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Global and China Automotive Seating Industry Report, 2022

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Automotive seating research: automotive seating enjoys an amazing boom in the context of autonomous driving

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As autonomous driving develops, vehicles, a simple mobility tool, are tending to be positioned as a "third mobile space" centering on human-vehicle interaction experience. As an important part of the "third mobile space", seating is also evolving in an intelligent direction. This report summarizes the main development trends of the automotive seating industry by combining the planning and layout of the world's major automotive seat suppliers and the seat configurations of marketed vehicle models and concept cars of OEMs in recent years.

1. Seating becomes more comfortable and intelligent.

From January to August 2022, China demanded 63.09 million units of new automotive seats, of which fabric, leather and artificial leather ones shared 21.7%, 18.8% and 47.8%, respectively. In terms of seat functions, seat heating boasted an installation rate of 7.9%, and 52.2% of vehicle models priced at RMB100,000-250,000 installed this function; the installation rate of seat ventilation stood at 2.7%, and 55.3% of vehicle models priced at RMB100,000-250,000 carried this function, of which the RMB100,000-200,000 models showed a rising installation; the installation rate of seat massage reached 1.1%, and the percentage of RMB200,000-350,000 vehicle models packing this function reached 49.0%, a surging rate mainly driven by Volkswagen ID Series, AITO, TANK 300 and Li Auto ONE.

Number of New Passenger Car Seats and Installation Rate by Function, 2020-2025E

	2020	2021	2022	2025E
Number of New Passenger Car Seats (10,000 Units)	9,598	10,332	10,435	10,697
Seat Heating	0.055	0.066	0.082	0.101
Seat Ventilation	0.01	0.019	0.026	0.037
Seat Massage	0.003	0.007	0.01	0.015
Seat Memory	0.024	0.033	0.037	0.067

Source: ResearchInChina

Carbon fiber composites become the first choice for lightweight seats

2. Carbon fiber composites become the first choice for lightweight seats.

Carbon fiber composite is a structural material compounded by carbon fiber and metal, ceramics, resin, etc. This lightweight, high strength material with a quarter of steel density and tensile strength higher than 3500Mpa, is a very suitable alternative to metal materials to make seat frames.

For example, in April 2021, Nobo Automotive Systems displayed a carbon fiber frame seat at the Shanghai International Automobile Industry Exhibition. The back frame of this seat is integrally formed with carbon fiber composites, and uses a small number of parts, reducing the weight by a staggering 35%. The high-end carbon fiber seat introduced by Zhejiang Tiancheng Controls in November 2021 adopts one-piece molding, thermosetting and injection molding processes, with weight about 30% lighter than conventional steel ones.

Carbon Fiber Frame Seat of Nobo Automotive Systems



Source: Nobo Automotive Systems

High-end Carbon Fiber Seat of Zhejiang Tiancheng Controls



Source: Zhejiang Tiancheng Controls

As well as use of new materials, suppliers also reduce seat weight through structural optimization and manufacturing processes.

For example, the UltraThin seat launched by Adient in August 2022 adopts the seat construction of thermoplastic elastomer (TPE) panels, reducing overall seat trim outline volume by 30%, overall seat part count by 10%, and overall mass by 14%.

Adient UltraThin Seat



Source: Adient

Recyclable and renewable materials help to achieve the goal of carbon neutrality.

3. Recyclable and renewable materials help to achieve the goal of carbon neutrality.

In response to energy conservation and emission reduction, suppliers put more focus on "green" and renewable eco-friendly materials in seat design and development.

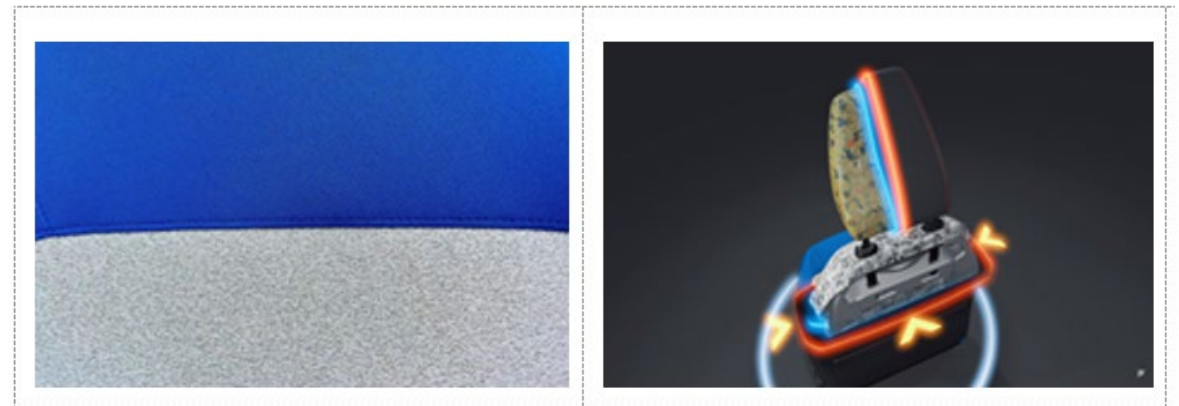
For example, in August 2022, Faurecia launched a new eco-friendly seat. The seat cover material is a recyclable material with a recycling rate of 85%, reducing 52% carbon emissions compared with conventional cover materials; the seat headrest filler uses foam material, a lightweight recyclable material based on the concept of blended fibers, with a recycling rate of up to 70%, slashing 56% carbon emissions. In February 2022, Hyundai Transys unveiled its future green mobility concept seat, a new seat concept co-created with Italian and Korean manufacturers using leather waste. The seat part uses recycled tanned leather; the seat backrest uses woven leather; the seat headrest is structured using recycled aluminum powder.

Future Mobility Concept Seat of Hyundai Transys



Source: Hyundai Transys

▲ Faurecia's Next-generation Eco-friendly Seat Cover Material (Left) and Recyclable Headrest Filler (Right)



Source: Faurecia

Intelligent technology redefines automotive seating comfort

4. Intelligent technology redefines automotive seating comfort.

Intelligent adjustment seats can be adjusted via mobile phone, voice or intention perception. For example, the SU seat launched by Yanfeng in 2022 has a pneumatic backrest that can sense the pressure distribution and adjust adaptively according to changes in the passenger's body size and sitting posture; the four-way pressure-sensitive headrest can automatically recognize the occupant's head position to intelligently adjust the height.

Xpeng G9 marketed in September 2022 packs an ultra-low frequency rhythm seat provided by Adient. The seat can vibrate with the beat of music, and move with the plot of the film source. Using artificial intelligence and other technologies, Hyundai Transys provides comfortable ride experience that matches body sizes of occupants, for example, the seat can make active adjustments according to body size, posture and habits of occupants.

Yanfeng | Pneumatic Self-Adaption Backrest



Source: Yanfeng

Music Rhythm Seat of Xpeng G9

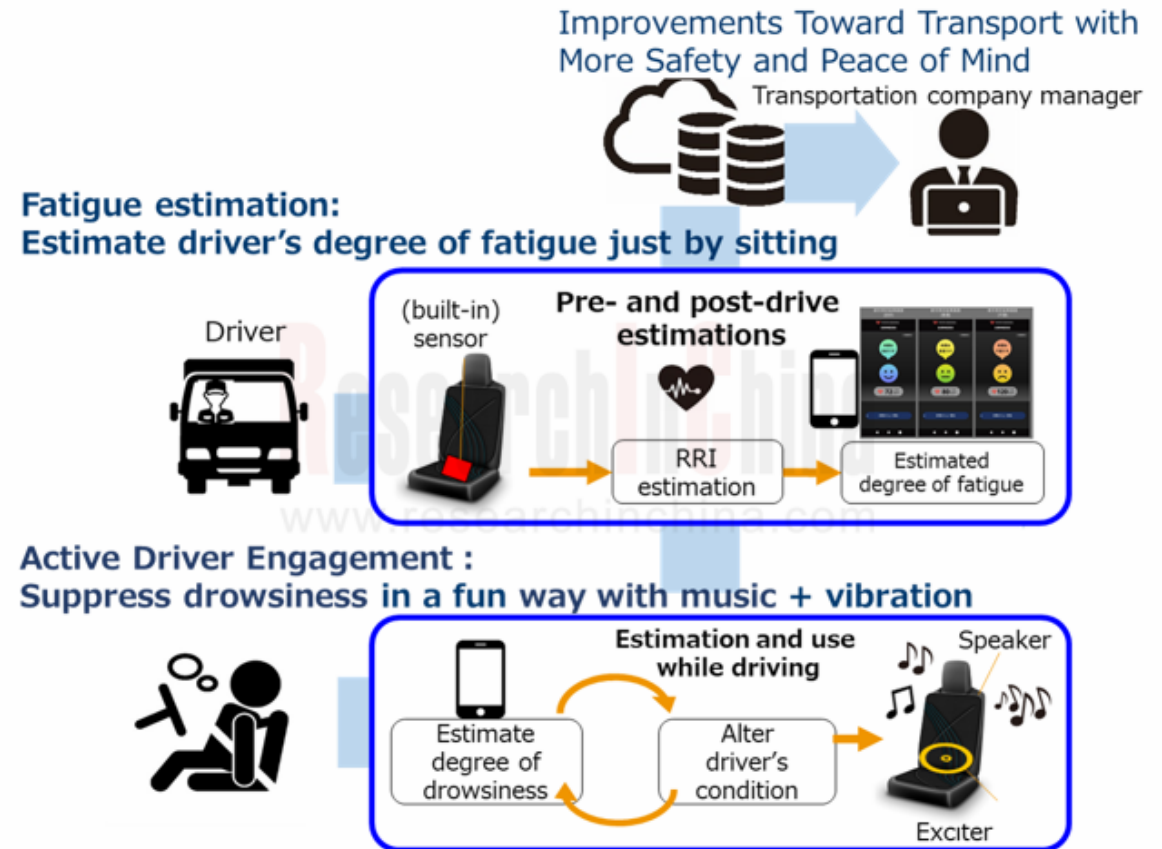


Source: Xpeng

Toyota Boshoku IoT Seat Cover Functions

The intelligent health sensor automatically senses health indicators such as heartbeat and breathing rate via the non-contact sensor installed inside the seat, and then automatically provides intelligent adjustments such as massage, music play and ambient light control, according to physical state. For example, in March 2022, Toyota Boshoku announced an IoT seat cover equipped with two systems: the fatigue estimation system that uses a built-in sensor to measure the driver's heart beat and thereby estimate their state of fatigue; the active driver engagement system that vibrates the seat cover and plays music accordingly to suppress drowsiness.

Demonstration of Toyota Boshoku IoT Seat Cover Functions



Source: Toyota Boshoku

Smart Surface of Yanfeng Zero-pressure Seat

Smart surfaces not only allow touch control on seats instead of conventional buttons, but display information. For example, the zero-pressure seat, integrated luxury seat and SU seat unveiled by Yanfeng in 2022 all pack smart touch control armrests that enable such functions as seat position adjustment, seat ventilation, heating, massage and leg drag, as well as one-button activation of zero-pressure posture.

Smart Surface of Yanfeng Zero-Pressure Seat



Source: Yanfeng

The "changeable cockpit" in the autonomous driving environment.

5. The "changeable cockpit" in the autonomous driving environment.

In the future, vehicle cockpits will not only be used for riding, but enables switching between different scenarios by flexibly adjusting seats, so as to meet people's needs.

For example, in the new intelligent cockpit IRS3.0 launched by South Korea's DAS Corporation in 2021, the seats carry ultra-long slides and allow 360° omnidirectional rotation, realizing six scenarios including social contact mode, conference mode and comfort mode. The cinema-style folding seat released by Yanfeng Seating in 2022 can be folded and slid to enable scenarios like commuting mode, family mode, travel mode and joy mode.

Six Scenario Modes of DAS Intelligent Cockpit IRS3.0



Source: DAS





Four Scenarios of Yanfeng Cinema-style Folding Seat



Source: Yanfeng Seating

Mobile Cockpit Solutions of Some Suppliers

Mobile Cockpit Solutions of Some Suppliers

Supplier	Release Time	Solution
	2017	AI18 Seat: five usage scenarios - lounge mode, communication mode, cargo mode, baby plus mode, and family mode.
	2019	New seating ecosystem: cargo mode, road trip mode, and mobile conference mode. Application: two of these modes will be brought into production as early as 2022.
	2019	Changeable cockpit ConfigurE+ system: enable social contact, business meetings, entertainment, cargo and other modes, making cars multifunctional.
	2019	Concept X-4: support multiple modes - relaxation mode, driving mode, and sinking mode.
	2021	Intelligent comfort system solution: the rear seats can be rearranged to form two independent seats, allowing passengers to lie almost flat in the car.





	2021	iNest 2.0 Intelligent Cockpit: three-zone driving mode - the steering wheel and the dashboard screen can be synchronized to enable the left, middle and right driving position movements, bringing three cockpit modes: driving, conference and entertainment.
	2021	The new intelligent cockpit IRS3.0: the seats pack ultra-long slides and allow 360° omnidirectional rotation, realizing six scenarios including social contact mode, conference mode and comfort mode.
	2022	Multifunctional mobile seating system: set 10 main scenarios for customers using mobility, such as parenting mode, health support mode and VIP mode.
	2022	Cinema-style folding seat: enable such scenarios as commuting mode, family mode, travel mode, and joy mode by folding and sliding the seat.

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