



Clean Sky 2 Workshop

on

Low NOx and Advanced Combustion Technologies

Clean Sky 2 JU Offices, Floor 1 - Meeting Rooms 2 & 3

Av. de la Toison d'Or, 56 - 1060 Brussels

19 February 2020, 08h30-18h00

Background & Scope

In the framework of the Clean Sky 2 Calls for Proposals, several thematic projects were launched on the topic of Advanced Low NOx Combustion Technologies. These projects from CfP08 will complete their first year of activity by end of 2019. Additionally, substantial work on lean combustion was performed in Clean Sky 1, and is ongoing in Clean Sky 2 Programme.

I would like to take this occasion, not only to provide a dissemination opportunity to these projects (either closed or ongoing), but to bring together the combustion experts around Europe to discuss the relevant items **to set-up a roadmap for future combustion technology** in general for the next decade(s).

Discussions have started at various stakeholder levels regarding the next Aeronautical Framework Programme, or more precisely, the potential future Clean Aviation Partnership. The focus is not only on decarbonisation, but more widely on climate neutral impact, i.e. including NOx, SOx, particulates, and eventually contrails or cirrus induced cloudiness.

The proposed agenda covers the following topics:

- Low NOx combustion technologies (including computational and experimental work)
- Particulate matters
- Combustion technology related to alternative fuels (in particular Hydrogen combustion)
- Potentials of Additive Manufacturing for Advanced Combustors
- Regulatory and Certification aspects.

Attendance is very much welcome, expecting contributions at the level of the discussion at the end of the day with a view to establish a draft roadmap. To this aim, a round table is organised to collect your vision of priorities in terms of research for the next Framework Programme and for the next decade(s), i.e. for mid-term EIS (2035) and for long term EIS (2050).

J.F. Brouckaert
Chief Scientific Officer, Clean Sky 2 JU



Workshop Agenda		
08:30	08:45	Registration & coffee
08:45	09:00	Welcome & Introduction <i>Jean-Francois Brouckaert, Clean Sky 2 JU</i>
Session 1: Low NOx Technologies		
09:00	09:30	LEAFINNOX - Development of the Lean Azimuthal Flame as an Innovative aviation gas turbine low-NOX combustion concept <i>Epaminondas Mastorakos, University Of Cambridge</i>
09:30	10:00	CHAIRLIFT - Compact Helical Arranged combustors with lean LIFTed flames <i>Antonio Andreini, University of Florence</i>
10:00	10:30	DENOX - Innovative Technologies of Electrochemical Suppression and Electromagnetic Decomposition for NOx Reduction in Aeroengines <i>Igor Rybalchenko / Dmytro Dolmatov</i> <i>National Aerospace University - Kharkiv Aviation Institute</i>
10:30	11:00	Coffee break
11:00	11:30	Rolls-Royce Advanced Low Emissions Combustion Technology <i>Marco Zedda, Rolls-Royce plc</i>
11:30	12:00	GE Aviation: Premium Low Emission Combustion Technologies <i>Thomas Ripplinger, GE Aviation</i>
Session 2: Experimental methods and Combustion Monitoring		
12:00	12:30	FAST TAPS: Cooled Fast-Response Wall-Static Pressure Taps Design Methodology For Combustion Chamber Measurement Applications <i>Julien Clinckemaille, von Karman Institute for Fluid Dynamics</i>
12:30	13:00	Advanced Optical Diagnostics for Application in High Pressure Combustion – Highlights from the CORNET Project (CORe Enigne NoisE Technology) <i>Chris Willert, DLR German Aerospace Centre</i>
13:00	13:45	Lunch Break



Session 3: Particulate Matters		
13:45	14:15	RAPTOR - Research of Aviation PM Technologies, mOdelling and Regulation <i>Ayce Celikel, ENVISA SAS</i>
14:15	14:45	ESTiMatE - Emissions Soot Models for aeroengine operation <i>Daniel Mira, Barcelona Supercomputing Center</i>
Session 4: Additive Manufacturing		
14:45	15:15	Additive Manufacturing (R)evolution Applied to Combustor – the experience of the CS2/START RQL Reverse Flow Combustor <i>Antonio Peschiulli, GE Avio</i>
Session 5: Hydrogen Combustion and other Non-Drop In Fuels		
15:15	15:45	ENABLEH2 - Enabling Cryogenic Hydrogen-Based CO2-free Air Transport <i>Xiaoxiao Sun, Cranfield University</i>
15:45	16:00	Coffee Break
Session 6: Regulatory and Certification Aspects		
16:00	16:30	Aircraft Engine Emissions Certification Regulations <i>Werner Hoermann, European Union Aviation Safety Agency</i>
Session 7: Future Technology Roadmap		
16:30	17:00	Non-CO2 emissions reduction technology status (Forum-AE) <i>Olivier Penanhoat, Safran Aircraft Engines</i>
17:00	17:45	Round Table Discussion to establish a future technology roadmap for combustion technologies for mid-term (EIS 2035) and long-term (EIS 2050) technology goals. <i>Jean-Francois Brouckaert, Clean Sky 2 JU</i>
17:45	18:00	Conclusions and Wrap-up <i>Jean-Francois Brouckaert, Clean Sky 2 JU</i>



Registration

Please register by email to:

Christina-Maria.MARGARITI@cleansky.eu,

Cc : Jean-Francois.BROUCKAERT@cleansky.eu

Registration Deadline: January 12th, 2020