

4 decades of evolution in the development of a car

From compass to digital design

- / **Drawing tables up to 6 metres long give way to 3D sketches to create a car**
- / **Over 1,000 engineers work at the SEAT Technical Centre, five times more than 40 years ago**
- / **Electronics and new driver aid systems, key players in new extreme tests with prototypes**

Martorell, 07/06/2018.— A kit consisting of compasses, rubber erasers and onionskin paper as the main tools for designing a car has given way to the digital era. SEAT engineers who have participated in the launch of iconic models take us through the evolution in the process of creating and developing a model over the past 40 years:

-Up to six metres of paper: Today's designers work in front of a screen using the latest 3D technology, but four decades ago they gathered around a long drawing table to outline a full-scale car. **"Everything was done by hand with paper, ruler and compass, and of course no image editing programmes"**, recalls Ángel Lahoz. In the 80s, one of the challenges was to project the different sections of the model design, one on top of the other, onto the paper.

-From lead pencil to digital stylus: **"There used to be a single computer in each department for the manager's assistant and the rest of us worked at tables full of drawings and coloured pencils. It looked like an artists' workshop"**, says Lahoz. Today, this image has been replaced by interactive tablets and digital pens. Designers can now immediately apply corrections with a simple click, leaving behind **"the countless modifications made with rubber erasers"**, he adds.

-Two tonnes of plaster compared to 5,000 kg of clay: During the creation stage of a new model, sketches coexist with full-scale reproductions of the prototypes, making it easy to define the final shapes. Designers used plaster for the first generation Ibiza in the 80s, whereas today they use a clay-like resin **"which is much easier to mould"**, points out Lahoz. In addition, current technology produces **"great precision, down to a tenth of a millimetre"**. This more manual process is combined with virtual prototypes.

-Designers wearing HD glasses: **"When I began at SEAT, if they had told me how we would be working today, I would have thought it was science fiction"**, says Lahoz. Not only is it possible nowadays to design a model using virtual reality, but you can also experience first-hand what it feels like at the wheel. These new work tools guarantee the viability of initial sketches by around 90%.

-Twice as many simulations thanks to virtual reality: Virtual reality has become a key aspect in recent years in the entire development stage of a model. A further example of this is collision testing. 95,000 simulations were performed for the new Ibiza, which is twice as



many as for the previous generation. In addition, this new technology is able to analyse up to 3 million elements of a car, a figure that 30 years ago topped out at 5,000.

-The evolution of extreme tests: Before making their way onto the market, the models have to pass a series of tests in extreme conditions. **“Testing has changed a lot over the years”**, assures Jaume Camps, an engineer in charge of the extreme tests. Three decades ago the prototypes were already undergoing dynamic heat tests in desert regions and extreme cold in the Arctic Circle. The difference, emphasises Camps, is that the number of tests has now increased due to **“the addition of all kinds of electronics and driver aid systems”** in today’s cars.

-Five times as many engineers in the workforce: The SEAT Technical Centre opened in 1975 with 211 engineers and a surface area of 130,000 m2. Four decades later, this knowledge hub has a 200,000 m2 facility and more than 1,000 professionals.

SEAT is the only company that designs, develops, manufactures and markets cars in Spain. A member of the Volkswagen Group, the multinational has its headquarters in Martorell (Barcelona), exporting 80% of its vehicles, and is present in over 80 countries through a network of 1,700 dealerships. In 2017, SEAT achieved worldwide sales of nearly 470,000 vehicles.

The SEAT Group employs close to 14,700 professionals at its three production centres – Barcelona, El Prat de Llobregat and Martorell, where it manufactures the highly successful Ibiza, Leon and Arona. Additionally, the company produces the Ateca and the Toledo in the Czech Republic, the Alhambra in Portugal and the Mii in Slovakia.

The multinational has a Technical Centre, which operates as a knowledge hub that brings together 1,000 engineers who are focussed on developing innovation for Spain’s largest industrial investor in R&D. SEAT already features the latest connectivity technology in its vehicle range and is currently engaged in the company’s global digitalisation process to promote the mobility of the future.

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