

We THINK

We DO

We LIFT

DIECI

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ALWAYS ONE STEP AHEAD

How a
DIECI
machine is created



How a **DIECI** machine is created



Emilia has always been known as “the land of good food”, or alternatively “the land of motors”, depending on your preferences. On closer examination you will find that the two are inextricably linked, because it is from the land and the need to keep forging new tools to work it that world-famous brands have made their name. They include DIECI, which designs its machines based on the needs of operators in the construction, industry and agriculture sectors, ever focused on seeking out innovative solutions to the unique challenges faced in such sectors. The DIECI production plant is no less innovative: built to the latest industrial architecture specifications, it lies on the outskirts of Montecchio Emilia (RE), strategically located from a logistical and communications point of view. The plant occupies an area of 120,000 m², of which 40,000 m² is covered, and is divided into three buildings containing the sales offices, production lines (equipped with advanced machinery) and the Technical Office. The last of these departments is the company’s nerve centre, where the 144 current production models originated and where future models are taking shape even now. Alongside these structures is the testing ground, an area of over 20,000 m² with a 900-metre concrete track, an off-road test course and a 400 m² covered structure housing educational workshops, classrooms for training operators and a 60-seater grandstand with full views over the complex. This impressive facility is also environmentally friendly, insofar as all the structures have been designed according to the principle of thermal convection, while water treatment, vehicle washing and waste residue disposal systems comply with the most stringent current standards. This great company is one of the industry’s major global players, with over 70% of its machines exported abroad, three European subsidiaries (DIECI France, DIECI Deutschland GmbH in Germany and DIECI Telehandlers in the UK) and an extensive and efficient dealership network, including in leading markets such as the United States, Canada, Central and Latin America, Turkey, the Middle East, South Africa and Australia. But how do these machines, which are appreciated all over the world, come into being?





The design



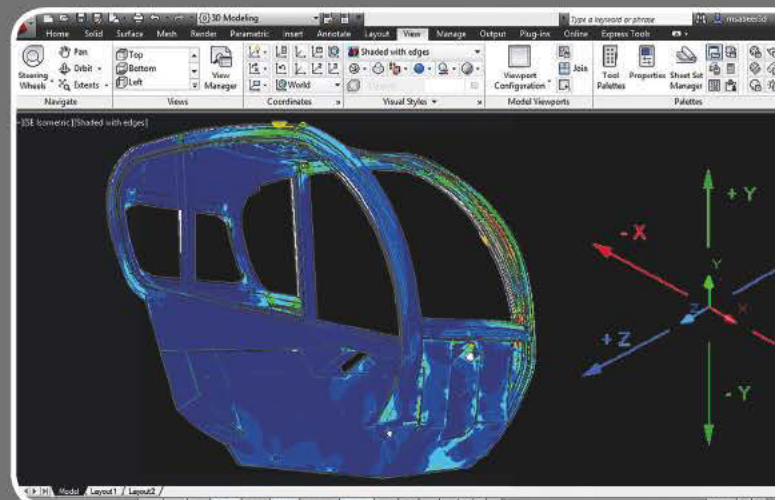
One dictionary definition states that “design” (or “creativity”) stems from “...the need to give an answer to problems and necessities”. It is based on this principle that the team at the DIECI Technical Office designs machinery for a wide variety of uses in every corner of the globe. The team has expanded from three employees in 1997 to 18 today, plus another four people engaged in the Research and Development division.

Every machine starts from a concept devised by an experienced, close-knit team of mechanical, electrical and hydraulic engineers, who draw up the design for an initial prototype that is subsequently built in the Research and Development area. Next is the pilot stage, when the prototype undergoes a series of tests to evaluate its performance and ensure that it meets the design specifications, safety regulations, approval and certification parameters, as well as the characteristics requested by the market.

Tests are performed on the test track and using specific equipment such as a roller bench (for performing tests in motion), a tilting platform (for stability tests) and the latest generation electronic instruments, which capture the data needed for the machine's development.

At the same time, the team formulates the process design, which involves preparing all the equipment (jigs, templates etc.) required for series production.

The Technical Office also includes a division dedicated to designing special machines, as well as developing customised machines based on standard production models that are fitted with particular features at the customer's request.





From raw material to semi-finished products



Once the design is complete, it is necessary to produce the various components that will form the chassis, which is the base onto which other components will be assembled to create the finished machine. The DIECI metalwork departments use advanced machinery such as laser and plasma cutting machines, which can cut metal sheets up to 40 mm thick, and folding machines that can generate a force of 800 tonnes and which make the moulded boom casings.

The various parts are then joined together at welding stations by anthropomorphic robots that autonomously identify and track the joints to be welded. After the welding stage comes the first quality control, where any imperfections are identified and corrected. All welded components undergo sandblasting to remove any welding slag and prepare the parts for spray painting, which is carried out in rooms with filtered air that prevent the ingress of dust and impurities.

Painting involves two stages: the application of a primer, which protects the metal from corrosion and facilitates the adhesion of the top coat. The paints are acrylic, water-based paints with excellent yield, durability and environmentally friendly properties, eliminating the pollution and flammability risks posed by the previous enamel-based paints.



From semi-finished products to the assembly lines

While the chassis begin their journey along the assembly line, the steel structures of the telescopic booms are assembled on special stands equipped with a hydraulic unit, in which pretesting is performed simultaneously in order to verify the correct assembly and functionality of the lifting system. The chassis then proceed simultaneously along seven assembly lines, where the vehicles begin to take shape and are prepared for installation of the engines: these power units are purchased from top manufacturers of commercial vehicle engines (FPT and Kubota to name a few), selecting models with the most advanced, high-performance features and that comply with emission limits (which vary depending on the machine's destination country). Before assembly, a special department prepares the engines for the various optional equipment required by the customer, such as extra filters, exhaust gas treatment, transmission, gearbox, power take-offs or other special equipment, which are configured for fitting. Once the engine is installed, the machine moves along the assembly line, where each of its components are fitted one by one: radiator, cowlings, cab, tyres and all the essential electronic and safety equipment that complements any modern vehicle. As with the previous stations, each assembly stage includes a control to ensure correct installation and complete functionality of each part. Once the boom is joined to the chassis, the machine assumes its final shape, although one rigorous final assessment still awaits it....





Testing



Each machine that rolls off the assembly line has the potential for a long and successful service life, but before “graduating”, it must first prove its credentials on the specially equipped DIECI test track where, in addition to the checks already carried out during assembly, the machine is subjected to stringent and rigorous testing. Every single unit, every individual customer request, every optional extra and, most importantly, every safety system is inspected and verified under actual operating conditions. Everything must work perfectly: if a problem is detected, the machine is returned to the workshop until the issue is eliminated. No dispensations are allowed, especially where user safety is concerned.

Finishing and shipping



Once pretesting is successfully completed, the machines are transferred to the finishing department, where the final touches are applied in the form of decals, fenders and wing mirrors. After a further final test of all its functions, the machine is ready to show the world what it can do! But for DIECI machines and the people who operate them, the next test is never far away...



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