

Technology/Process: **Composite Assembly Jigs**
 Responsible: **SAAB, Stefan Borgenvall**
 Partners: **FlexProp, Karl-Otto Strömberg**
 Work package: **4.9 – “Composite Assembly Jigs”**



Description of Technology/Process:

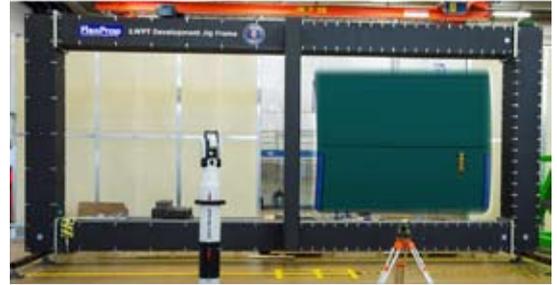
By introducing CFRP as manufacturing material for jigs and fixtures the mechanical performance and thermal behavior of typical jigs used in aerospace is improved.

A lightweight and self-supporting fixture enables new innovative ways to plan the production due to the improved mechanical properties such as weight, geometrical stability and stiffness.

Before:

WP 4.9 is a new application of LWPT, Light Weight Production technology. LWPT is an established technology in the automotive industry, it is a standard within the VAG Group. For this new application the project started at TRL 4.

Illustration:



Keywords:

LWPT,
 Light Weight Production technology,
 Light weight Fixtures,
 Light weight Jig,
 CFRP fixtures,
 Pulsed Lean production,
 Saab Aerostructures,
 Saab Aeronautics,
 FlexProp,
 Acreo,
 SWEREA,
 SICOMP,
 Compracer Labs

Benefits:

LWPT improves productivity, saves time during ramp up, reduces investment costs and deliver more accurate tooling over time. But most interesting, LWPT opens new innovative ways to plan the production flow.

LWPT is today standard within the VAG Group worldwide. AUDI states that by introducing LWPT, investments costs are reduced by 30 percent, energy consumption has dropped by 40 percent, and the necessary workshop floor space is now just 60 percent of prior requirements. But most importantly, flexibility has improved significantly. It is believed that similar benefits will be possible in the aerospace industry.

Work performed:

Design, realization and validation of the worlds largest fixture made out of CFRP for aerospace applications.

The project delivered a fully operational test jig frame which now will be used for a prototype in production. The frame has been equipped with Fiber Bragg Sensors in a related project and a paper will be presented at the SAE conference in Seattle, September 2015. The Flexprop Saab LWPT development jig frame is a solid foundation for further development work.

The fixture is an enabler. The project has shown it is possible to build large CFRP structures at a competitive cost which meet industry standards. The project team foresee a large potential market for the technology, but first the technology has to be industrialized.



Future developments & exploitation:

FlexProp markets and sells the technology today and there are some examples already in production. It is clear the technology has further potential both from a component and system perspective. Development is continuing in a number of projects, one example is the bottom beam which has been equipped with a measuring system based om FBG (Fiber Bragg Sensors). The goal is to develop a

competitive and robust production system based on LWPT and set a new industrial standard for jigs and fixtures. With new available material developments it is possible to further reduce weight and cost. SAAB, Swerea IVF/ SICOMP, Acreo and FlexProp will continue cooperation in future projects with GFD work providing the foundations.