Emissions from Reciprocating Engines and their Abatement

One day seminar - Tuesday 18 September 2018

IGEM House, Kegworth DE74 2DA

The background

It is clear that gas engines (and gas turbines) will play an important role in supporting the variability of renewables, along with storage systems (such as the expansion of batteries), hybrid plants and demand side management.

This situation is anticipated to continue for some time as coal is finally phased out (in the UK in particular) and the growth of renewables continues. This will occur at a time when demand for charging EVs is planned to steadily increase.

Diesel engines using liquid fuel will also remain vitally important for an extended period – particularly in transport and especially on a global basis, whilst alternative fuels and EVs become more widespread.

Unabated emissions, especially in conurbations, are no longer acceptable in many parts of the world. The recent fiasco of "adjusting" auto diesel engine emissions data has also resulted in a growing mistrust of quoted figures - and a political reaction against the use of diesel engines in new light vehicles and generating plant in Europe and North America.

The use of gas fuels – natural gas and biogases of various origins – is emphasised in National Grid's Future Energy Scenarios 2017 where gas is seen as a continuing important fuel until at least 2050.

Use of hydrogen, as the ultimate "clean" fuel locally, is also being more actively promoted for transport in cities – this could extend to stationary installations once the infrastructure is in place?

It is anticipated that emission regulations will be further tightened in future.

For diesels, these are mainly focussed on NOx and PM but with generators needed to start and load quickly, requirements to achieve Emission Limit Values (ELVs) in short times can be challenging for exhaust SCRs, for instance.

For gas engines, the issue of methane slip is currently unregulated – at least in the UK – a situation that is likely to change in the not too distant future. Exhaust treatment could then be necessary to oxidise any unburned hydrocarbons.

The seminar is intended to:

- Forecast where exhaust emission regulations in UK/Europe are likely to go in the short term – say 2025.
- Establish what abatement technologies are available (or being developed) to achieve the anticipated ELVs. Evidence of how well existing techniques work in practice is especially valuable.
- Establish the cost implications of abatement and thus the likely impact on market prospects for generators.
- Will H2 supply (and fuel cells) become significant players?

Seminar Price

Delegate	£285.00 (ex VAT)
IDGTE Member	£242.25 (ex VAT)
Student/Retired	£100.00 (ex VAT)

Booking

Form available from ***www.idgte.org***, or phone **01234 214340**

idgtE

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Programme

9.00 Registration

9.15 **Keynote Speaker: "Regulating Engines in the Balancing Market"**
John Henderson, Senior Advisor Fuel & Power, Environment & Business, Environment Agency

The existing Generator regulations under MCPD. focussing on the Permit system and the process that is applied is the starting point.

For the future, DEFRA has published its Draft Clean Air Strategy for consultation which has just closed. The implications of this for future regulations will be discussed.

9.50 **Ricardo plc - Simon Brewster, CEO Dolphin N2 Ltd**

Overview of the energy scene with particular reference to developments with gas and diesel engines aimed at reduced emissions.

10.25 **Cummins Power Generation - Mark Duda, Lead Sales Applications Engineer, Project Design & Implementation**
The challenges of the latest upcoming emissions regulations and generation solutions. Lean burn gas projects to meet UK capacity market requirements. Future directions for reciprocating engine projects - hybrid opportunities.

11.00 Tea/coffee break

11.15 **Kohler/Clarke Energy - John Fonseka, Lead Engineer, Service Support**

Impact of lower exhaust emissions requirements on GE Jenbacher gas engines.

11.50 **Johnson Matthey - Joseph McCarney, Business Development Manager**

Catalysts required currently and for the future lower ELVs. Oxidising methane slip from gas engines an issue?

12.25 **NOxProtekt - John Moore/Jonathan Rodgers**

Experience of installing and operating SCR systems for NOx reduction

1.00 Lunch

1.40 **Cambustion - Dr Mark Peckham, Director**

Measuring the transient emissions from diesel engines. One of the main emissions events of gensets (even when fitted with aftertreatment systems) is the cold start – a highly transient operating condition where a sudden spike of NOx, particulate and other emissions can occur. Fast response analyzers are necessary to measure this event and to correlate with the engine parameter readings which are contributing to the emissions. This presentation discusses typical diesel engine transient events and their causes.

2.15 **Chevron Products UK Ltd – Michael Gülck**

New CHP emissions regulations and the effect on CHP and engine oil performance.

2.50 Tea/coffee break

3.05 **Ulemco Ltd - Paul Turner, Technical Director**

Conversion of reciprocating engines to operate on H2 and DF H2 diesel vehicles. Case for an H2 infrastructure.

3.40 Comfort break

3.45 **Workshop Session 1**

Stream 1: John Henderson	Regulation in light of Defra's Clean Air Strategy
Stream 2: Simon Brewster	Development of gas/diesel engines to reduce emissions
Stream 3: John Fonseka	Impact of future emission regulations on gas engine performance

4.15 **Workshop Session 2**

Stream 1: John Moore/Jonathan Rodgers	Operation and cost of SCR systems for NOx reduction
Stream 2: Michael Gülck	Effect of engine oil performance on tighter regulation
Stream 3: Paul Turner	H2 economy may be nearer than some think!?

4.45 Finish

The workshop sessions are intended to promote more in depth discussion in related areas to the presentations. Please note that delegates can move between streams.

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Student/Retired	☐	£100 (ex VAT)	£120.00				

Price includes seminar, teas/coffees, lunch, delegate pack, wifi and parking.

Delegate details

Mr/Mrs/Ms _____ First Name _____ Surname _____

Job title _____ Company _____

Address _____

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Conditions

No refunds shall be issued for cancellations received after 21 August 2018. However, a substitute delegate may attend in your place.

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