

AUTOMOTIVE

From Zero to Future



The future is digital: cars as supercomputers, the Internet of Things (IOT), eye-tracking, wearables, and 3D printing are gradually becoming a reality. These developments are based on electronic components like sensors, opto-electronic components, processors, and connectors.

The more extensively the virtual world interacts with our real world, the greater the demands will be for reliable electronic components.

Individual components as well as integrated systems must operate safely at all times under all conditions: with fluctuations in climate or temperature or in extremely hot, cold, wet, or dusty environments.

Cobeal™ Clean Rooms offer: Versatility, Versatilidad, Air Flow Control, Quick Assembly Time, Easy and Economical Modifications and Reconfigurations

These requirements can only be met by components and systems produced under optimum conditions with state-of-the-art technology, already proven for its durability and reliability in corresponding tests.

Cobeal™ has developed innovative systems in the field of environmental controls, temperature processes and air conditioning. We have developed solutions especially for the electronics industry that meet the highest demands.

Test it. Environmental Simulation.

We offer custom test environments for your industry for the simulation of extreme temperatures, drastic temperature changes, vibrations and humid and dusty environments. These can be combined with our standard range of performance systems for weathering and corrosion testing in all weather conditions.

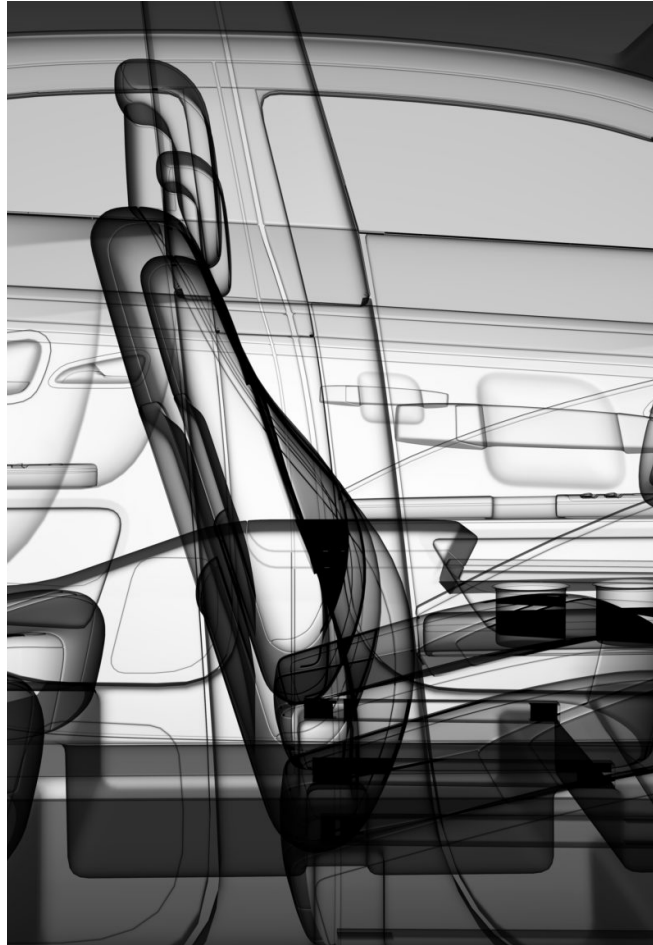
Heat it. Industrial Heating Technology.

We develop, plan and produce reliable heating systems of the highest quality. This helps us make customized solutions for you; for example, for the drying of coatings or cross-linking of plastic sheaths for sensors.

Cool it. Climate Control Technology.

Accelerate processes so you can take your product to the market faster.

Complex manufacturing processes and operating conditions require the best possible weather conditions. In addition to clean rooms and contaminant systems to protect people,



We love extremes, repeatable results, energy-efficient processes and excellent service.

Cobeal offers the kind of service you expect from experts in indoor air climate control.

products and the environment, we also offer air conditioning systems for optimal temperature control of IT equipment and operating units. As one of the leading providers of climate control technology, our experts will guide you from planning to the implementation of your projects.

Cobeal offers a wide range of production systems for the electronics industry. From chips to switches to heating, drying or vacuum ovens in clean rooms: with us, the focus is on your product.

Benefits to You:

- Short process times thanks to rapid heating and cooling.
- Consistent quality of the product due to its homogeneous distribution of temperature in the work space.
- Reproducibility through the use of components with consistently high quality
- Systems that adapt optimally to production.



For materials with a high proportion of solvents or flammable materials, we have developed drying ovens with special protection devices to ensure safe operation. Versions of these solutions are available for clean rooms, specifically for high precision electronic components.



At the micro-metric scale, a grain of dust is too large. Cobeal™ therefore developed clean room technology for various requirements, special systems for measuring rooms, contaminant systems and server cooling.

A Clean Room is a protected, zero-contaminated work environment where the concentration of airborne particles is controlled. Clean and controlled environments are used by a wide range of industries, and they play an essential role in modern production and research.

The control of molecular and particle contamination is crucial since smaller microns of dust or gas molecules can cause damage to automotive production. At Cobeal™, we offer a wide range of HEPA or ULPA air filters and air filtration systems for a variety of pollution control applications within our modular, hard wall and flexible wall clean room environments.

In the automotive industry, clean room processing is critical for the delivery of safe and effective components as the demand for parts assembled in an automotive clean room is high.

At Cobeal, we offer an integrated approach from planning to implementation, providing all the services and approved products necessary to deliver controlled environment solutions. We have a reputation for quality workmanship and we construct automotive clean rooms that have excellent maintenance reliability, energy efficiency, and overall value.

Servicios de sala limpia

- Design & Build
- Construction & Installation
- Training & Support
- Remodeling Works
- Clean room Certification
- Servicing Testing Validation
- Free Site Survey
- Clean room Planning
- Computer Aided Engineering
- Discounted Service Contracts
- Panel Repairs
- Control & Monitoring Management
- Differential Pressure Qualification
- Specializing Testing

Pass your stress test

Thermal shock test chambers

Environmental conditions have a great effect on the functionality and reliability of electronic components, devices, and systems.

These products are subjected to a large number of shock-like temperature changes, allowing latent weaknesses to be detected as quickly as possible. This provokes early failures, so that faults can be detected at an early stage of production and the life expectancy of the samples can be predicted.

With the Cobeal temperature shock test chamber, extreme rapid temperature changes ranging from -80°C a $+220^{\circ}\text{C}$ can be implemented. Our test chambers consist of two independently controlled chambers, one hot and one cold. These can be positioned on top of each other.

The specimens are placed on a lifting cage and rapidly transferred between hot and cold to achieve a temperature shock. The temperature levels and the number of cycles determine the severity of the test.

Generations of Cobeal test cabinets and chambers have been successfully used for many years in research, development, production, and quality assurance.

Test spontaneous temperature changes - to prevent shocks before they happen.



**Test to the limit:
only if the
individual parts
pass the test will
the entire system
work.**

Assembly of test chambers

Cobeal assembly test chambers are designed to perform constant temperature tests, tests of fluctuation of temperature and tests of operation of materials, individual components and finished products.

Traction test chamber

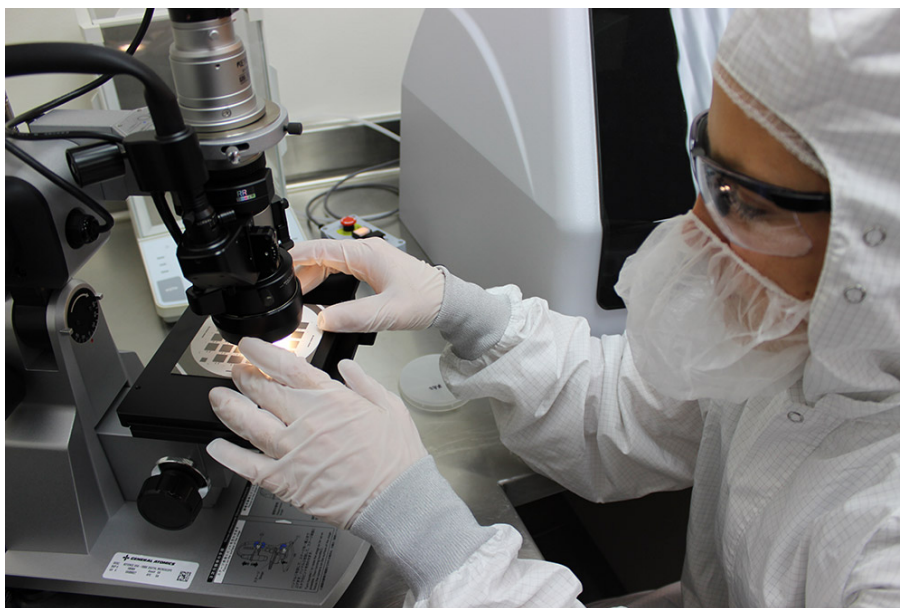
Environmental conditions during production, storage, transport and use have an effect on the function and service life of the products. Tensile tests must be carried out in specific climatic conditions to ensure the quality of materials. With the Cobeal tensile test climatic chamber, you can determine the behavior of the materials under realistic conditions.

Dust test chamber

Dust tests are mainly performed to test the functioning of electronic components under extreme environmental conditions. The dust is filled into the hopper below the test space.

The formation of dust within the test space is effected by injecting compressed air through four special nozzles. Due to the intensive air movement, the dust is blown into the upper test space and swirled around.

**Cobeal has improved its
value proposition by
providing completing the
manufacturing process
within its clean rooms. All
machining can occur prior
to assembly or on the job
site. This is as a result of
cutting-edge machining
technology.**



Cleanroom Features

- Good Manufacturing Processes (GMP)
- ISO 14644
- Environmentally Friendly
- Air Filtration
- Cleanroom Ceiling System
- Access Control
- Air Showers
- Desiccator Cabinets
- Horizontal Laminar Flow Clean Benches
- Laminar Flow Canopy
- ISO 4-9
- Low Power Consumption
- HEPA Filters
- Filter Fan Units (FFUs)
- Temperature Control
- Inter Lock Door Systems
- Unidirectional Airflow
- Horizontal Flow Wall Modules
- Laminar Flow Cabinets

Our clean room specialists will create and design an air filtration system with HEPA or ULPA filters of the highest quality, as well as effective air filtration systems to ensure that your automotive clean room works with the most advanced equipment available.

How Our Automotive Cleanrooms Work

The fresh air intake system ensures the necessary hygienic outdoor air exchange is maintained as well as air supply for the pressure cascade.

In the instances when increased air exchange is required, Filter Fan Units (FFUs) are used in recirculation mode to clean the air above the filter instead of using outdoor air. This solution enables significant cost savings to be made. In addition, we integrate cleanroom Class A sterile workbenches where necessary. This guarantees sterility.

Fume extraction units utilize a powerful fan and filtration system that pulls harmful airborne particulates away from the breathing zone and directly into the HEPA filter, which is up to 99.97% efficient on particles 0.3 microns and larger. Different filter mediums are used depending on the chemical vapors and particulates that are generated.

Our Laminar Flow Hoods are HEPA or ULPA-filtered. Our automotive cleanrooms utilize a powerful fan to draw in ambient air and purify it with high-quality filtration mediums to provide exceptionally clean, purified airflow inside the hood.



The automotive industry requires cleanrooms for a variety of different processes at various levels of the supply chain, from Tier I to Tier II and III. This can include CASS and other performance testing of paints and finishes, as well as quality assurance testing. Most manufacturers of automotive components are required to meet **ISO 9001** or **ISO/TS 16949** standards for production, and a cleanroom environment can help maintain the required standards of quality control.

Cobeal creates cleanrooms from design to installation to meet the needs of the automotive industry, for any application. Cobeal cleanrooms can be free-standing or make use of existing walls and structures and are made to be high-quality, durable, and high-performing. Our Rigid Wall Cleanrooms offer a high level of control over contamination, pressure, static, and humidity, and can be designed to comply with the strictest ISO standards or other quality management systems. Our Firm Wall cleanrooms offer flexibility and versatility without compromising control, and our Flexible Wall

cleanrooms boast a high degree of flexibility and work well for storage applications.

Our cleanrooms come with a number of options to meet your needs when it comes to air filtration systems with multiple stages that make use of prefilters and HEPA filters, laminar air flow systems that can be integrated with existing HVAC systems, and even cleanroom lighting, from standard to flow through modules.

Our solutions are deployed around the world in research, development, production and quality assurance of numerous products. Our experts are ready to provide support services to ensure high operational reliability of your systems.

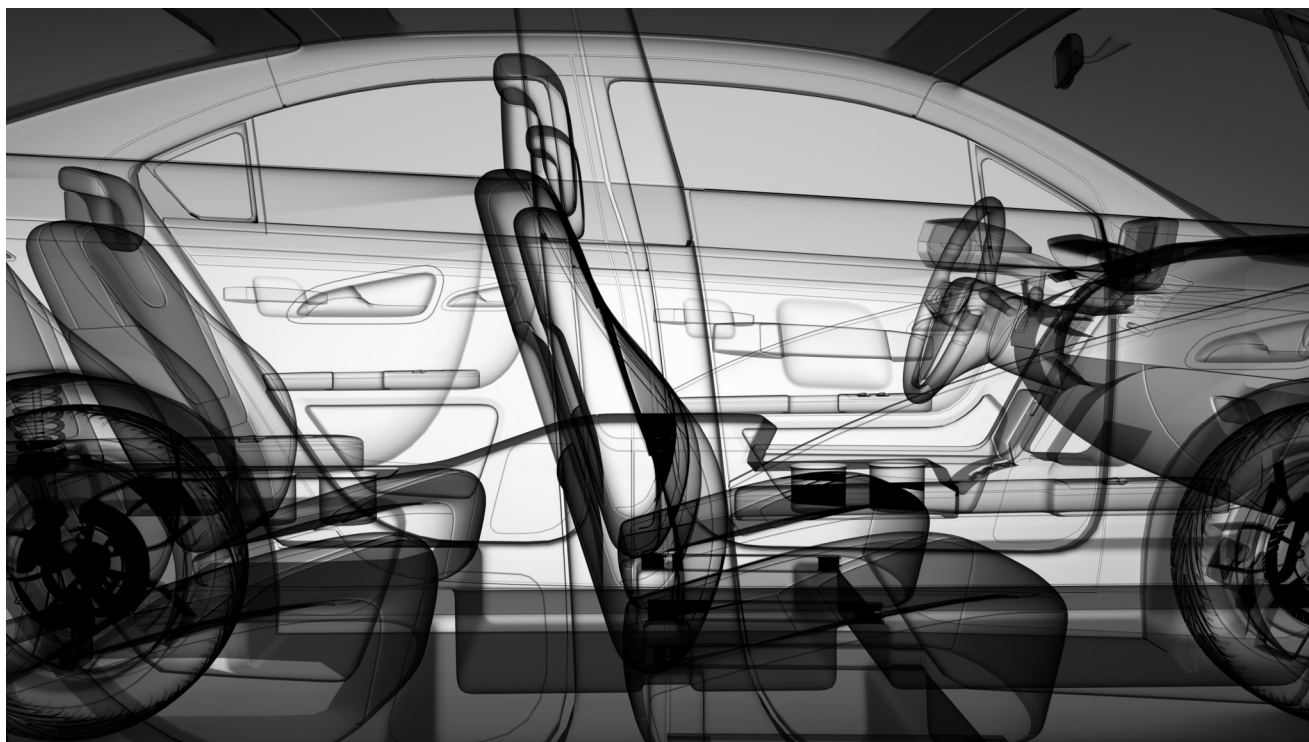
Cobeal is one of the leading manufacturers and installation contractors for environmental systems. With our testing systems, we can simulate all climate conditions around the globe. Whether temperature, climate, corrosion dust or combined shock testing: We have the proper solution. We supply systems in all sizes, from standard versions up to customized, process-integrated facilities - for high reproducibility and precise test results.

Cobeal offers a wide product portfolio in the field of heat technology. With an experienced team of engineers and designers, we develop, plan and produce high-quality and reliable heat technology systems for virtually any field of application. Products include heating/drying ovens, clean-room drying ovens, hot-air sterilizers, microwave systems and oven systems. The program reaches from technologically sophisticated standard versions to customized solutions for individual production operations.

To begin designing your automotive cleanroom, see our Design Guide For Cleanrooms, or contact us to discuss the design process of your cleanroom, as well as our installation and cleanroom remodeling services.

Our company also offers reliable climate solutions whenever people and machinery are challenged: in industrial processes, hospitals, mobile operating tents or in the area of IT and telecommunications technology. As one of the leading providers of clean-room and climate solutions - three generations - we deliver effective and energy-saving solutions and expertly guide you through your entire project, from planning to implementation.

Since 2004, Cobeal has been a provider of sophisticated cleanroom and contaminant solutions. The product range includes barrier systems, laminar flow facilities, security work benches, isolators and double door systems. The company emerged from Ventilación Industrial, S.A. (VISA™) in 1963 and has decades-long experience in filtration, dehumidification, and cleanroom design and construction.



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