

# SPEAKERS' CONTACT & PRESENTATION DETAIL FORM

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## TITLE OF PRESENTATION

Evolution & Challenges in Aircraft Composite Repair, Towards Industry 4.0.

## PRESENTATION ABSTRACT

As newly constructed aircraft like A350 & B787 have a structure made of up to 80 % of composites, including Class I (i.e. safety critical) parts, the need for bonded composite repair continuously increases. Considering the **increased criticality of repairs**, there is a new requirement for integrating such “autonomous” repair operations in a “**net-centric**” **Quality Assurance and Surveillance Network**, so that critical activities performed on an aircraft overseas could be **real-time monitored** by the manufacturer’s engineering department or MRO headquarters. Through applying these innovative features, end-users will be now able to increase automation & data exchange or, in other words, make steps towards the so-called **Industry 4.0**.

GMI has developed the capability for **transmitting on-line** remotely retrieved repair data to the end-user for further exploitation and process monitoring, through the “**ANITA 4.0**” hot bonder, enabling the creation of **digital / physical twins**. Based on ANITA EZ, **ANITA 4.0** can connect to the central IT network of a repair facility through WiFi, while applying any **encryption** requested standards. Special software can make visible only basic data of the curing process from interconnected hot-bonders operating worldwide, towards affected end-user’s departments, **strengthening QA procedures** and **increasing productivity and process monitoring**.

Such “**Industry 4.0**” concept is extended to the so-called **Repair Enhanced Autoclaves**, i.e. autoclaves using thermal blankets for heating of large parts to be extensively repaired, in order to enable **local adapted heating** and **avoid thermal distortion** (e.g. GE90 nacelle repair, developed in cooperation with AFI-KLM E&M). The **ANITA 4.0 architecture** also enables the use of **remote control tablets** and associated peripherals, to continue monitor repairs performed at difficult to access aircraft locations (e.g. vertical stabilizer) or simply for **saving Man-Hours**, by allowing technicians to leave the repair area and perform in parallel administrative activities, while being continuously informed of the repair evolution.

## SPEAKER BRIEF BIOGRAPHY

Dr George Kanterakis is an Aeronautical Engineer, graduate of the Hellenic Air Force Academy. He subsequently joined the National Technical University of Athens, Greece, where he concluded his PhD thesis on “Bonded Composite Repair of Metallic Aircraft Structures”. Before joining GMI, he has been working at all aircraft maintenance levels and at various logistics activities, both for military and for civil type aircraft. In parallel, he has been actively involved in more than 30 European Union R&D projects in the area of repair of composites, as Coordinator or Researcher. He, thus, has a strong background in maintenance of composites, through the combination of R&D activities with actual professional experience in the very same scientific area, for more than 20 years. He participated in the preparation of 57 research papers, with more than 100 Citations and in authoring a book chapter concerning composite repairs.