components, actuators and sensors; hybrid and electric powertrains and eco-CAV; fuels and lubricants; and exhaust aftertreatment and emissions.

AECC and IAV will present a joint paper on "Diesel Vehicle with ultra-low NOx emissions on the road"

Comparison of hydrogenated vegetable oil and biodiesel effects on combustion, unregulated and regulated gaseous pollutants and DPF regeneration procedure in a Euro6 car, Martin Pechout, et al.; *Science of The Total Environment* (in press), doi: [10.1016/j.scitotenv.2019.133748](https://doi.org/10.1016/j.scitotenv.2019.133748).

The evaluation of exhaust emission in RDE tests including dynamic driving conditions, Karolina Kurtyka, et al.; *Transportation Research Procedia* (2019), Vol. 40, pp. 338-345, doi: [10.1016/j.trpro.2019.07.050](https://doi.org/10.1016/j.trpro.2019.07.050).

Emissions Control, Catalysis, Filtration

A New Periodic Technical Inspection for Particle Emissions of Vehicles, H. Burtcher, et al.; *Emission Control Science and Technology* (September 2019), Vol. 5, pp. 279-287, doi: [10.1007/s40825-019-00128-Z](https://doi.org/10.1007/s40825-019-00128-Z).

Design of a Novel Gasoline Particulate Filter Aging Method, Stefan Sterlepper, et al.; *Emission Control Science and Technology* (in press), doi: [10.1007/s40825-019-00130-5](https://doi.org/10.1007/s40825-019-00130-5).

Synthesis and Study of Bimetallic Pd-Rh System Supported on Zirconia-Doped Alumina as a Component of Three-way Catalysts, Aleksey Vedyagin, et al.; *Emission Control Science and Technology* (in press), doi: [10.1007/s40825-019-00133-2](https://doi.org/10.1007/s40825-019-00133-2).

Laser Raman Spectroscopic Investigation on the Conversion of Molten Urea into NH₃ for the Selective Catalytic Reduction of NOx in Oxygen-Rich Exhaust Gases, Philipp Langenfeld, et al.; *Emission Control Science and Technology* (in press), doi: [10.1007/s40825-019-00131-4](https://doi.org/10.1007/s40825-019-00131-4).

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On the strategies to diminish the emissions of particles and secondary aerosol formation from diesel engines, Panu Karjalainen, et al.; *Environ. Sci. Technol.* (in press), doi: [10.1021/acs.est.9b04073](https://doi.org/10.1021/acs.est.9b04073).

Transport, Climate Change & Emissions

Understanding the Features of PGMs in Spent Ternary Automobile Catalysts for Development of Cleaner Recovery Technology, Xuan Wei, et al.; *Journal of Cleaner Production* (in press), doi: [10.1016/j.jclepro.2019.118031](https://doi.org/10.1016/j.jclepro.2019.118031).

Leaching of spent selective catalytic reduction catalyst using alkaline melting for recovery of titanium, tungsten, and vanadium, Gyeonghye Moon, et al.; *Hydrometallurgy* (in press), doi: [10.1016/j.hydromet.2019.105132](https://doi.org/10.1016/j.hydromet.2019.105132).

Calculating heavy-duty truck energy and fuel consumption using correlation formulas derived from VECTO simulations, Alessandro Tansini, et al.; *Society of Automotive Engineers (SAE International)*, doi: [org/10.4271/2019-01-1278](https://doi.org/10.4271/2019-01-1278)

Annual Automotive Exhaust System Summit

19-20 September 2019, Prague, Czech Republic
curtiswyss.com/agenda/exhaust.pdf

IAQM Routes to Clean Air

16-17 September 2019, London, UK
iaqm.co.uk/event/rtca19

The Institute of Air Quality Management (IAQM) presents Routes to Clean Air 2019, where air quality, public health and transport professionals share their experiences of improving traffic emissions. Speakers will discuss a range of topical issues offering their insight into the steps required to improve air quality, including best practice examples and practical challenges faced during implementation.

3rd Annual Real Driving Emissions Forum

24-25 September 2019, Berlin, Germany
www.rde-realdrivingemissions.com

The Forum will showcase the forefront practices and approaches towards RDE and Energy Consumption reduction, compliance with recent update of the legislation on RDE, main automotive technology trends based on cost-and-energy-efficient solutions.

28th Aachen Colloquium Automobile and Engine Technology

7-9 October 2019, Aachen, Germany
www.aachener-kolloquium.de

The congress provides a wide range of technical presentations addressing current challenges of the vehicle and engine industry.

European Transport Conference

9-11 October 2019, Dublin, Ireland
www.aetransport.org

The conference attracts transport practitioners and researchers from all over Europe where they can find in-depth presentations on policy issues, best practice and research findings across the broad spectrum of transport.

7th Annual Conference Real-Driving Emissions 2019

15-17 October 2019, Berlin, Germany
www.automotive-iq.com/events-real-driving-emissions

13th Conference on Gaseous Fuel Powered Vehicles

22-23 October 2019, Stuttgart, Germany
fkfs-veranstaltungen.de/3/conference-on-gaseous-fuel-powered-vehicles

3rd International FEV Conference Zero CO₂ Mobility

7-8 November 2019, Aachen, Germany
www.fev.com/coming-up/fev-conferences/fev-conference-zero-co2-mobility/introduction.html

Integer Emissions Summit USA

12-13 November 2019, Indianapolis, USA
www.integer-research.com/conferences/ies-usa-2019/

12th International ECMA Conference & Exhibition 2019 on Cleaner IC Engines for Sustainable Environment with Innovative Emission Control Technologies

14-15 November 2019, Pune, India
www.ecmaindia.in/eventsdetails.aspx?mpgid=41&pgidtrail=42&Eventsid=21

The ECT 2019 conference will address implementation of Bharat Stage VI emission norms and will look beyond, to forthcoming regulations such as RDE and World Harmonized Test procedures which will ensure that vehicles that come on the road in future are emissions-compliant in the true sense.

9th China International Diesel Engine Summit 2019

21-22 November 2019, Beijing China

www.borscon.com/2019de9/cn/index.html

The 9th China International Diesel Engine Summit will provide an opportunity to discuss China's energy-saving and emission-reduction policies and regulations for diesel engine, the latest technology progresses and future trends of new energy and alternative fuels, as well as innovative ideas in business modes.

POLIS Annual Conference

27-28 November 2019, Brussels, Belgium

www.polisnetwork.eu/2019conference

Europe's leading event on sustainable urban mobility in cities and regions

EU Clean Air Forum

28-29 November 2019, Bratislava, Slovakia

ec.europa.eu/info/events/eu-clean-air-forum-2019-nov-28_en

The European Commission is organising the 2nd Clean Air Forum in close collaboration with the Ministry of Environment of the Slovak Republic. It will focus on three themes: air quality and energy; air quality and agriculture; and clean air funding mechanisms.

Internal Combustion Engines and Powertrain Systems for Future Transport

11-12 December 2019, West Midlands, UK

events.imeche.org/ViewEvent?code=CON6849

The 2019 conference will provide a forum for IC engine, fuels and powertrain experts to look closely at developments in powertrain technology required to meet the demands of the low carbon economy

SAE World Congress Experience (WCX)

21-23 April 2020, Detroit, USA

www.sae.org/attend/wcx

41st International Vienna Motor Symposium

22-24 April 2020, Vienna, Austria

wiener-motorensymposium.at/en

TRA2020

27-30 April 2020, Helsinki, Finland

traconference.eu

TRA, The Transport Research Arena is the biggest European Research and Technology Conference on transport and mobility. In 2020 TRA is themed "Rethinking transport - towards clean and inclusive mobility" and brings together the experts from around the world to discuss the newest innovations and the future of mobility and transport.

NEW SIA Powertrain & Energy

3-4 June 2020, Rouen, France

www.sia.fr/evenements/193-sia-powertrain-energy-rouen-2020

Deadline for abstract: 4 November 2019

SAE Powertrains, Fuels and Lubricants

22-24 September 2020, Krakow, Poland

www.sae.org/pfl

Call for abstracts opens in August 2019

Deadline for abstract: 18 February 2020

SAE Heavy-Duty Diesel Emissions Control Symposium

13-14 October 2020, Gothenburg, Sweden