PhD Thesis at CMT - Motores Térmicos:
Advanced CFD Modelling of Hydrogen Gas Turbine Burners

Short description
Hydrogen has become an intensive field of research in the context of current efforts towards decarbonization of gas turbines. Accurate modelling of hydrogen combustion processes is essential to understand the implications of the use of this fuel in flame stability and NOx emissions. For that purpose, advanced computational fluid dynamics (CFD) with Large Eddy Simulation turbulence framework and advanced turbulence-chemistry interaction methods are mandatory. The scope of the present PhD is the modelling of hydrogen combustion using the previous set of numerical approaches. The student will have to develop a CFD workflow with OPENFOAM to enable the prediction of combustion and pollutant formation in gaseous fuel burners, focusing on hydrogen applications.

From the application side, the PhD candidate will perform CFD simulations of selected cases from those experimentally evaluated within current projects that CMT is carrying out. The purpose of those projects is the design and evaluation of different hydrogen burner concepts, including swirl stabilized and pilot-assisted combustion. CFD modelling approach will be validated with experimental data, and numerical results will bring in additional information that will help understand hydrogen flame behaviour.

Requirements
Candidates must have a master's degree in Engineering, Chemistry or Physics. Theoretical background in thermal and fluid-dynamics are needed. Previous experiences in combustion will be appreciated. Fluent English and team-work abilities are requested.

Duration and starting date
3 years starting in September 2023 after recruitment.

Application
The application should include: CV english, motivation letter and 2 support letters. Application deadline June 30th 2023.

Economic conditions
Check the following link: https://www.cmt.upv.es/#/fellowships

Contact
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