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BUSINESS BRIEFING

MANUFACTURING

AJW Group launches new division: AJW Technique Engineering

Aircraft component parts provider AJW Group has launched a new engineering division, AJW Technique Engineering. This division will provide comprehensive support for a range of design, production and maintenance services.

The division is set to commence operations in the fourth quarter of 2023 and aims to leverage the parent company's expertise and experience in the aerospace sector. With headquarters as well as design and production offices in the UK, the firm will operate worldwide.

The envisioned scope of work includes cabin interior design, engineering, modification, repair, and manufacturing for both commercial and VIP sectors, P2F cargo conversions, composite repair and engine structural repair.

The Part 21J Design services offered will encompass the development and approval of modifications and repairs, ensuring compliance with industry regulations and safety standards. The division's Design Organisation Approval and Production Organisation Approval teams will work closely with customers to provide tailored design solutions that optimise aircraft performance and enhance passenger experience.

AJW Technique Engineering's Part 21G Production services will focus on manufacturing and certifying aircraft parts, adhering to rigorous quality control processes and manufacturing practices, for example EASA European Part Approval and FAA Parts Manufacturer Approval parts. This capability will further bolster AJW's ability to provide integrated solutions and improve operational efficiency for its customers.

Christopher Whiteside, chairman of AJW Group, expressed his enthusiasm about the launch, stating: "With the establishment of AJW Technique Engineering, we are taking a significant step forward in expanding our capabilities and enhancing our ability to deliver comprehensive engineering solutions to the aerospace industry. This new division will further strengthen our position as a trusted partner and provider of innovative services worldwide."

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Furnishing material matters

The materials used in aircraft cabins, from seats to sidewalls, must meet the requirements of more than one constituency, as ***Bernie Baldwin*** reports

One of the great challenges for an airline industry supplier is that, no matter who pays for their product, a company is nearly always having to satisfy two customers at once – the operator and the passenger. And they don't always want exactly the same thing.

In the aircraft cabin, the use of effective materials is a good example of that challenge. Passengers want comfort and refinement and, while an airline wants to deliver that, it also desires durability, lightness and the ability to meet all necessary regulatory standards.

Take a seat

The most-used material in this area, namely on the seats, directly affects every passenger. Each one has his or her own response to it as they settle down for a comfortable flight. In recent years, economy class seats have become much slimmer and taken weight out of the aircraft. But both airlines and suppliers continue to seek ways in which changes in material and smarter design could help to get more weight removed.

Sohaib Ahmed, interiors programme manager at AJW Group, believes there are numerous ways in which modifications in materials and intelligent design can contribute this area. One of the company's developments – its partnership with the largest seat cover manufacturing facility in Europe, Autostop Aviation – offers a strong starting point.

"An example of a smarter material choice is SkyLeather, manufactured using 100 per cent water-based polyurethane and known for its exceptional lightweight properties," notes Ahmed. "Compared with natural leather, SkyLeather offers a weight saving of 25 per cent, resulting in approximately 0.96kg saved per passenger. Based on the A320 and 737 aircraft families, implementing SkyLeather can help airlines save approximately 16,000kg of fuel per year, per aircraft, and reduce carbon emissions by 50,000kg annually, per aircraft. This

1. JetBlue's Mint Studio features high-tech comfort fabrics from Ultrafabrics and Tapis
2. Lantal's innovative Digital Deep Dyeing Technology is fast and also more sustainable

"SEAT COVERINGS MATERIALS HAVE SEEN ADVANCES IN COMFORT, EASE OF CLEANING AND DURABILITY"

25%

SkyLeather offers a weight saving of 25 per cent, resulting in about 0.96kg saved per passenger

makes it one of the lightest material options available for seats."

Tapis and Ultrafabrics also bring lightweight seating materials to the market successfully, the proof being the ongoing nature of their partnership, which is still going strong after more than 40 years. The collaboration sees Ultrafabrics make the products in their mill in Japan. After that, the products are shipped to Tapis in Dallas, Texas, where they are finished to make them flameproof and airworthy. Tapis then distributes them into the global aerospace industry.

Fire blocking

As with AJW's Ahmed, Barry Silverman, vice-president, marketing and branding at Ultrafabrics, also identifies one of his company's products as a tool to help to get more weight out of interiors. "The use of new modern materials such as Ultrafabrics Atago is a good example," he confirms. "The Atago product utilises a base layer that is an integral fireblocking material. This allows for the fireblock material – typically used in a seat cushion build-up – to be removed and allows the use of non-graphite foams for the seat cushions.

"Removing the graphite and fireblock takes weight out of the product and can reduce the overall weight of the passenger place by 1lb per passenger with synthetic leather and 2lb per passenger when converting from genuine leather," Silverman adds.

The economy class seat weight reduction conundrum is also being met by Lantal Textiles, according to Luzius Rickenbacher, the company's executive vice-president, aviation interiors. "Lantal developed a seat fabric which has a different design on both sides and has the same performance independent of whether used on its front side or back side.

"This product, called 'double-sided fabric', allows the airline to reduce complexity by having only one part number, reducing weight as the customisation element is done with one seat fabric, and using the 'other' side for the head rest, compared to leather for example. Furthermore, we see lots of potential in the seat cover design application in order to continuously check whether lamination is being used or not."

Advances in technology

Of course, seat coverings in all cabin sections have also been seeing advances in materials with reference to comfort, ease of cleaning and durability. "We mainly see more demand for sustainable materials. Lantal has developed a 100 per cent biodegradable wet-green leather as well as other seat fabrics," Rickenbacher reports.

AJW's Ahmed concurs that there have been significant advancements in seat covering materials across all cabin sections in the past few years. "Our SkyLeather material exemplifies these improvements by providing exceptional comfort with a soft and supple feel akin to natural leather. Moreover, SkyLeather boasts effortless maintainability, as stains and marks can be easily wiped away using a cloth and soapy water," he comments.

"In terms of durability, this revolutionary material surpasses expectations," Ahmed clams. "Wyzenbeek testing involves rubbing along the warp

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and weft of the test fabric to predict wearability. Having exceeded 400,000 double-rub Wyzenbeek cycles, with testing ongoing, SkyLeather instils confidence that this number will continue to rise significantly. Comparative testing has shown that SkyLeather outperforms similar materials currently available on the market in terms of durability and longevity."

The company has recently received endorsement of its faith in this material with Azerbaijan Airlines' decision – announced at the 2023 iteration of Aircraft Interiors Expo (AIX) – to install SkyLeather on three of its A319 and six of its A320 aircraft.

Regarding the materials covering seats in all cabin sections, Ultrafabrics'

"THE SYNTHETIC LEATHER TREND BEGAN IN THE US AND IS SPREADING TO THE REST OF THE WORLD"

Silverman has observed a few trends from airlines in their choices, in particular alternatives to natural leather. "The trend towards synthetic leather began in the US around ten years ago and is now spreading to the rest of the world," he explains. "Using a leather or synthetic leather finish enables a wipe-clean finish. Our high performance topcoats are engineered to be resistant to a much wider array of cleaning chemicals (alcohol, quaternary ammonium and so on) than genuine leather.

"Ultraleather is the only product with an integral foam layer in between the back cloth and the topcoat," he notes. "The foam layer provides heat dissipating effects for better thermal comfort and increased surface area contact from the conforming nature of the foam, leading to less pressure and more physical comfort."

Touchy-feely

Alongside the sense of touch, Tapis-Ultrafabrics has been working on innovations in materials for the sense of sight, by bringing vibrant colours to Ultrafabrics products. Its launch colour, stemming from a partnership with Pantone, the famous colour matching company, is called Vivid Punch. This is based on Pantone's own 'colour of the year', dubbed Viva magenta, which gives an idea of the vibrant hue that is being promoted.

"We wanted to examine colour in interior aviation design," Silverman declares. "Typically, that is driven by the brand. Our hope is that we can introduce something a little bolder to the discussion, and follow some other industries like, for example, automotive and even furniture design. There's no reason why the airline industry can't begin to experiment with bigger, bolder colours that communicate an idea that creates excitement, creates a new feeling. Our hope is to get them to think more about that."

1. Tapis-Ultrafabrics want to inject more colour into interior aviation design
2. Newer materials are soft touch, easy to wipe clean, durable and lightweight

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1. Tapis-Ultrafabrics' bold new Ultraleather shade, 'Vivid Punch'
2. Lantal's Digital Deep Dyeing Technology maximises design freedom and customisation

"PRODUCTS SUCH AS CARPETING, PANELLING AND MONUMENTS ALSO HAVE NEW DEVELOPMENTS"

It is not just in seating materials that progress has been made in weight and durability. Interior products such as carpeting, panelling and monuments also have new developments being introduced regularly.

"The use of lightweight foams (such as Zotefoam) in combination with products like our Ultraleather 9 Series allow for soft touch panels and front row monuments," Silverman reports. "Combining the two materials typically weighs around 450gsm [grammes per square metre] in total, which is significantly lighter than honeycombs and thermoplastics.

"The combination of attributes such as soft touch, wipe clean, durability and light weight is a huge step forward in materials innovation," the Ultrafabrics VP contends.

Lantal, meanwhile, has developed a new dyeing process for cabin carpets. The Digital Deep Dyeing Technology has already been something of a hit by winning the 2023 Crystal Cabin Award in the "Sustainable Cabin" category at the awards ceremony which took place in Hamburg alongside AIX 2023.

"Conventional aviation carpets use a yarn dyeing process, but this is slow and energy intensive," notes Rickenbacher. "Complex and colourful patterns end up increasing carpet weight and costs, and risk not meeting all airworthiness requirements. With our new carpet technology, Lantal is firstly going digital to ensure customised solutions are available within days. We are also going ultra-lightweight while maximising design freedom and customisation. Finally, we're going green through major water and CO_2 reduction and low waste production processes.

Deep dye

"All stakeholders are benefitting from the Digital Deep Dyeing Technology – something the judging panel realised," the EVP elaborates. "Passengers enjoy a more appealing cabin environment, airlines and OEMs will achieve weight reduction targets and experience shortened lead times and, most importantly, nature benefits from a tremendous environmental footprint reduction."

This final theme resonates with the view of AJW's Ahmed about the development of materials beyond those for seats. "In response to the threat of climate change, the aviation industry is committed to taking active measures toward the reduction of global greenhouse gas emissions. Businesses across the globe are working to reduce their carbon footprint and are investing in technology to design and develop more sustainable products to achieve this," he remarks.

"Like the innovative SkyLeather material, lightweight carpeting materials that are also durable can reduce aircraft weight significantly, thereby reducing the carbon footprint of the airlines using them," Ahmed continues. "Manufacturers have been implementing advanced weaving techniques when producing aviation carpeting. Using innovative fibres allows for thinner and lighter carpets, while still maintaining an aesthetically pleasing appearance."

Ahmed also points to new compounds – made from honeycomb structures or carbon fibre-reinforced polymers – being used to create panels. "These lightweight, earth-friendly products are ideal for aircraft interiors and can be used in the manufacture of galley storage units and lavatories, further helping to reduce onboard weight while still maintaining functionality," he states.

Alongside, the materials themselves, considerable progress has been made in production techniques which add to weight savings and durability. Suppliers are therefore managing to meet the demands of those two customer factions, helping airlines maintain the appearance and comfort of their cabins while delivering reduced weight and increased longevity of the products.

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