Clean Sky2 Workshop

on

Advanced Low NOx and Hydrogen Combustion Technologies

2nd Edition

Virtual Event

April 29th-30th 2021

Background & scope

After the success of the first edition held in February 2020, we are happy to announce the 2nd edition of this workshop. The event will give a dissemination opportunity to many relevant research projects funded by the Clean Sky 2 programme and by H2020 framework (either closed or ongoing), but it will also permit 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).

The proposed agenda covers the following topics:

- Keynote talk about aviation climate impact
- Low NOx combustion technologies (including computational and experimental work)
- Advanced combustion technologies
- Particulate matters
- Hydrogen combustion

Most of the Day 2 contributions will be dedicated to future **hydrogen** applications with some fundamental perspectives from most important aero-engine manufacturers.

Attendance is very much welcome, expecting contributions at the level of the discussion at the end of Day 2 with a view to establish a draft **roadmap**, based on the first draft issued last year. 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)**.

Due to travel restrictions caused by COVID-19 pandemic the workshop will be given as a virtual event.

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

A. Andreini
University of Florence

WORKSHOP AGENDA DAY 1 – APRIL 29		
9.00	9.15	WELCOME AND INTRODUCTION **Jean-Francois Brouckaert**, *Clean Sky2 JU* **Antonio Andreini**, *University of Florence (Italy)*
KEYNOTE		
9.15	10.00	AVIATION CLIMATE IMPACTS AND A REVISION OF THE AVIATION NOX IMPACTS **Volker Grewe** / **Sigrun Matthes**, *DLR (Germany)*
SESSION 1: LOW NOX TECHNOLOGIES		
10.00	10.30	LEAFINNOX - LEAN AZIMUTHAL FLAME AS AN INNOVATIVE AVIATION GAS TURBINE LOW-NOX COMBUSTION CONCEPT **Epaminondas Mastorakos**, *University of Cambridge (UK)*
10.30	11.00	CHAIRLIFT – COMPACT HELICAL ARRANGED COMBUSTORS WITH LEAN LIFTED FLAMES **Rainer Koch** / **Stefan Harth**, *KIT - Karlsruhe Institute of Technology (Germany)*
Coffee break		
11.30	12.00	DENOX: MODELING, STUDYING AND MODIFYING OF NOX GENERATION AND SUPPRESSION PROCESSES IN STIMULATED FLAMES **Dmytro Dolmatov** / **Igor Rybalchenko**, *National Aerospace University "KhAI" (Ukraine)*
12.00	12.30	UREA-BASED NANOEMULSIONS AND THEIR APPLICATION AS FUEL ADDITIVES FOR CLEAN AVIATION **Maria Grazia De Giorgi**, *University of Salento (Italy)*
Lunch break		
SESSION 2: ADVANCED COMBUSTION TECHNOLOGIES		
14.15	15.00	ROLLS ROYCE LOW EMISSION ADVANCED COMBUSTION TECHNOLOGIES **Marco Zedda**, *Rolls Royce (UK)*
15:00	15:30	LOW EMISSION ADVANCED COMBUSTION TECHNOLOGIES **Christophe Viguier** / **Matthieu Rullaud**, *SAFRAN HE / SAFRAN AE (France)*
15:30	16:00	GE AVIATION LOW EMISSION ADVANCED COMBUSTION TECHNOLOGIES **Antonio Peschiulli** / **Thomas Ripplinger**, *AvioAero (Italy) / GE Aviation(Germany)*
16:00	16:15	POTENTIALS OF STEAM-INJECTED AND WATER-RECOVERING GAS TURBINE **Oliver Schmitz**, *MTU (Germany)*
16:15	16:30	PRESSURE GAIN COMBUSTION AND THE INSPIRE RESEARCH NETWORK **Antonio Andreini**, *University of Florence (Italy)* - **Myles Bohon**, *TU Berlin (Germany)*
Coffee break		
SESSION 3: PARTICULATE MATTER		
16:45	17:15	ESTIMATE **Daniel Mira**, *BSC - Barcelona Supercomputing Center (Spain)*
17:15	17:45	RAPTOR **Ayce Celikel**, *ENV-ISA (France)* / **Andrew Crawford**, *University of Cardiff (UK)*
17.45	18.00	Closure of Day 1

WORKSHOP AGENDA DAY 2 – APRIL 30		
9.00	9.30	THE SOPRANO H2020 PROJECT **Klaus-Peter Geigle**, *DLR*
SESSION 4: HYDROGEN		
9.30	10.00	ENABLE-H2 **Devaiah Nalianda** / **Andrew Rolt** / **Xiaoxiao Sun**, *Cranfield University (UK)*
10.00	10.30	SIMULATION AND CONTROL OF HYDROGEN COMBUSTION: THE ERC SCIROCCO PROGRAM **Thierry Poinsot**, *CERFACS (France)*
10.30	10.50	GE AVIATION PERSPECTIVES ON HYDROGEN BASED PROPULSION **A. Peschiulli** / **T. Ripplinger**, *AvioAero (Italy) / GE Aviation (Germany)*
Coffee break		
11.15	12.00	ROLLS-ROYCE PERSPECTIVES FOR HYDROGEN BASED PROPULSION **Marco Zedda**, *Rolls Royce (UK)*
12.00	12.30	CARBON-FREE AIR TRANSPORT CHALLENGES **Pierre-Alain Lambert** / **Nicolas Jeuland**, *SAFRAN Tech / SAFRAN Innovation (France)*
Lunch break		
14.00	14.30	ULTRA-LOW NOX HYDROGEN AND SYNGAS COMBUSTOR DEVELOPMENT AND TESTING CAPABILITIES **C. Oliver Paschereit**, *TU Berlin (Germany)*
14:30	15:00	ONERA COMBUSTION TEST FACILITIES FOR AERO GASTURBINE ENGINES TO SUPPORT LOW NOX AND HYDROGEN INITIATIVES **A. Mohamed, F. Guichard, N. Bertier & O. Dessornes,** *ONERA (France)*
15:00	15:30	PROMISING DESIGNS OF ADDITIVELY MANUFACTURED BURNERS FOR HYDROGEN-FUELLED COMBUSTION CHAMBERS IN AIRCRAFT ENGINES **Fabrice Giuliani**, *Combustion Bay-One, Graz (Austria)*
SESSION 5: ROUND TABLE		
15:30	17:30	ROUND TABLE DISCUSSION TO ESTABLISH A FUTURE TECHNOLOGY ROADMAP FOR COMBUSTION TECHNOLOGIES FOR MID-TERM (EIS 2035) AND LONG-TERM (EIS 2050) TECHNOLOGY GOALS. **Jean-Francois Brouckaert**, *Clean Sky 2 JU*
17:30	18:00	WRAP-UP AND CONCLUSIONS **Jean-Francois Brouckaert**, *Clean Sky2 JU* **Antonio Andreini**, *University of Florence (Italy)*

Registration

Please register by filing the online registration form available at:

REGISTRATION FORM

In case of technical issues with the registration form please register by email to:

Antonio Andreini – antonio.andreini@unifi.it
Cc: Jean-Francois.BROUCKAERT@cleansky.eu

REGISTRATION DEADLINE: April 27th, 2021

Virtual event

The workshop will be organized and managed as virtual event using the Cisco Webex meeting platform available at the University of Florence

- ➔ The Webex event links for the two days of the workshop will be sent to registered participants by email

** **Disclaimer:** Please be aware that the registration list (name, email, affiliation) will be shared with other participants of the Clean Sky 2 Workshop on Low NOx and Advanced Combustion Technologies. Should you wish for your name and contact details not to be disclosed please contact by email: antonio.andreini@unifi.it*

PDF version of the presentations will be collected and distributed to participants as Workshop proceedings