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FOR RAILWAY SEATS



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# In full flow

## A Portuguese consortium has come up with a railcar seat loaded with material and technological wizardry

In September 2009, a consortium of Portuguese companies initiated Project Iseat, with the aim of developing a seat for long-distance and high-speed trains using integrated, lightweight, comfortable and eco-efficient solutions. The Flow seat is the outcome of that project.

The name 'Flow' reflects the design's flowing lines and feeling of suspension. The seat cushions, armrests and backrest are suspended from the structural elements (central console and column) for a light 'flying carpet' aesthetic. Extending this feeling of lightness, the seat makes extensive use of advanced lightweight materials (composites) to constitute the structural elements that form this support.

Passenger comfort is addressed by features such as seat rotation around the central console, which enables the adjustment of the seat in line with travel direction. Accessories include sockets, USB and audio connections, cup holders and a litter bin.

The back panel includes accessories such as an LCD entertainment screen, magazine rack, table, seat numbering, footrest, handle and reading light. The backrest and seat folding system move together to offer a reclined position, while the headrest boasts two folding lateral supports with integrated lighting.

A set of controls in the armrest is assembled under the leather in such a way that all physical contact happens between passenger and leather. The consortium calls this 'Skin2Skin' technology. With Skin2Skin, passengers control all the technological aspects of the seat, for example selecting the audio/video channel or adjusting light intensity, without the ubiquitous plastic interface. Alongside the LCD display, the backrest includes a ticket validation system.

The backrest is made from a carbon fibre and cork (Corecork) composite sandwich panel, which is then covered in leather, employing different textures and punctured holes for strength

and to draw away perspiration. The consortium says the leather complies with all relevant industry standards, provides added comfort, durability and ensures a low cost of ownership through low maintenance costs. Corecork is designed to provide weight savings, in addition to comfort and thermal and acoustic insulation.

Project Iseat brought together the expertise of several Portuguese companies – including Caetano Components, part of a large group of bus and coach integrators (Grupo Salvador Caetano); Amorim Cork Composites, a supplier of cork solutions (Corticeira Amorim); Couro Azul, a leading supplier of leather for the transport industry (Carvalhos Group); and INEGI, a research and technology organisation with expertise in the development, design and prototyping of composite materials and structures.

The consortium worked with Alstom and Almadesign, a leading industrial design company, for technical and marketing consultancy. Nibble, an electronic systems specialist, provided input for lighting, interfaces and infotainment; while CIN, an Iberian company specialising in the production and marketing of paints and varnishes, provided the skills required for painting and finishing. The project also had the support of the Portuguese National Association for the Advancement of Railway Industry (PRIA).

Iseat was funded by approximately €900,000 (£779,630) from the Portuguese National Strategic Framework Programme under the Operational Programme for Competitiveness Factors and European Regional Development Fund. ☒

ABOVE AND BELOW: The Flow seat, designed for long-distance and high-speed routes

