

# **THE EIGHTH TRIENNIAL INTERNATIONAL AIRCRAFT FIRE AND CABIN SAFETY RESEARCH CONFERENCE**

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## ***Prediction of the thermal degradation of a carbon epoxy composite by a three-dimensional numerical simulation***

**P. TRANCHARD<sup>1</sup>, F. SAMYN<sup>1</sup>, S. DUQUESNE<sup>1</sup>, B. ESTEBE<sup>2</sup>, S. BOURBIGOT<sup>1</sup>**

<sup>1</sup> *ISP/UMET – UMR/CNRS 8207, Ecole Nationale Supérieure de Chimie de Lille (ENSCL), Bât. C7, Avenue Dimitri Mendeleïev – BP 90108, 59652 Villeneuve d'Ascq Cedex, France*

<sup>2</sup> *Thermal Tech Center, AIRBUS Opération S.A.S, 316 Route de Bayonne – 31060 Toulouse, France*

The evaluation of fire behaviour of structural composites is done through experimental tests which are time consuming and costly for the aircraft manufacturers (e.g. ISO 2685 and burnthrough test). Concurrently, the amount of composites in aircraft structures has increased and each type of material has to be fire evaluated accordingly. Currently, the numerical simulation is largely used during the development phase of an aircraft. That is why simulation tools are under-development to predict the thermophysical behaviour of composite exposed to fire. Hence it is necessary to explore in details the behaviour of composites under fire conditions in order to secure the design and to secure the certification tests to match with the aircraft master planning.

In the talk two approaches will be considered. A novel fire test bench designed to mimic burnthrough test will be first commented and fire behaviour of some composites will be examined. A new three-dimensional numerical simulation developed to predict the thermal degradation of the composite coupon will be then presented and fully discussed.