PHYSICAL ERGONOMICS

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Cars must be comfortable and driving them should be simple and intuitive.
Seats should be adapted to our postures and controls easy to reach.
But our bodies and driving habits are changing.
Ergonomists are constantly rethinking the design of the driver's seat in order to optimize interaction between a car and its driver and therefore improve safety.

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- Safety
- Environment
- Life on board
- Mobility
- Competitiveness

BASIC FACTS

Our physiques are constantly changing. Young people are taller on average, while the population as a whole is ageing. What's more, physical types can vary considerably from country to country. Yet young and elderly should be able to drive the same car efficiently and easily, irrespective of their physique and whether or not they are supple enough to perform certain movements.

For Renault it is not enough that future generations of vehicle should be easy to use in the functional sense of the term.
The main issue at stake in ergonomics is the design of cars that adapt perfectly to drivers, are easy to get to know, understand, drive, and manoeuvre. In addition to the fact that a vehicle that is easy to use and natural makes the driver feel good about him-/herself, feeling at ease at the wheel of a vehicle also lowers stress and enhances safety.
Every element and every control should be carefully designed and easy to identify, recognize, and use. What it does should be self-evident. In more general terms, the cabin should adapt to all occupants, ensuring they are comfortable and feel confident and safe in a car.

IN SHORT

IN ADDITION TO COMFORT ERGONOMICS HELPS TO BUILD A RELATIONSHIP OF CONFIDENCE BETWEEN A DRIVER AND HIS/HER CAR. BY KEEPING DRIVING-RELATED TIREDNESS AND STRESS TO A MINIMUM, ERGONOMICS IMPROVES SAFETY.

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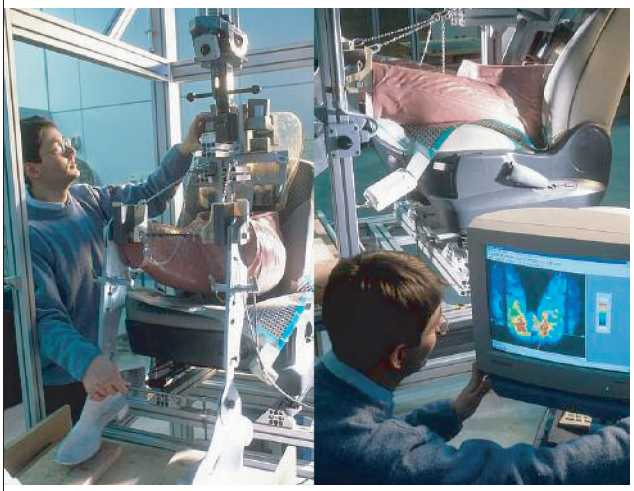
HOW DOES IT WORK?

Renault's ergonomists have built knowledge of the parameters that should be factored into the design of drivers' seats through tests both on prototypes and on conformateurs. A conformateur is a cockpit in a laboratory where each element can be adjusted for a more comfortable position and less effort. It enables individuals with different physiques to try out varied or innovative configurations. Surveys of real customers' behaviour and responses, followed by analyses of survey findings, supplement initial measurements and help to build a veritable ergonomics data base. But ergonomists do not limit themselves to drivers' positions. They analyse all the space in a cabin. Virtual dummies help them in their work. Determined from anthropometric data and able to simulate a very wide range of physiques, virtual dummies enable ergonomists to ensure that each control in a car is within easy reach and that a car is easy to get into and sit down in. Virtual dummies boast particularly life-like body movements thanks to the PC-Reflex system. It uses small reflecting targets placed on a person. A PC detects their movements through cameras and applies them to the virtual dummy. In this way it is possible to build up a data base of very realistic body movements, which enable the simulation of anybody's gestures and bodily movements in any cabin. PC-Reflex and the virtual dummies seek to ensure that the drivers' seats and passenger compartments are perfectly adapted to their users and that, in more general terms, their design and roominess ensures freedom of movement for passengers and drivers alike. Biofaithful dummies reproduce the suppleness of human body movements. They are used to check that seats are comfortable. Measures are taken using the system Tekscan, which consists of a cover incorporating over 4,000 sensors that is draped on a seat.
The system maps the points of pressure exerted on the seat by the biofaithful dummy and highlights the risks of discomfort. The dummy exerts more pressure on a seam or piece of stitching, for example, which could lead to discomfort on long journeys. On the other hand, when a dummy's weight is evenly distributed over a wide area of contact, comfort is guaranteed. Finally, working directly from parameters in a data base built from cross-referenced information, collected and measured in the different ways described above, enables ergonomists to operate life-like virtual dummies. One advantage is that they can take their seats in the virtual vehicles stored in CAD files on computers. This solution is useful for ergonomists, as it enables them to design solutions that immediately factor in drivers and passengers, while complying with vehicle specifications.



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