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Management



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ECONOMY COMFORT

Yves Hendrickx, creator of the LSEAT, has come up with an improvement for passengers in coach class

Flying long-haul in economy is convenient and cost-effective, but rarely can it be described as comfortable.

Airlines are keen to make the best use of space and specify high-density configurations for the coach section. As passengers are unlikely to rebook with an airline that leaves them feeling cramped and jetlagged, something must be done.

A further issue is the risk of deep vein thrombosis, which can occur particularly when the passenger is folded into a seat and forced to be still for hours.

Enter industry veteran Yves Hendrickx with an invention that he hopes can help. He has developed a product known as the LSEAT, which effectively puts a lie-flat bed over the existing seat. It has

▼ The mechanism can be fitted to existing seats



“We had to find a solution that would work with any type of aircraft flying long or medium range and that could adapt to any supplier of seats”

YVES HENDRICKX
creator of the LSEAT

a simple mechanism powered by the passenger's own body weight to swap between seat and sleep mode which doesn't require any power to operate.

The passenger can then 'lie' flat forwards and downwards in a sort of diagonal pose, without inconveniencing anyone in front or behind them.

Successful show

Following a successful showing at AIX, where Hendrickx says that he counted 211 airline representatives trying the invention, it has been announced that the LSEAT will be available on a rental

per installed seat basis with a three-year contract covering maintenance and warranty.

“We had to find a solution that would work with any type of aircraft flying long or medium range and that could adapt to any supplier of seats,” Hendrickx explains, adding that no-one had deep enough pockets to pay for recertification on every type of seat.

Fortunately, a way forward was found. “The regulations are that if a cushion is raised by half an inch or less it does not need recertification, but any more than that and it will do,” says Hendrickx. “That means our system – where we insert the mechanism to slide forwards and downwards – has to be less than half an inch high, as well as meeting all of the other requirements, such as it must be made from traceable materials and aviation grade metals.”

The product can be retrofitted on existing seats in a short amount of time (said to be under ten minutes by the manufacturer) and has been designed as a ‘minor modification’ under the FAA/EASA procedures.

The LSEAT has been designed to be able to fit as many makes and variations of seats as possible without need for design modification.

It also had to be designed to quickly retract in the event of an evacuation. As such, it has been designed with a spring to retract it that can withstand 19G.

“Besides this, there was about 20 other points to work through, which is why development has taken three and a half years,” explains Hendrickx.

Once installed, the LSEAT should offer an important point of difference for any airline. We'll be interested to see it taking to the sky sometime soon. ●





ECONOMY COMFORTS

The rise of long-haul low-cost travel presents new challenges for seat designers

In this magazine we pontificate endlessly on premium seats with every design change, no matter how minor, examined in minute detail.

So it is easy to forget that the vast majority, some say 86% of passengers, fly in economy. On long-haul routes, airlines try to make the experience more bearable for passengers with seat-back screens, charging and a supply of drinks and snacks.

None of this can make up for a lack of personal space for passengers, particularly as operators look at ways to fill the back section of the plane. For example, long-haul LCC French Bee operates transatlantic flights on an Airbus A350-1000 with a 10-abreast 3-4-3 configuration and we doubt that it will be the last operator to do so. It isn't just Airbus either. It looks like the upcoming Boeing 777X will be similarly laid out.

The issue of flying on longer journeys in a cramped space goes beyond simply making passengers a little uncomfortable. Immobility when flying can develop different pathologies, such as deep vein thrombosis and pulmonary embolism, dubbed by

Professor Donald Cruickshank as 'Economy Class Syndrome'. Obviously, airlines are keen to avoid inflicting this on their passengers, and that is where good seat design comes in.

Seat designs

Despite the space constraints, seat manufacturers take ergonomics seriously. Mirus, known for its lightweight ranges of economy class seats, has invested a significant amount of resources in making them as pleasant as possible.

"Our commitment to passenger comfort is at the heart of every seat we design," says Adam Challenor, technical director at Mirus Aircraft Seating. "From cushion height to armrest shore hardness, we carefully consider each element of our seats, maximising passenger comfort and living space at every opportunity."

Challenor shares the process the company follows as it puts together new models. "Each seat we design begins with a basic mock-up which we upgrade and



modify at numerous points throughout the project to ensure every design decision adds ergonomic value. Further to this, we run extensive comfort trials and pressure mapping activities on new and existing seats with a wide range of potential users, considering the passengers' varying weights, heights and sex.

"These trials ensure an awareness of how our seats perform on longer journeys, given the growing demand from airlines for high density space-saving economy class seats for long-range flights."

The design of the seat depends on the average length of the flight, as Alastair Hamilton, vice president of sales and marketing for interiors at Collins Aerospace, explains. "The purpose of a widebody, long haul aircraft with an average flight time of six to eight hours brings forward a specific set of criteria and features for considerations that are different when compared to a single-aisle, low cost carrier with an average flight time of two to three hours."

Collins is best known for the Pinnacle economy seat, said to be flying in a third of the world's narrowbody jet fleet. The seat features the patented Crystalflex cushion system. However, this design could be superseded by a prototype known as 'Helix' which we first spied at AIX in 2024. The new design is visually similar, but incorporates an updated frame which improves the seatback angle which the company believes will be more comfortable for passengers.

Hamilton continues: "We identify those needs with our customers and meet their requirements. From our customers we see demand for passenger comfort, cabin optimisation and

increased passenger experience. We work very closely with our customers to continuously develop and install new features and elements into a cabin."

Recaro is one of the best-known names in economy class seating and has for many years provided products that keep passengers comfortable. The latest of these seats is the R3 long-range economy class model, seen at this year's AIX. Design tweaks offer an improved living space for passengers, providing enhanced legroom and ergonomic support, while being about two kilograms lighter than its predecessor.

The seat has been ordered by airlines that have the new A321XLR on order. Thai Airways, Aer Lingus, China Southern and Iberia are known customers of the R3.

Commenting on the seating, Yongchao Zeng, executive vice president of China Southern says: "For China Southern Airlines, comfort in our passenger's travel experience is a top priority. We are proud to partner with Recaro, which is renowned for its heritage of delivering highly ergonomic and comfortable seats." China Southern was already a client of Recaro, having



▲ Adam Challenor, Mirus

86%

The vast majority, approximately 86% of passengers, fly in economy

▲ Collins' 'Pinnacle' seat, one of the most popular economy seats worldwide

"MIRUS, KNOWN FOR ITS LIGHTWEIGHT ECONOMY SEATS, HAS INVESTED A SIGNIFICANT AMOUNT IN MAKING THEM AS PLEASANT AS POSSIBLE"

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DEGREES

LSEAT offers a device that fits over the existing seat frame and extends out to give a type of diagonal lie-flat bed with a 40-degree seat extension

“OUR PASSION FOR FLYING IS WHAT DRIVES US TO PURSUE ONGOING DEVELOPMENT OF SEATS FOR THE ECONOMY CLASS CABIN”

previously equipped its fleet with 8,270 pax of the CL3710 seats, a seat similar to the R3.

“Our passion for flying is what drives us to pursue ongoing development of seats for the economy class cabin,” says Dr Mark Hiller, chief executive officer of Recaro Aircraft Seating.

Future developments

One aspect about economy seats that has always been an issue is the inability to fully recline. However, one innovation that might make economy travel a little easier is the LSEAT. It offers a device that fits over the existing seat frame and extends out to give a type of diagonal lie-flat bed with a 40-degree seat extension.

Yves Hendrickx, the inventor of the concept says: “The regulations are that is a cushion is raised by half an inch or less it does not need recertification, but any more than that and it will do. Our system where we insert the mechanism to slide forwards and downwards had to be less than half an inch high, as well as meeting all of the other requirements, such as it must be made from traceable materials and aviation grade metals.”

A list of around 20 other design points required to meet specification were worked through in a process that took around three and a half years. Hendrickx proposes leasing the product to



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airlines in a deal that includes maintenance and installation. If successful, it will change the way passengers view economy travel.

Another interesting development is a product that we spotted in the shortlist for this year's Crystal Cabin Awards. CMG (Comfort Motion Global) has developed a technology originally designed for the automotive sector that deals with fatigue and diminished blood flow by means of small, automated seat adjustments that redistribute body weight and promote better circulation, minimising the risk of stiffness, swelling and deep vein thrombosis.

This technology provides a seamless, therapeutic experience, described by on the company's marketing materials as “moving from one comfortable position to another like melting butter”.

Dr. Paul Phipps, CMG's chief medical officer and director of research and development, comments: “Our technology is a game-changer in addressing the physical and psychological challenges of prolonged air travel. Healthy Motion Seating improves passenger well-being by enhancing comfort, boosting circulation and reducing the discomfort that often accompanies hours of sitting.”

The product is a software solution rather than a standalone seat. As such, it can be deployed to aircraft seating that already has stepper motors installed. This might mean it reaches the premium seats first, but if successful it could be rolled out in time to the largest part of the cabin. ●

1. Recaro R3 in Iberia A321XLR
2. LSEAT installation



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