

Title:

**Structural Health Monitoring (SHM): One Technology of the Airbus Intelligent-Airframe philosophy**

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The Airbus airframe development strategy is based on the “Airbus ‘Intelligent’ Airframe” approach, which targets on development and implementation of intelligent solutions (best innovative materials, optimized design) and smart structures with intelligent characteristics. When evaluating the potential of new structural solutions and new technologies, Airbus has both in mind: the benefit in upgrading existing models and new programmes.

Beside features, like Self-Healing, Adaptive Structures, etc., Structural Health Monitoring (SHM) is one of the major contributions for future “Intelligent Structures”. SHM is a new and alternative way of Non-Destructive-Inspection (NDI) in order to ensure the structural integrity of aircraft structures.

Airbus works since the nineties with increased priority on the subject of SHM for civil aircraft airframe design in cooperation with worldwide leading R&T institutes, Airlines and other sub-contractors. Due to the current maturity level the economical benefits of SHM technology are not yet available for the customer. Nevertheless, further development and a step-wise implementation will provide these benefits. For the time being Airbus is developing a variety of SHM technologies as different technologies are required depending on the kind of application. The presentation will start with a 10 minutes movie about the Intelligent Airframe Philosophy of Airbus. This fully animated movie describes in an easy to understand way the major topics of such “Intelligence”. It will act as the introduction to a presentation about the SHM activities within Airbus. The focus will be on the generic application of SHM on metallic and composite structures. The process of development, from the application scenario over the testing of sensors on demonstrators, up to the use in aging aircraft will be presented. Furthermore the needs and requirements for sensor technologies in relation to reliability will be shown. An outlook to future technologies, like Nanotechnology, will finalize this presentation.