## ADVANCED FLOW AND HEAT TRANSFER INVESTIGATION GROUP

### Contact details

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<td>Logo</td>
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### Areas of expertise

**Biomedical Engineering**
- Flows through Bypass Grafts and Mechanical Heart Valves - numerical (CFD) and experimental investigations (PIV)
- Heat and Mass Transfer
  - Free and Impinging Jets with application in Personalized Ventilation; Heating Ventilation and Air Conditioning; Heat Transfer; Combustion: reactive and non reactive flows – numerical (CFD), experimental investigations

**Fluid Flow Control Systems**
- Design and manufacture of controllers for fluid systems; Sensorics; Analyse and signal processing

### Team


### Representative projects


### Significant results

**The most representative publications of the past 5 years:**

1. Florin BODE, Amina MESLEM, Claudiu PATRASCU, Ilinca NASTASE, “Flow and wall shear rate analysis for a cruciform jet impacting on a plate at short distance”, Progress in Computational Fluid Dynamics, An Int. J., Accepted for publication in 30.08.2019, 2020
The offer addressed to the economic environment

Research & development

Providing support (expertise and facilities) for research in connected fields like: hemodynamics, biomedical flows, thermo-gas-dynamics/combustion by the complementary use of CFD techniques and optical PIV methods.

Developing/upgrading the experimental setup used to investigate the pulsed flows similar to that through a bypass (currently in the experimental model stage) with a view toward potential use in testing vascular prostheses

Designing and machining customized optically transparent models of axisymmetric channels and bifurcations appropriate for PIV investigations

Developing solutions for PV (Personalized Ventilation) and HVAC (Heating Ventilation and Air Conditioning) based on CFD numerical simulations

Measuring viscosities for a wide range of fluids, including non-Newtonian fluids, and low viscosity fluids (e.g., possible beneficiaries in cosmetics or pharma industries)

Measuring parameters for monitoring the indoor air quality (temperature, humidity, air velocity, CO2 concentrations)

Consulting

Consulting and technical support for designing, building and evaluation of thermo-energy and combustion equipment

Technical and judicial expertise in the area of: using thermal equipment and combustion

Training

Courses for providing surgeons with a new approach to reconstructive bypass surgery from the engineering perspective.

Introductory course in numerical simulation of fluid flow and heat transfer for undergraduate students and students at the M.Sc., doctoral and postdoc level (2018-2019: 10 Undg. St. + 3M.Sc.St. + 1 PhD St +1 postdoc.) Initial training in in PIV optical measurement techniques for students at the M.Sc. and doctoral level.