

USERS' PLATFORM

Successful partners

Conseil & Technique, an SME dedicated to the development of new products

Since its creation, Conseil & Technique, based in Toulouse, France, has developed its own unique know-how in the design of composite parts. It all began with the daunting technical challenge of producing parts for Jean-Louis Etienne and his boat, Antarctica (now named Tara).

At the helm of the company, Guy Valembois has always striven to build the development of the company upon technical innovation, through observation of nature and through lessons learned from the history of design. His approach is simple: never let it be a question of replacing the existing metal part with an identical composite part, but rather of “thinking composite” from the earliest design phase, so that the concept is integrated right off the drawing board. Nowadays specialising in the mechanics



of movement and composite parts, Conseil & Technique is a recognised player in the aerospace industry. It has over 130 international patents to its name and proposes new approaches for resolving technical problems from a fresh perspective. Since it does not have the technical manufacturing facilities required by the aerospace sector, the company has established strong partnerships and technical relationships with its customers. Since 2008 and the advent of three major innovations in the field of

composites – rods with high mechanical properties, a damping layer and attachment fittings for primary and/or secondary structures – C&T has secured SKF Aerospace France as one of its major customers and partners. Their two technical teams have succeeded in confirming the industrial potential of certain innovations which are sure to be the keys to future commercial success.

Connecting rods with high mechanical properties

After several trials, the C&T and SKF teams, in association with a network of SMEs, have succeeded in manufacturing large-scale composite components, such as landing gear struts. Although this may not be a pure innovation as such, when you succeed in associating this manufacturing process with the use of prestressing in the composite part itself, what you have is quite simply a world's first.

The targeted uses of such a product underline the fact that the company is

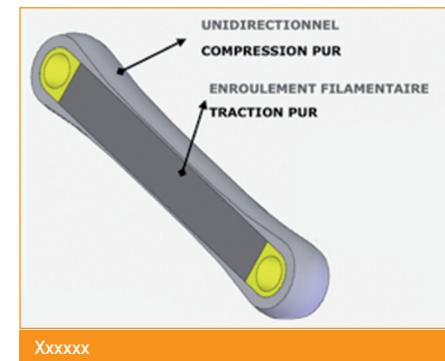
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The stress levels obtained thanks to the complementary know-how of the respective teams are quite exceptional:

- Centre-to-centre distance: 850 mm
- Overall net weight: 4.2 kg
- Ball joints: Steel
- Tensile and compression strength: 500 kN (50 T)
- Breaking stress: 2,600 MPa

capable of replacing steel rods with prestressed composite rods in extreme environments and, as a consequence – given identical technical specifications – of offering weight savings, volume savings and far superior compression or tensile strength.

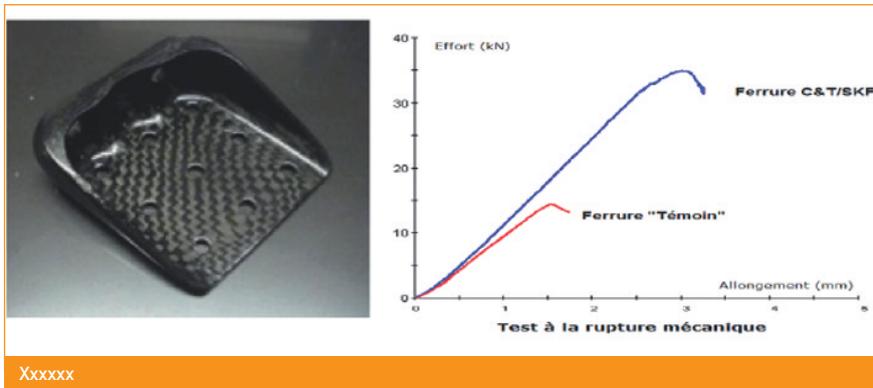
The teams are moving ahead at full tilt in order to be able to propose these new



solutions to the big aerospace companies. To this end, they have moved into the development stage (TRL4). A second phase will involve evaluating other aerospace applications. The technical collaboration between the two teams does not end there, since they are continuing to develop new processes for the manufacturing of composite parts.

Damping layer made out of composites

Throughout the development process, C&T quickly became aware that there was a sore lack of solutions or products for certain technical scenarios. It was



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vital that they find a solution to the main drawback of composite materials: their susceptibility to impact, particularly in the context of the composite rod project for landing gear struts.

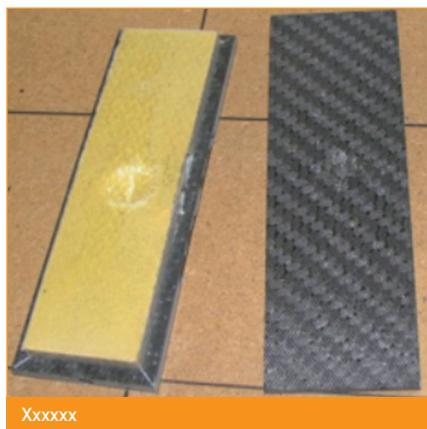
Hence, in conjunction with Ateca (F82), a shock absorption specialist recognized by the EADS group, the teams have once again pooled their know-how and skills to fill this gap and propose a technical solution not only for their own composite parts, but also for others on the market.

For this innovation, the team set themselves some very strict technical and commercial constraints: working with recognized materials, offering users ease of implementation, and offering a range of damping levels and the visualisation of impacts.

The pairing of Ateca and C&T achieved a technological feat in coming up with a solution in line with these technical specifications. Thanks to this damping layer, the teams are now capable of managing impacts to parts for energy levels of 10, 35, 70 and 90 J. This layer has been designed to enable rapid maintenance and LRU (line-replaceable unit) operation, either directly on the runway or in a repair station (PART145 or FAR145). This protective damping layer will also enable maintenance with no disassembly of the rod (or of the part

concerned), thus significantly lowering downtime costs.

Furthermore, Ateca made sure from the outset that it only selected certified materials that were already in use in aerospace programmes. This damping layer could be used for other applications, on account of it being capable of protecting all composite parts of whatever shape or form. One of the objectives of this layer is to eliminate the extra weight and thickness associated with the former solutions.



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New-generation composite fittings

Since its initial co-operation with SKF Aerospace France on the first patented composite fittings, back in 2008, C&T has managed to attract market attention. Today, the company has the opportunity

to work on the optimization of certain primary airframe structures.

That the company was chosen as a partner is due both to the originality of the technical solution proposed by C&T and to the fact that, together, the two companies had previously succeeded in resolving the “unfolding” phenomenon for this type of part, thanks to the consolidated experience of each of the partners.

The process also involves the upstream design of the composite part, which must be optimized to the maximum. The objective is to leverage the performance of carbon as efficiently as possible, and this gives rise to exceptional results: for an equivalent weight, the resistance is three times greater.

Fully aware of the importance of innovation in composite materials, the technical teams, under the leadership of Yves Maheo, engineering manager at SKF Aerospace, Philippe Vie, CEO of Ateca and Guy Valembos of Conseil & Technique, continually strive to maintain the competitive edge they acquired with the first of their innovations. It is therefore in order to continue ensuring a strategic positioning on this market that SKF Aerospace France has selected C&T for most of its composite R&D projects.

Thanks to their complementary skills, the three companies have succeeded in producing new technical solutions that can really make the difference. Today, the teams are in the final technical phase (TRL4) and have already begun their marketing initiatives. This is crucial, since the aviation and space sectors are extremely demanding arenas. Needless to say, the three companies are also looking to make inroads into other sectors, such as the railway and automotive industries. ■

More information:

www.conseil-et-technique.com