



DENSO

PROJECT VISION

Denso is a Japanese multinational company specialising in the manufacture of components for the automotive industry. It was founded in 1949 as a spin-off from Toyota, and its headquarters are located in Kariya, in Aichi Prefecture, Japan.

It currently produces a wide range of products, from thermal and electronic systems to powertrain and safety components. It is also known for its invention of the QR code and its development of industrial robots

In Mexico, DENSO has four plants, the Apodaca plant in Monterrey — founded in 1996 — being the first and one of the most relevant at national level. Since then, it has been a driving force for industrial growth in the region.

In 2019, DENSO underwent a major expansion at its Apodaca plant, creating more than 500 new jobs. This growth triggered the need to modernise and expand their production lines, particularly in the area of printed circuit board (PCB) manufacturing, which led to the project we are proud to announce today.

The project carried out by Valtria by Clauger in Mexico consists of the construction of an ISO Class 8 cleanroom of over 3,000 m², designed to accommodate surface-mount technology (SMT) processes. This process (SMT) is an electronic manufacturing technique in which components are placed directly on the surface of a printed circuit board (PCB), without the need to drill holes as in traditional methods.

This contract award represents the first approach between DENSO and Valtria by Clauger, consolidating this new strategic opportunity with one of Mexico's largest auto parts manufacturers.

DENSO Autoparts is a benchmark in the national industry, participating in both the original equipment segment and the aftermarket. Its impact is significant: it generates more than 10,000 jobs in the country and produces more than 7 million parts per month, many of which are destined for export. Its leadership in the Mexican automotive sector positions it as a key partner for technological and industrial development.

The SMT process requires highly controlled environmental conditions, as it involves electronic components sensitive to particulates, humidity and temperature. Therefore, the ISO 8 classification is essential to guarantee the quality, reliability and durability of the products. This trend towards more controlled environments reflects an evolution in the automotive industry, which increasingly demands greater precision, traceability and efficiency in its electronic manufacturing processes.

This project not only responds to an operational need of DENSO, but also represents a great opportunity for Valtria by Clauger within the automotive industry, in companies that increasingly demand cleanroom solutions in controlled environments for specific processes in their supply and assembly chain. This allows us to enter a new ecosystem of highly specialised clients, strengthen our presence in the north of the country and reaffirm our commitment to excellence in engineering solutions for critical environments.



PROJECT PURPOSE

The main objective of this project was to support DENSO's operational expansion at its Apodaca plant, responding to the increasing technological demands of its electronic production. The work was structured in two new functional areas: Area A, with a surface area of 2,008 m², and Area B, with a surface area of 1,586 m², both with a clear height of 3.5 metres. These zones are integrated into the existing production lines, significantly expanding the plant's manufacturing capacity under a controlled environment that meets the highest quality standards in the industry.

The new rooms are classified as ISO 8, ensuring a low particle concentration environment, which is essential for Surface Mount Technology (SMT) processes. The environmental conditions set -23 ± 2 °C temperature and 50% relative humidity. To maintain these parameters, an HVAC system was designed with an injection flow rate of 160,000 m³/h and a cooling capacity of 260 tonnes, as well as incorporating a customised air showers system with a capacity for more than 150 people per shift, reinforcing the protection of critical areas against external contaminants.

As part of the cleanroom environment optimisation, the old Bioclad system (hygienic cladding) previously used by the client was replaced with a PIR sandwich panel wall solution with FM certification. This new configuration brings substantial improvements over its predecessor: higher fire resistance, better thermal insulation, high durability and lower maintenance requirements. The installation was complemented by walkable ceilings of the same technology, which represents an ideal solution to facilitate service and technical access, while ensuring the structural and operational integrity of the space.

PROJECT PLANNING AND ROLES

The project was managed by the Valtria by Clauger Mexico branch, through the commercial efforts of Edmundo Sánchez, who made the initial contact with DENSO during the Automotive Supply Fair in León, Guanajuato. This meeting marked the starting point of a relationship that, step by step, developed into a strategic partnership with one of the largest auto parts manufacturers in the country.

As an initial phase, DENSO presented a basic engineering, on the basis of which a technical and economic proposal was elaborated in line with its requirements. Following the relevant supplier evaluation and a strong commercial phase, Valtria was officially awarded the contract in December 2023. The construction phase began in early 2024, led by Engineer Juan Carlos Collin as Project Manager and main point of contact with the client, alongside Site Manager Gabriel Duarte, who coordinated the work directly on site.

In this project, multidisciplinary coordination has been key. The main actors responsible for implementation have been:

- Héctor Urbano, Director of the Mexico branch.
- Ana Atilano, Head of the Production Department and supervisor of overall operational management.
- Marcelo Melleta, Head of the Engineering Department and BIM Coordinator for the project, responsible for the technical integration of design and planning.
- Juan Carlos Collin, Project Manager, responsible for overall project management and in constant contact with the client.
- Gabriel Duarte, Site Manager, in charge of day-to-day execution and liaison with subcontractors.
- Edwin Carvajal, HSE (Health, Safety & Environment) Manager, ensuring strict compliance with safety and environmental standards.



The synergy between these professionals has enabled steady progress at every stage, reinforcing Valtria's commitment to operational excellence, technical precision, and on-site safety.

PROJECT CHALLENGES

The execution of the DENSO Monterrey project presented multiple technical and logistical challenges, mainly derived from the client's need to keep its operation active throughout the construction phase. Being two separate areas — Area A and Area B — and with production areas in operation, the coordination of access, space release and sequencing of activities became a real puzzle. The Valtria team had to adapt its planning in real time, moving forward in phases as the client cleared areas, which required flexible, precise and highly communicative management.

Another key challenge was the installation of three-stage air handling units — specialised technology for cleanrooms that was not common in DENSO's previous facilities. These units were roof-mounted, which involved complex lifting and anchoring operations, particularly in a plant with ageing infrastructure and limited technical access points.

For walls and ceilings, the client had previously used Bioclad-type cladding, a PVC sheet-based system which, while functional in general environments, offers limited performance in critical settings — especially in terms of airtightness, heat transfer, fire resistance, and ease of maintenance. Valtria proposed and implemented a PIR sandwich panel system with FM certification, offering key advantages: enhanced fire resistance, superior thermal insulation, dimensional stability, and a longer service life. This was further complemented by the installation of walkable ceilings — an ideal solution that facilitates maintenance without compromising the integrity of the cleanroom environment, offering performance far beyond that of PVC or Bioclad systems.

Finally, one of the most unique challenges was the custom design of an air shower system with the capacity to handle over 150 people per shift. This system was developed with particular attention to staff entry flows, avoiding bottlenecks and ensuring a smooth and safe transition into the clean areas. The result was an ergonomic, robust solution, fully integrated into the plant's operational pace.





SOME IMAGES











