

SYMPOSIUM

PARSIFAL PROJECT: A DISRUPTIVE AIRCRAFT FOR FUTURE AIR TRANSPORT.

Abstract.

Civil air transport increases all over the world and it will double in the next two decades, but the bottlenecks of this trend are the saturation of traffic in the airports, the increments of noise close to the airport areas and of the noxious emissions in the high atmosphere; this situation will no longer be sustainable in the future and, consequently, new requirements have been formulated to cut emissions and noise per unit of transport (passengers, freights) by means of a jump forward of aircraft performances. Conventional aircraft have been optimised step by step in the last half century and any great new improvement is no longer possible; thus, new aerodynamic configurations have been proposed. Parsifal project aims at defining a new disruptive configuration based on the Best Wing System concept by Prandtl, with a box wing lifting system in the front view, properly designed to minimize the induced drag. Parsifal (Prandtlplane ARchitecture for the Sustainable Improvement of Future AirpLanes) is a project funded by the European Community in the framework of a call on Breakthrough Innovation in Aeronautics of Horizon 2020. The project is coordinated by University of Pisa (Italy), with the partnership of Delft University of Technology (Holland), Onera Meudon (France), DLR Hamburg (Germany), Ensam Bordeaux (France), SkyBox Engineering Pisa (Italy). An Advisory Board composed of persons from Airbus, Leonardo, Academia, airport companies, airliner companies and pilots cooperate with the partners. The symposium will give an overview of the project regarding the architecture of the aircraft and the concepts on Aerodynamics, Structures, Flight Mechanics, Engine Integration, etc.

SYMPOSIUM N.17

PARSIFAL PROJECT: A DISRUPTIVE AIRCRAFT FOR FUTURE AIR TRANSPORT

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Paper N.1 PARSIFAL PROJECT: AN OVERVIEW

A.Frediani, V.Cipolla, K.Abu Salem, V. Binante

Paper N.2 AERODYNAMIC AND ACOUSTIC ANALYSIS OF A PRELIMINARY PRANDTLPLANE CONFIGURATION WITHIN THE FRAMEWORK OF THE PARSIFAL PROJECT - M. Carini, M. Méheut , L. Sanders

Paper N. 3 PRANDTLPLANE AIRCRAFT LEAST-WEIGHT DESIGN:A MULTI-SCALE OPTIMISATION STRATEGY

M. Picchi Scardaoni, M.I. Izzi, E. Panettieri, M. Montemurro

Paper N.4 A HYBRID, CONFIGURATION-AGNOSTIC APPROACH TO AIRCRAFT CONTROL SURFACE SIZING - C. Varriale, A. Raju Kulkarni, G. La Rocca, M. Voskuij

Paper N.5 TAKE-OFF ANALYSIS AND SIMULATION FOR A PRANDTLPLANE COMMERCIAL AIRCRAFT - A.Frediani, K.Abu Salem, M.Bianchi, V. Binante, V.Cipolla, G.Palaia

Paper N.6 COMPARATIVE DESIGN SENSITIVITY STUDIES ON BOX-WING AIRPLANES - R.J.M. Elmendorp, G. La Rocca