



Pacelab SysArc

Aircraft-level optimization of systems architectures

Pacelab SysArc is a system architecture design software, which helps aircraft designers and system architects, technologists or chief engineers to assess promising technologies and to mitigate the risk of design decisions.

Aircraft systems are key drivers of innovation in aircraft design and significantly influence overall mass, fuel consumption, operating costs and reliability. Particularly with new technologies such as the more electric aircraft or hybrid-electric propulsion concepts, it is crucial to analyze and optimize systems at a global level to minimize the likelihood of design inconsistencies or unforeseen behavior in the integration phase.

Pacelab SysArc combines the logical definition of systems architectures with the physical layout of system components and their connections within the 3D geometry of the aircraft. The tight, yet runtime-efficient integration of systems architecture configuration and conceptual aircraft model makes it possible to continually check how modifications of the systems architecture will affect aircraft characteristics and overall performance.

Delivering instant feedback on the global impact and key metrics of architectural alternatives, Pacelab SysArc provides a reliable framework for assessing new technologies and for making investment or product development decisions.

Benefits

Design space exploration

Get a 360° view of system architectures in the 3D geometry of the aircraft

Aircraft-level investigations

Optimize system architectures globally in a fully-fledged aircraft design environment

Technology assessment

Predict system performance and impact early on

Cost and risk mitigation

Identify critical areas of your development project and steer your technology roadmap

Key Features

Multiple architectures

User-extensible library of parametric component models for all standard systems

Intuitive definition

Graphical-schematic definition of system architectures

Physical representation

Energy loss tracking via synchronized representation in 3D aircraft geometry

Detailed inner geometry

Flexible compartment model to aggregate thermal loads

Automatic routing

Layout of distribution elements such as cables, pipes or ducts along defined pathways

Operational modes

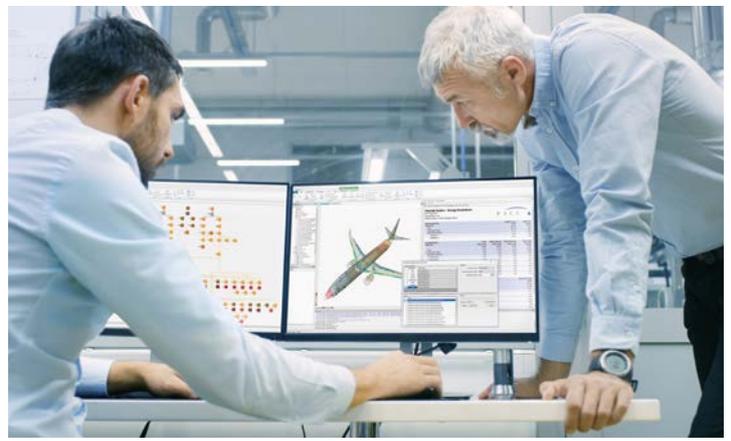
System sizing with user-definable flight conditions and failure modes

Aggregated power & energy

Computation of power and energy for any operating condition

System mission

Impact of systems' operation on aircraft flight performance



Exploring architectural & technological alternatives

Setting up systems architectures with Pacelab SysArc is quick and intuitive: Starting from the aircraft model of your choice, you simply drag and drop systems components from the resident library to the schematic diagram view. The library provides comprehensive sets of electric, hydraulic, environmental control, actuation, propulsion or avionics components, which you can flexibly replace or extend with your own models.

Next, you define the logical connections between individual components by clicking and dragging a line from outbound to inbound ports and defining the flow of energy or data. The software automatically translates the logical connections to mathematical relations which will determine the physical behavior of the systems architecture.

Pacelab SysArc's routing algorithm uses the logical connections and the components' positions in the physical space of the airframe to automatically create distribution elements such as cables, pipes or ducts. It computes the aggregated electrical power required at user-defined operating points and sizes components and distribution elements accordingly, taking into account conduction losses and thermal dissipation.

A sophisticated trade study feature enables you to monitor key parameters through different flight phases and failure scenarios to determine the conditions under which a particular aircraft system will become overloaded; you are free to also integrate proprietary and customized algorithms.

Conclude your investigation by checking the impact of your systems architecture on the mission performance of the aircraft to size the airframe or to explore off-design conditions.

To find out more or request a free software demo, please visit our website at www.pacelab.com.

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