

## JOB OFFER

# Senior Research Engineer High-Fidelity CFD for Turbulent Flows and Acoustics

Cenaero, located in Gosselies (Belgium), is a private non-profit applied research center providing to companies involved in a technology innovation process numerical simulation methods and tools to invent and design more competitive products. Internationally recognized, in particular through its research partnership with Safran, Cenaero is mainly active in the aerospace, process engineering, energy and building sectors.

Cenaero provides expertise and engineering services in multidisciplinary simulation, design, and optimization in the fields of mechanics (fluid, structure, thermal and acoustics), manufacturing of metallic and composite structures as well as in analysis of in-service behavior of complex systems and life prediction. It also provides software through its massively parallel multi-physics platform Argo and its design space exploration and optimization platform Minamo. Cenaero operates the Tier-1 Walloon supercomputing infrastructure, that is currently composed of 14,000 computing cores and will be renewed by the end of 2022 with an investment of 10 M€.

To sustain its expanding research activities in **high-fidelity numerical simulation for turbulent flows and acoustics**, Cenaero is currently looking for a senior research engineer and offers a permanent contract (CDI) in Belgium.

### Position

Numerical tools and methodologies for advanced simulation of turbulent flows, in particular scale-resolving simulations (DNS, LES, and hybrid RANS/LES), are being developed at Cenaero for different purposes: direct prediction of the aerodynamic performance for aeronautical configurations in cases where industry-standard RANS methods deliver inaccurate results, in-depth physical understanding of flow features, and improvement or calibration of lower-fidelity models. A domain of particular interest is aeroacoustics, where the correct prediction of noise sources often requires that the turbulent properties of the flow be accurately represented.

The successful candidate will strengthen the high-fidelity CFD activities at Cenaero in the context of collaborative research projects and industrial contracts at both Regional and European levels. Leveraging external and in-house numerical codes as well as large-scale HPC resources, he/she will develop CFD methodologies involving advanced turbulence modeling to simulate internal and external flows for aeronautical applications. He/she will interact with numerical experts at Cenaero to improve in-house simulation tools and with application specialists to deliver solutions of industrial relevance. He/she is also expected to contribute to the growth of research and service activities by setting up new collaborative research projects and industrial contracts.

## **Profile**

Candidates should:

- Hold a PhD degree in Aerospace or Mechanical Engineering or related disciplines.
- Have a solid background in:
  - Fluid dynamics and the physics of turbulent flows.
  - Scale-resolving (DNS, LES, hybrid RANS/LES) and advanced RANS simulations in CFD.
- Demonstrate substantial experience (either academic or industrial) with:
  - Different pre- and post-processing tools for CFD.
  - Large-scale simulations in an HPC context.
  - Scripting and programming (Python, Linux shell...).
- Have excellent analytical skills and a solution-oriented thinking capacity.
- Be fluent in English with effective communication skills (both written and spoken).
- Be a team player yet have a proactive and autonomous attitude.

The following skills will be considered as valuable assets:

- Knowledge of acoustics.
- Experience in the development of numerical methods for computational mechanics:
  - Finite Volume or Finite Element Method.
  - C++ programming language.
- Fluency in French.

## **Offer**

Cenaero offers the opportunity to take part in the development of cutting-edge numerical simulation technologies, in direct relation with renowned academic partners (UCLouvain, the Von Karman Institute, University of Bergamo, among others) and major industrial players of the aeronautical sector (such as the Safran group). The successful candidate will benefit from outstanding supercomputing capacity with a brand-new Tier-1 facility at regional level and the possibility to access one of the most powerful supercomputers in the world through the LUMI consortium, in which Belgium has a significant share.

Cenaero offers a competitive salary package and the possibility to develop one's professional skills in a stimulating and dynamic work environment. We believe that our co-workers are the source of our success. We care for the personal development of our collaborators and seek to make them harmoniously progress.

## **Contact**

Interested candidates should send a cover letter, quoting reference number of the offer, and a resume to [rh\\_be-jo-2022-005@cenaero.be](mailto:rh_be-jo-2022-005@cenaero.be).