

1998

50th 3AF International Applied Aerodynamics Conference

Forthcoming challenges for aerodynamics

The 3AF International Conference on Applied Aerodynamics is organized each year by the Aerodynamics Committee of the French Aeronautics and Space Society (3AF) in a different venue in France known for its activities in the field of aeronautics



La Société Savante
de l'Aéronautique
et de l'Espace

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and/or space technology. The conference is an excellent opportunity for scientific exchanges within the aerospace community where aerodynamicists from industry, research institutions and academics meet. Scientists and engineers from other fields involving fluid mechanics are also welcomed.

Each year the conference focuses on a different topic representative of current concerns in the field of aerodynamics. It is organized on the basis of five half-day of technical presentations, each introduced by a keynote conference given by an expert in the field covered by the session.

In 2015, the conference was hosted by the Institut Supérieur de l'Aéronautique et de l'Espace (ISAE-Supaéro) at Toulouse.

The 50th 3AF International Applied Aerodynamics Conference (AERO2015) was an opportunity to focus on forthcoming challenges for aerodynamics arising from the ever growing demands for “greener vehicles”, more comfortable means of transportation, alternative energy sources and environmental “friendliness”. This involves improvements to fuel consumption and pollutant emissions, as well as reduction of negative impacts on the environment such as noise, wake vortices, soiling, etc. There is also a pressure to increase efficiency and reliability of wind-turbines, etc. Green or sustainable building construction requires careful consideration of ventilation systems with reduced energy cost. There is also a constant need for better performance, increased range and improved stealth for military aircraft and missiles.

Aerodynamics plays an important and sometimes key role in all these domains so that such performance improvement can only be reached through decisive progress and even breakthrough in the many domains of aerodynamics including: flow modelling and physical understanding of complex phenomena, predictive and design methods, experimental investigation and data interpretation, etc.

All domains of application of aerodynamics were of interest: aircraft and UAV, engines, missiles and space launchers, airships, terrestrial vehicles, buildings, wind-turbine farms, ships, trains, etc. Among the many aspects of the problem, the following items were considered: new technologies (laminarity, drag reduction, separate flow control), noise reduction, propulsion system installation, aircraft, UAV and compound rotorcraft design, counter rotating open rotor, challenges in flow modelling and numerical simulation, unsteadiness, computation and experiment (wind tunnels, flight tests), etc.

This special issue of the *International Journal of Numerical Methods for Heat & Fluid Flow* presents a selection of articles based on the most instructive contributions to the conference. Guest editorial

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