Aircraft *interiors* INTERNATIONAL

2020 DESIGN SHOWCASE

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THE ESSENTIAL GUIDE
FOR CREATING THE NEXT GENERATION OF AIRCRAFT INTERIORS

2020 DESIGN SHOWCASE

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A SUSTAINABLE FUTURE

Addressing the challenges of future mobility is reflected in the work of Almadesign, a Lisbon-based design consultancy that has been driving innovation through design for the last 22 years

From designing the next generation of regional electric aircraft with Eviation's Alice, to developing Urban and Regional Air Mobility solutions such as the Flexcraft S-TOL and designing the wide-body A330neo "first to fly" project with TAP Air Portugal, Almadesign projects always start with a focus on the passenger experience, using design as a tool to bring together people, skills and capabilities to create a sustainable future.

1

EVIATION ELECTRIC AIRCRAFT

The electric revolution made history this year at Paris Airshow when Israel-based Eviation presented Alice, an all-electric nine-passenger aircraft. Almadesign worked closely with Eviation to design, develop and build the prototype cabin interior, creating a brand new passenger experience for the zero emissions regional commuter. The project took 18 months, from kick-off to prototype presentation. Almadesign worked with Eviation within a strong partnership with a global supply chain, including companies from Israel, Portugal, France, Italy, Germany, Spain, Singapore and the USA.

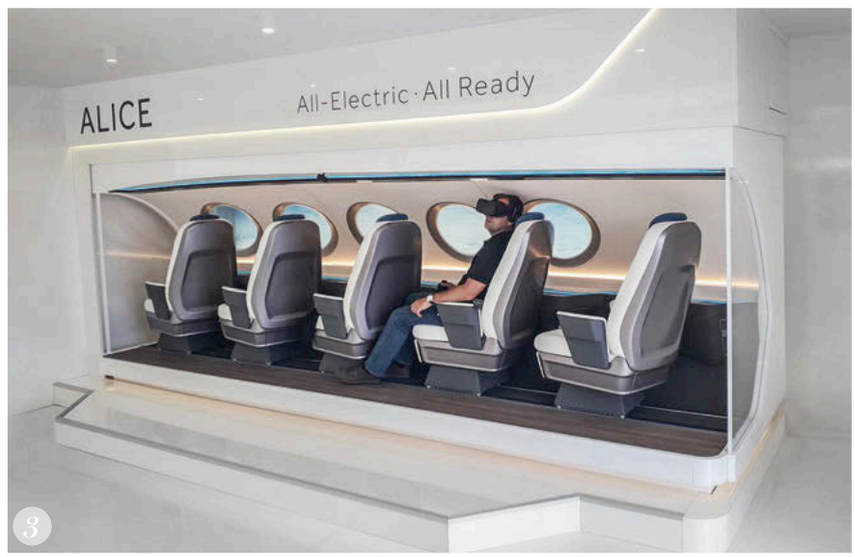
This interior is distinguished by its reverse herringbone seating arrangement, with passengers angled towards the extra-large cabin windows. The LOPA is asymmetric, with four left-hand seats and five right-hand seats. Each passenger has a living space which includes a large side console, storage space for small items and a charging point. Upon entering the cabin the seats are aligned with the direction of flight, but after take-off they can be rotated to become angled towards the window, creating greater passenger privacy, increasing headspace and providing a spectacular view.

2

Alice is powered by electric motors and all systems in the aircraft are electric-based, enabling highly efficient, zero emissions commuting. The design intervention, done in a close cooperation with the Eviation Design team, focused

"ALMADESIGN PROJECTS ALWAYS START WITH A FOCUS ON THE PASSENGER EXPERIENCE"

Cape Air has been announced as the first airline customer for the Eviation Alice aircraft



1. EVIATION'S ALICE CABIN HAS A REVERSE HERRINGBONE SEATING CONFIGURATION

2. HYBRID-ELECTRIC FLEXCRAFT FOR ON-DEMAND AIR TRANSPORT

3. THE ALICE CABIN DESIGN BEING EVALUATED USING VR TECHNOLOGY

4. THE TAPERED CABIN OF ALICE REQUIRED EXTENSIVE COCKPIT DESIGN WORK

on designing new seats, the whole cabin interior including the lavatory, as well as the cockpit, instrument panel and pilot seats. The composite fuselage has a unique aerodynamic and efficient shape, which was developed by Eviation, enabling a highly customised, dynamic interior. Although the side consoles are angled, a modular system was developed for the interior parts and their assembly, allowing for a high-end aesthetic with feasible production processes.

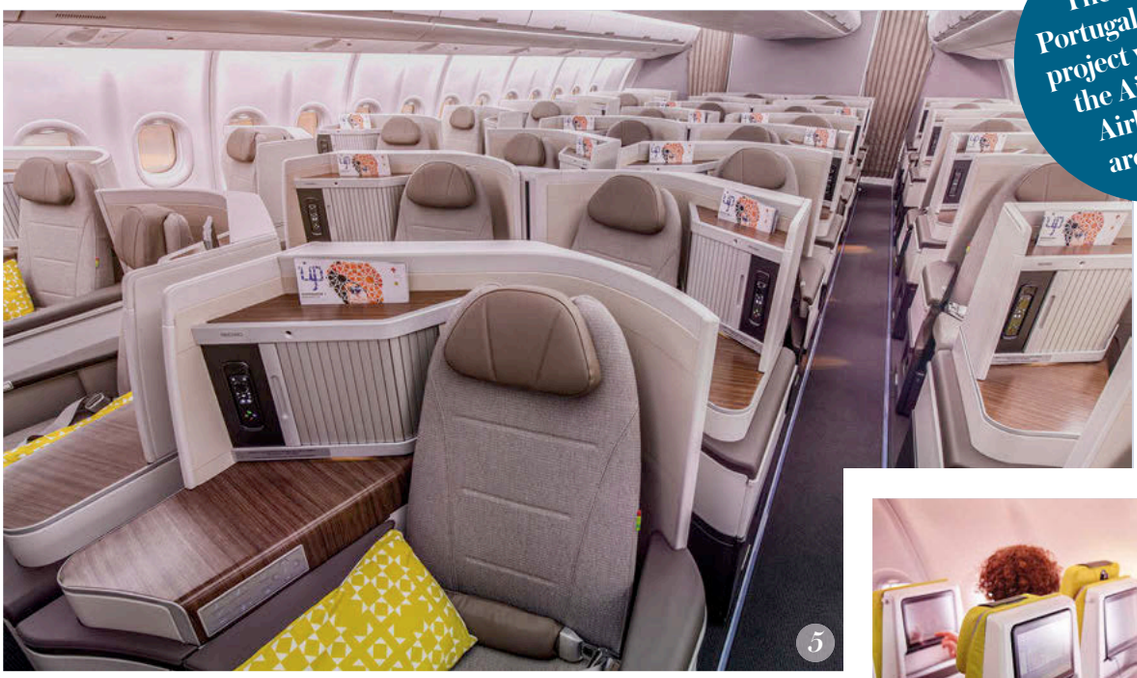
From the seats to the side consoles, weight was a primary concern, with composite materials and aluminium structures used to produce lightweight parts. Elements such as polished aluminium logos on high-gloss surfaces were used to enhance the Eviation brand.

The cockpit proved a big challenge for the design team, as the fuselage tapers towards the front end and the windscreen is very large. The pilots' ergonomic constraints, such as visibility, free space and reach, had to be considered while integrating the glass cockpit, switches, rudder pedals, controls and side sticks. A coherent design language was maintained throughout the cockpit, to create a functional and comfortable workspace and a high-end look and feel. Almadesign also developed a VR cabin walkthrough experience to validate the design solutions together with Eviation before prototyping, bringing knowledge from different areas to improve the design processes.

"It has been a wonderful journey with Eviation towards a future of zero-emissions flight," says José Rui Marcelino, CEO of Almadesign.

THE PASSENGER EXPERIENCE

It was during The Future of Transportation World Conference that Almadesign unveiled the first outcomes from the Flexcraft (flexible aircraft) project,



The TAP Air Portugal A330neo project works with the Airspace by Airbus cabin architecture

5. TAP'S A330neo CABINS ARE FITTED WITH RECARO CL6710 BUSINESS CLASS SEATS

6. TAP HAS FITTED RECARO CL3710 ECONOMY CLASS SEATS IN THE A330neo, WITH 12IN IFE DISPLAYS

"THE STUDIO WORKED ON TRANSLATING THE TAP AIR PORTUGAL BRAND INTO EVERY DETAIL OF THE CABIN"

focussing on the opportunities of hybrid electric propulsion and modular aircraft architectures. Urban and regional air mobility vehicles have emerged as a future trend against a backdrop of increasing urbanisation, road congestion and advances in electric and hybrid propulsion technologies and autonomous systems. New trends in mobility services such as mobility on demand, mobility as a service and shared mobility have also seen significant developments in recent years. Flexcraft is focused on developing an on-demand urban air transportation solution with a great passenger experience, achieved by designing innovative cabin layouts and modular fuselage configurations.

The project brings together the expertise of a consortium of companies and institutions (Almadesign, IST, SET, Embraer and Inegi) in the fields of industrial design, aeronautical engineering, process engineering and aircraft manufacturing. The Flexible Aircraft will be tested using a remotely-operated scaled demonstrator, an innovative manufacturing process already presented this year at Paris Airshow, and a full-size cabin mock-up that will be unveiled at Aircraft Interiors Expo 2020, bringing together all players to make urban and regional air mobility a reality.

THE TAP A330neo EXPERIENCE

The A330neo project is part of TAP Air Portugal's strategy to become a modern, efficient and competitive flagship airline, with its Lisbon hub being a key European gateway to the world. Almadesign's team worked closely with the airline to define its brand values and to create an interior identity for the Airspace cabin. The project started with discussions with all suppliers, from Airbus to seat manufacturers.

The cabin LOPA offers generous personal space and comfort to improve the TAP passenger experience. The studio worked on translating the Portuguese brand into every detail of the cabin to help create seamless travel experiences for passengers. The different classes integrate a 'smart freshness' concept, with textured materials and colour accents and a 'Mediterranean luxury' concept which enhances the sense of comfort through the selection of textured natural fabrics, wood finishes and earth tones.

Light can play a key role in cabin comfort and affect passengers' behaviour and well-being. The Airspace cabin brings this idea to life with a window of light in the welcome-effect ceiling, filtered by a pattern of Portuguese tiles. Passengers experience dynamic colour changing during each flight phase, creating different ambiances. These elements contribute to defining the on board experience and create the first contact with the TAP brand when boarding. The designs reinforce the airline's brand identity and reposition TAP's service standards in its long-haul growth strategy.

Almadesign's broad experience across other industries – with more than 500 projects in the automotive, product and retail areas – has led the team to develop other projects such as solar-powered boats and electric and fuel-cell powered buses. All these projects have one thing in common: the aim of a sustainable future with an improved passenger experience.

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