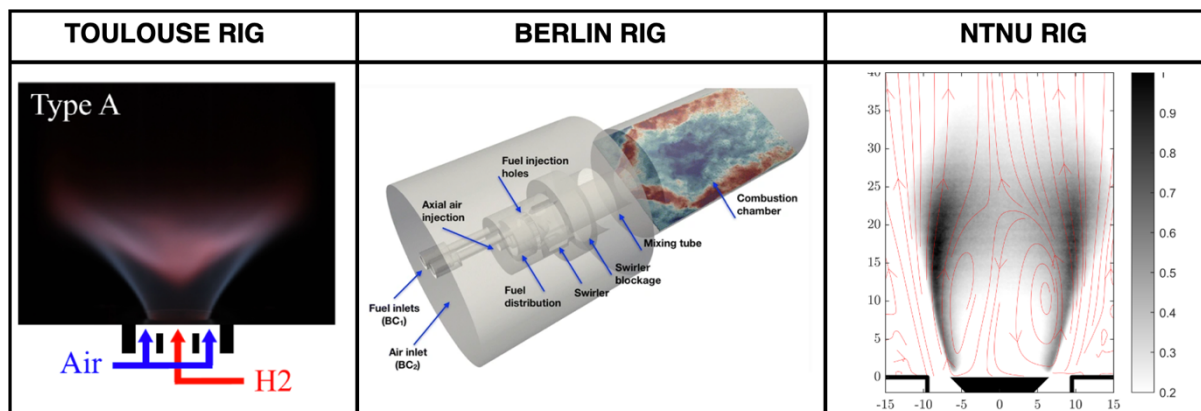


**Clean Aviation Workshop on H2 CFD (CAW-H2-CFD) - First announcement**  
**Creation of a workshop on CFD codes for hydrogen-air**  
**combustion within the framework of CLEAN AVIATION**

Turbulent combustion sits at the intersection of two highly non-linear phenomena: chemistry and turbulence. Despite its importance and wide application, there is still no comprehensive scientific theory about turbulent combustion and reliable computational models are needed to help develop new, clean jet engines that the transition to a decarbonised world requires. The specificities of combustion in jet engines (complex geometries, swirled flows, compact chambers, complicated cooling devices, high pressure flames, limited NOx emissions) make these simulations a daunting challenge. The lack of theory and adapted codes becomes all the more obvious with the switch to hydrogen. One would have thought that for hydrogen, being the smallest fuel molecule, its combustion would be easier. Nothing could be further from the truth and recent research show that it is more difficult to burn hydrogen cleanly and safely, and that its modelling using advanced 3D CFD solvers remains very challenging.

To help scientists and engineers validate computational fluid dynamics (CFD) tools for hydrogen combustion in gas turbines, Clean Aviation is organising an inter-laboratory collaboration where well-defined H2 flames will be modelled by various approaches. This systematic comparison will allow to understand where improvements can be made and can assist academia and industry alike deploy their resources where they are mostly needed.

Experimental, high-precision data will be made available for three experiments first: the HYLON rig in Toulouse, the TU Berlin rig in Berlin and the NTNU rig in Trondheim. Only pure hydrogen-air flames will be considered in CAW-H2-CFD.



All participants interested in testing their CFD solvers versus this set of experimental rigs are encouraged to contact the organizers listed below. Experimental data will be made available on the [TNF workshop](#) web site, on the page dedicated to [hydrogen flames](#). A first meeting will be organized in the framework of CLEAN AVIATION at the end of 2023 and it is expected that the exercise will be continued in the next years like for most TNF flames. No financial support is available for this work which is a community effort towards reliable and validated CFD solver for hydrogen - air combustion. The groups who want to participate are welcome to download the data from the [TNF workshop](#) site. It would be greatly appreciated if they can express their interest to participate by contacting the organizers so that we can organize communication inside the group: [poinsot@cerfacs.fr](mailto:poinsot@cerfacs.fr), [h.pitsch@itv.rwth-aachen.de](mailto:h.pitsch@itv.rwth-aachen.de), [em257@cam.ac.uk](mailto:em257@cam.ac.uk)

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