

An advanced software tool for enhancing the design of cleaner aero-engines



- Funded by the European Commission, ESTiMatE will develop advanced software for the smart prediction of pollutant emissions and soot in aero-engine combustors.
- This new tool is being developed using a novel approach that combines sophisticated experiments and reaction models.
- The tool will have a significant impact on the design of cleaner engines for the aeronautical sector.

Barcelona, 28 May 2020 – The European ESTiMatE project (Emissions Soot ModEl) is addressing Europe’s 2050 vision of reducing the environmental impact of aviation by developing an advanced modelling and simulation software tool to allow more reliable analysis and prediction of the soot formation process in aero-engines. The tool will be an important factor in designing engines that will consume less fuel and emit fewer emissions, especially soot.

The project is coordinated by the Barcelona Supercomputing Center in collaboration with aero-engine manufacturing giant Rolls-Royce. With a funding of €1.8M, ESTiMatE’s modelling strategy involves simulations of chemical evolution of jet fuel and particle formation in aero-engine combustors.

“Our project uses a multidisciplinary approach for the study of the formation and destruction pathways of soot and further pollutant emissions,” said ESTiMatE coordinator Oriol Lehmkuhl.

“We are integrating research and industrial design based on advanced CFD modelling and simulation with experimentation. Our aim is to develop a highly reliable and smart software tool that will be more accurate and more efficient than those used in the industry today.”

ESTiMatE’s work will strengthen Europe’s aeronautical sector by reducing the time and cost involved in aircraft design, testing, and certification. There will also be positive implications for the environment and the population worldwide due to the reduced emissions.

“The aviation industry has largely benefitted society but it is also responsible for CO2 and other emissions that not only contribute to global warming but also affect public health. The ultimate goal of the ESTiMatE project is to help reduce this industry’s negative impact and to make aviation more sustainable for future generations,” said ESTiMatE technical manager Daniel Mira.

About ESTiMatE:

ESTiMatE is funded by the EU’s Horizon 2020 programme as part of the Clean Sky Joint Undertaking, the largest European research programme developing innovative, cutting-edge technology aimed at reducing CO2, gas emissions and noise levels produced by aircrafts. Partners of the project include Technische Universität Berlin (Germany), Universitat Politècnica de València (Spain), Technische Universität Eindhoven (The Netherlands), Technische Universität Darmstadt (Germany), Karlsruher Institut für Technologie (Germany) and Universität Stuttgart (Germany).

More information: <https://estimate-project.eu/>

Contact:

Rose Gregorio, Barcelona Supercomputing Center

Email: rose.gregorio@bsc.es



This project has received funding from the Clean Sky 2 Joint Undertaking under the European Union’s Horizon 2020 research and innovation programme under grant agreement No 821418.