SUSTAINABILITY DRIVE – EVTOL INTERIORS

electric avenues

THE PROMISE OF ZERO-EMISSION FLIGHT VIA A NEW BREED OF VEHICLE IS STILL COMPELLING, AND DETAILS OF THE INTERIORS ARE STARTING TO PERCOLATE THROUGH

Words by Guy Bird

EXCLUSIVE FIRST PICTURES OF EXPLORATORY DESIGN IDEAS FOR THE SIRIUS BUSINESS JET INTERIOR, BY DESIGNWORKS, A BMW GROUP COMPANY

Despite initially unveiling a five-seat eVTOL design, in September 2023 Horizon Aircraft announced its shift to a seven-seat version, the Cavorite X7. Potential customers had advised the company that larger aircraft with lower passenger seat mile costs better aligned with their needs

So 2023 came and went without the most ambitious targets for electric vertical take-off and landing (eVTOL) vehicles flying commercially being met, but that's not to say the nascent industry has stalled – far from it. Bigger aviation and automotive players are still backing smaller tech start-ups and following up on slick exterior designs, their interior visions are starting to emerge in more fully realised form. Interesting examples of collaboration include Volkswagen calling on the aviation expertise of design agency tangerine for its China region-focused eVTOL, Sky Garden. Meanwhile, relative newcomer Sirius Aviation is drawing on the expertise of Designworks, a BMW Group company, for its forthcoming hydrogen-powered business jet.

Another eVTOL player, AutoFlight, has employed the services of Frank Stephenson Design (FSD), whose CV includes automotive work for BMW, Maserati, McLaren and Mini. "The main theme for the interior design was to create a living space in the skies that is bright, open and comfortable for passengers," says FSD.

To that end, the AutoFlight Prosperity I cabin has a bigger window surface compared with a conventional small aircraft. "We make use of a 1+2+2 seating layout, with the pilot seated in the centre of the aircraft, with two rows of passenger seats behind, respecting the designated centre of gravity of the aircraft, which is also a key design parameter, particularly during the transition

Certifying NEW MATERIALS

Despite the influence of non-traditional aviation designers in many of the eVTOLs being developed, there is acute awareness of the difficulty in certifying new proposed materials for aviation use.

As Weiwei He, tangerine's lead designer on the Volkswagen Sky Garden eVTOL project for China says: "We are sensitive to the fact that eVTOLs will likely be subject to similar regulatory frameworks as the commercial aviation sector (the industry standards and regulations are still under development internationally). The cushion for the headrest is made from fully recyclable plastic 3D-printed to form a 3D knit. This material is currently used in the automotive industry but is not yet certified for aviation, while the faux leather used for the seating is bio-based."

LEFT & RIGHT: VW AND TANGERINE'S VISION FOR THE SKY GARDEN EVTOL FOR CHINA

phase from vertical to horizontal flight," says FSD. "Futureproofing is also relevant in this case, as autonomous flight capabilities would then allow the pilot seat to be occupied by an additional passenger."

DESIGN CONTINUITY

Successful vehicles often have a strong design continuity between exterior and interior and the AutoFlight Prosperity I is designed to offer this: "The interior volume and exterior shape are very closely related, with the aim to minimise cross-sectional area to increase efficiency, while giving sufficient room for up to five passengers. The widest point of the cabin is at the shoulders of the second-row passengers, with increased 'tumble home' in the upper fuselage area. One of the initial goals for the interior was to achieve a floor height similar to that of a large SUV, to allow for ease of ingress and egress."

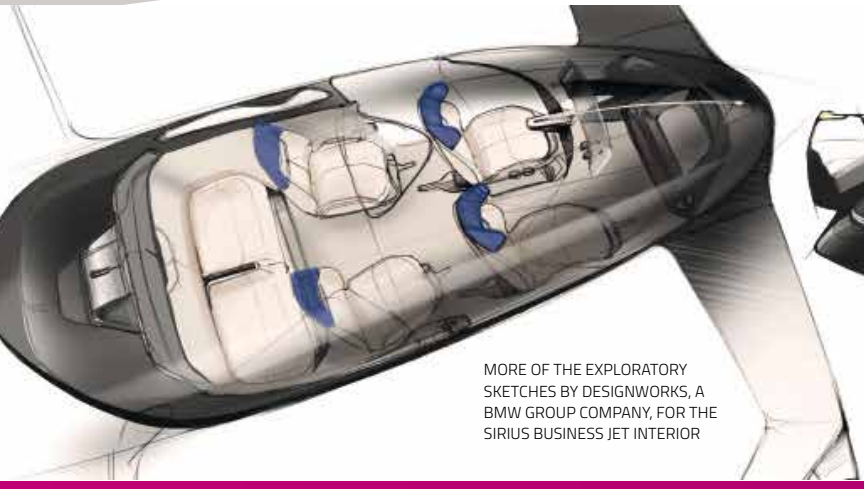
A more spacious passenger area is also the aim for the Sirius Business Jet. It's very early days for the interior design, but Designworks and Sirius graciously shared their thoughts. "We were contacted quite

Scan for a video of the Lilium Jet Pioneer Edition cabin design

LEFT & INSET ABOVE: THE AUTOFLIGHT PROSPERITY I INTERIOR, DESIGNED BY FSD

Eve Air Mobility held a customer advisory board meeting in December 2023 at which customers and partners discussed topics including vehicle configuration and the passenger cabin experience. Recaro Aircraft Seating has been selected for the seats

Scan for a video of the Supernal S-A2 vehicle product concept



MORE OF THE EXPLORATORY SKETCHES BY DESIGNWORKS, A BMW GROUP COMPANY, FOR THE SIRIUS BUSINESS JET INTERIOR

early and tried to make it [the passenger cabin] a little wider, by getting more space in the cross-section at shoulder height while also looking into more interesting window cuts," explains Tommy Forsgren, lead designer at Designworks. "That means it's a little less egg-shaped and slightly more hexagonal. In this small cabin, when you're walking to the back, every centimetre helps."

AUTOMOTIVE INFLUENCE

Sirius Aviation's CEO, Alexey Popov, and VP of design and director of product development, Dr Alexander Los, say they only ever had one partner in mind for the aircraft, due to a deep respect for Designworks' roots in aviation and pioneering work in hydrogen. Designworks and Sirius haven't quite fixed an interior direction yet but given the former's automotive expertise with both BMW and Rolls-Royce car interiors, those aesthetics will surely be strong pulls. "It will be a mix of traditional luxury well-being but with lightweight inspiration," says Forsgren.

Sirius' Dr Los sums up the brief as "nobility" – a good word given the target high- and ultra-high-net-worth customers. Expect materials to be lightweight and sustainable but within the bounds of certification. "As the [hydrogen] tech overall is revolutionary in its sustainability, we should reflect that in

CAN YOU SMELL *the difference?*

Unique selling points (USPs) are hard to come by in crowded markets with lots of competition, but the new Sirius Business Jet is claiming one in the way that it will smell. There's plenty of time to hone that before its late 2028 first delivery target, but the business is super-serious in how it intends to achieve its ends.

"Scent is one of the key elements of the design," explains Dr Alexander Los, VP of design and director of product development at Sirius Aviation. "When you get into a BMW car you always know it's a BMW. That takes a huge engineering effort, as each structural and interior material needs to be composed with a scent you recognise, which is attractive and pleasant for the passenger. It's not about impregnation, it's about the selection of the material itself that provides the smell. For high-end passengers, every aspect of the design matters, and what you smell is one of the design factors."

our [interior] material choices," says Forsgren.

Given eVTOLs' smaller size compared with business jets, maximising light, space and the feeling of space are common concerns. There are also details that some seem to have solved by making major changes to the cabins. For instance, in the AutoFlight Prosperity I, FSD has been able to increase localised passenger headroom, lower the seats' H-points and made windows bigger. "The original concept sketches explored a full-height transparent side glass [panel] from floor to ceiling, however it was deemed too daunting for passengers," says FSD. "Thus the belt line was shifted to align with the side armrests, which still provides an exceptional view out in comparison with conventional aircraft. Weight is critical, so the front windscreen was reduced 10% in size to allow for huge weight savings without impacting the overall view out."

TOP & ABOVE: THE XPENG AEROHT EVTOL DESIGN

MAKING AN ENTRANCE

There's also a bit of automotive-style drama to one of its doors. On the left a gullwing door opens upwards, which makes the second- and third-row passengers very accessible, while on the right, there is a singular pilot door at the front that hinges upwards on the A-pillar with a folding armrest, to ease entry for the pilot.

It's an entry approach also taken by tangerine for Volkswagen's Sky Garden – with only one large upward swinging door plus a loop-shaped step well integrated into the vehicle's body to aid ingress and egress.

"The internal space of the eVTOL is very similar to a car, so lots of automotive references were used as design inspiration," explains Weiwei He, tangerine's lead designer on the project. "At the same time, this is a flying experience, so we prioritised the views of urban landscapes by maximising the size of the windows surrounding the seating."

Time will tell which eVTOL brand will get into the skies commercially first. That's still a fluid situation, although 2025 seems the earliest possibility, in part due to the arduous nature of obtaining various global certifications. Meanwhile, the cross-pollination of ideas resulting from the input of designers from different industries continues to fascinate.

A modular flying car

While most of the eVTOLs creeping closer to commercial reality are more 'flying taxi' than 'flying car', Chinese automotive newcomer Xpeng – via its aviation offshoot Xpeng AeroHT – recently revealed two vehicles in the latter category.

The first is a MPV-like six-wheel vehicle called the Land Aircraft Carrier, which has a two-person 'air module' for low-altitude flights. The second is an eVTOL that looks like a conventional car but with multiple rotors on arms that sprout from its roof. On the inside, when preparing for flying mode, the multifunctional yoke retracts to give better access to the screen, and a joystick becomes the primary method of control.

Of the two vehicles, Xpeng AeroHT's official line is: "Considering policy, regulation and application factors, the production and delivery of the modular flying car will precede the eVTOL flying car."

With electric cars already in production, and backing from Chinese tech giants Alibaba and Xiamoi, Xpeng is one to watch.