ELEMASTER

International Design Centers

Innovation in Electronics

We have The IDEA

INDUSTRIAL DESIGN ELECTRONIC APPLICATIONS

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INTERNATIONAL DESIGN CENTERS **INNOVATION IN ELECTRONICS**

Elemaster Group is an ODM-EMS European leader in design and supply of electronic boards, complete products and system solutions for OEM Customers.
From Railways and Medical to Industrial, Automotive and Avionics sectors, we design advanced products, platforms for long life cycle, high reliability and mission, safety critical applications.
Electronic products development, co-development from concept feasibility to fast prototyping, from pre-serial to mass production: we create real turnkey solutions with the lower total cost.
Elemaster Group is present with its EMS facilities in all the continents, Europe, America, Africa and Asia.
The Design Centers do research and develop electronic application technologies in partnership with the major international chipset and components makers, we propose innovative solutions starting from state of the art to new architectural feasibility studies, simulation and proof of concepts of software, hardware, enclosures, mechanical components.
The wide range and multidisciplinary competences and the long experience coming from different sectors (railways, robotics, advanced medical technologies, automotive, energy) generate through the cross fertilization a unique rich environment where the creativity of the design teams can generate innovative, reliable, safe, green and cost competitive products.

In such a challenging and complex market, with more and more “drive by data” society, our Design Centers cooperate with institutional public and private Universities, National and International research centers, support and boost the business of new companies, start-up and inventors. Thanks to our international organization and network we can downsize the investments and the industrial risk, enabling a fast positioning of the products and solutions on the market.
The Design Centers ISO 14001:2015 develop and certify, as customers’ partners, starting from requirements to complete embedded platforms, hardware, firmware, software, radio frequency, product styling, mechanical engineering all under certified processes: ISO 9001:2015 for Industry, ISO/TS 22163:2017 for Railways ISO 13485:2016 for Medical, as unevaluable service is the internal accredited ISO/IEC 17025:2017 EMC test laboratory.
Experiences cover safety critical design according to IEC 61508, ISO 13849, EN 50128/9, and IEC 62304. Among safety critical design from SIL0 to SIL4.
The Design Centers are in Italy close to Milan (Lomagna), and in Germany to Stuttgart (Ulm).


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ELECTRONIC DESIGN

The best EDA instruments, like CAD, CAE, and CAM systems, support the teams of engineers of the Design Centers, in analog & digital design, power and RF developments from electronic embedded boards to complete systems.

Among the services, there are VHDL hardware description language design, FPGA, SOC (System On Chip), SOM (System On Module), micro-controllers, microprocessors, DSP ranging from 8 to 64 bit.

Experience with emerging engineering methods, structured development processes to cover RAMs, FMEA, FMECA, MTBF, FTA, V&V development cycle in addition with hardware and software Design Simulation, controlled/simulated EMC routing, and deep computing Simulation Analysis, enables Design centers to produce designs compliant at the first time with the European and International standards.

Modular and portable hardware and software functional blocks development, meet the most complex distributed embedded solutions. Low and High-level programming languages and object-oriented and graphical programming techniques are implemented to create standard software modules as a base also for future software block re-use and integration.

Modular, functional certified software “box” strategy guarantee long and reliable interoperability of the soft components for long life cycle products.

Abstract of application

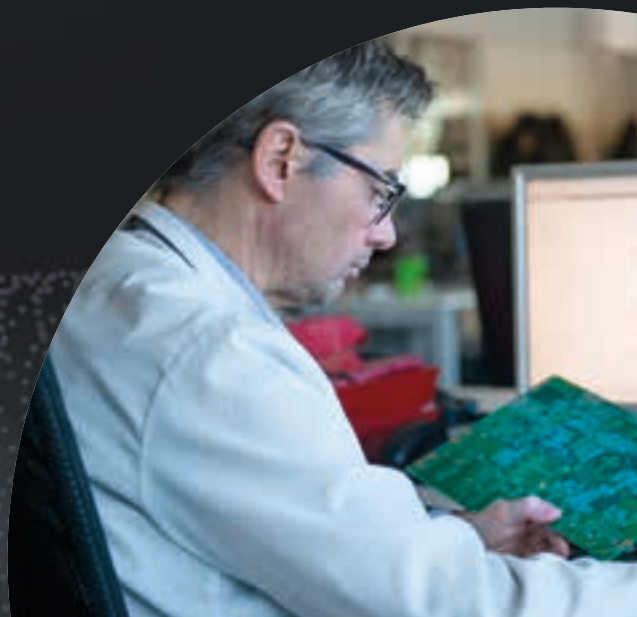
- Software development for gas meter device according to Software Guide Welmec 7.2 (Risk Class C for instrument of type P)
- FPGA SILx design for a large European railway car builder according to IEC 61508 and EN 50128
- SIL4 board microprocessor based for railway system, according to EN 50155,
- EN 50126/9.
- SILx software design (embedded microcontroller based device) for railway application according to EN 50128.
- Automotive safety critical traction control according to ISO 13849 cat 3 PL=D
- Various medical design according to medical standard IEC 62304 Class A/B/C
- Industrial safety critical design for robotic application according to ISO 13849 cat 3 PL=D.

HARDWARE INDUSTRIALIZATION

Hardware industrialization development team performs design, simulation and verification for functional safety design (SIL), ATEX, DTC (Design to Cost), DFM (Design For Manufacturability), DFT (Design For Testing), reliability analysis (MTBF, FMEA), environmental analysis (RoHS, REACH, conflict minerals), EMC/EMI/Safety/Environmental test in our laboratories for product certification.
PCB layout development team works with different CAD tools (Mentor Graphics, PADS, PADS PRO, Altium, Allegro Designer, Eagle, for simulation and layout analysis Ansys, Flowtherm, Hyperlynx, Polar)
is a very high value service for customers design teams.

SERVICES

- Library creation according to customer specifications
- Layout design in your target system
- Layout design at the customer's site
- DFM analysis
- EMV analysis
- Signal integrity analysis
- Power integrity analysis
- Thermal analysis
- Impedance calculation
- Specification of printed circuit board technology
- Supervision of the projects till final assembly of the PCB



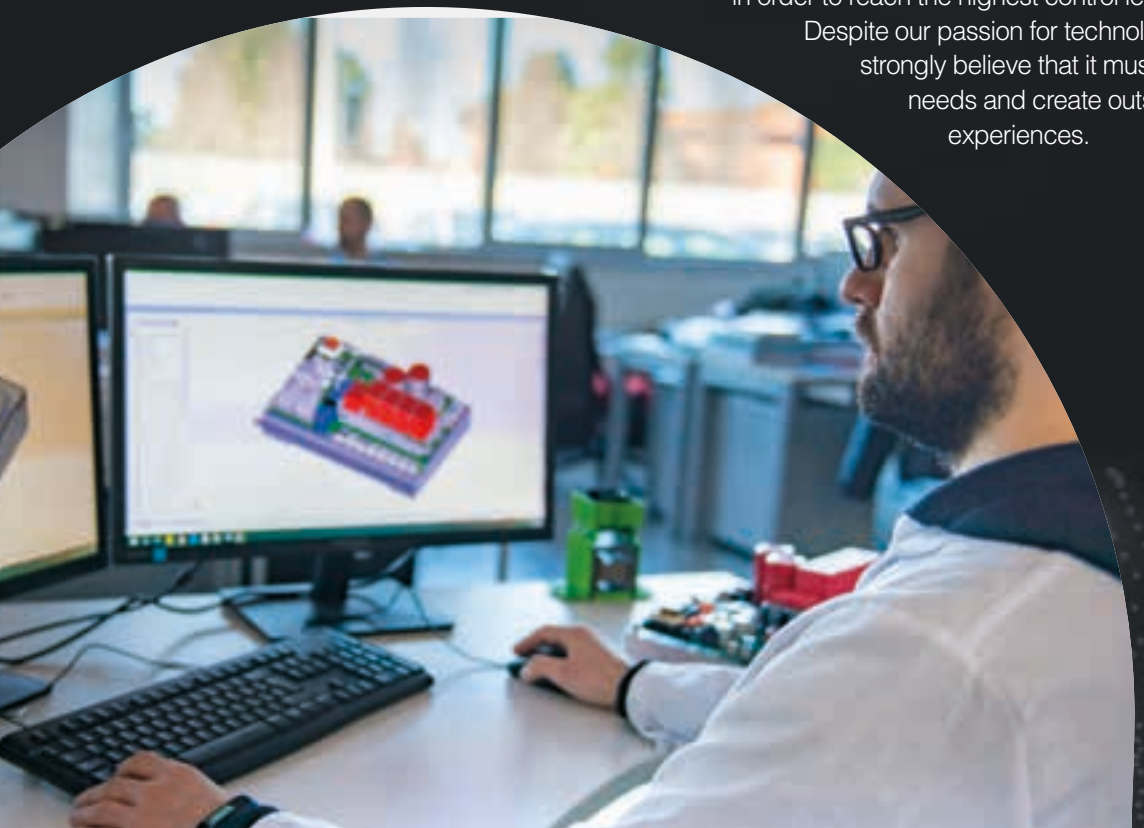
SOFTWARE DEVELOPMENT

Software team developed a wide range of applications for complex industrial, process controls, medical, railways, networking solutions based to sense and drive to cover “Drive by wire” requirement. Also wireless safety application has been developed in the automotive sector (wireless airbag for motorbikes) or IOT (internet of Things) emerging application in industrial automation.
Many software protocols/applications have been developed for real time embedded computing like Ethercat, Power Link based on Ethernet real time bus, TCP/IP protocol used for industrial process controls, CANOpen, Devicenet, Profibus, BTE, WiFI, Mesh network, custom protocols, and many others to comply with the customer requirements.
SW design for embedded applications based on operating system like Linux and Android, or RTOS like freeRTOS, RTX, uCOS and SCIOPTA.
Development of Human Machine Interface based on Linux and QT Graphical libraries. Development complying with international standard coding rules like MISRA-C.
Main programming languages: C, C++, Python, C#, Labview, Java.
Embedded System Design Lab with available tools: SVN (configuration management and repository), RedMine (issue management), Oracle Agile (PLM), Polarion (requirement tracing), tools for schematic, pcb, fw, FPGA, mechanical design, tools for analog, digital, thermal, signal integrity, power, emc simulation, Cadence, SPICE, Modelsim, Altera Quartus, ilinx ISE and Vivado, Lattice Diamond, National Lab View, IAR, KEIL-MDK-ARM, Code Composer, Solidworks 3D (mechanical design).

- SW architectures designed to support overall customer system or single target device
- SW design ranges from low-level peripheral drivers and BSP to high-level application layer
- Development of PC-based application to allow customer interface with target board
- Customer support on early system integration and further system maintenance
- SW development lifecycle according to V-cycle: each requirement and design item owns a corresponding test to verify product functionality
- Cooperation with Test engineers team to ease board production start-up phase and functional test
- Integration of SW and VHDL in the context of System-On-Chip solution: development on softcore (NIOS or Microblaze) or Processing System (Cortex-A9).
- Functional breakdown between programmable logic and sw design

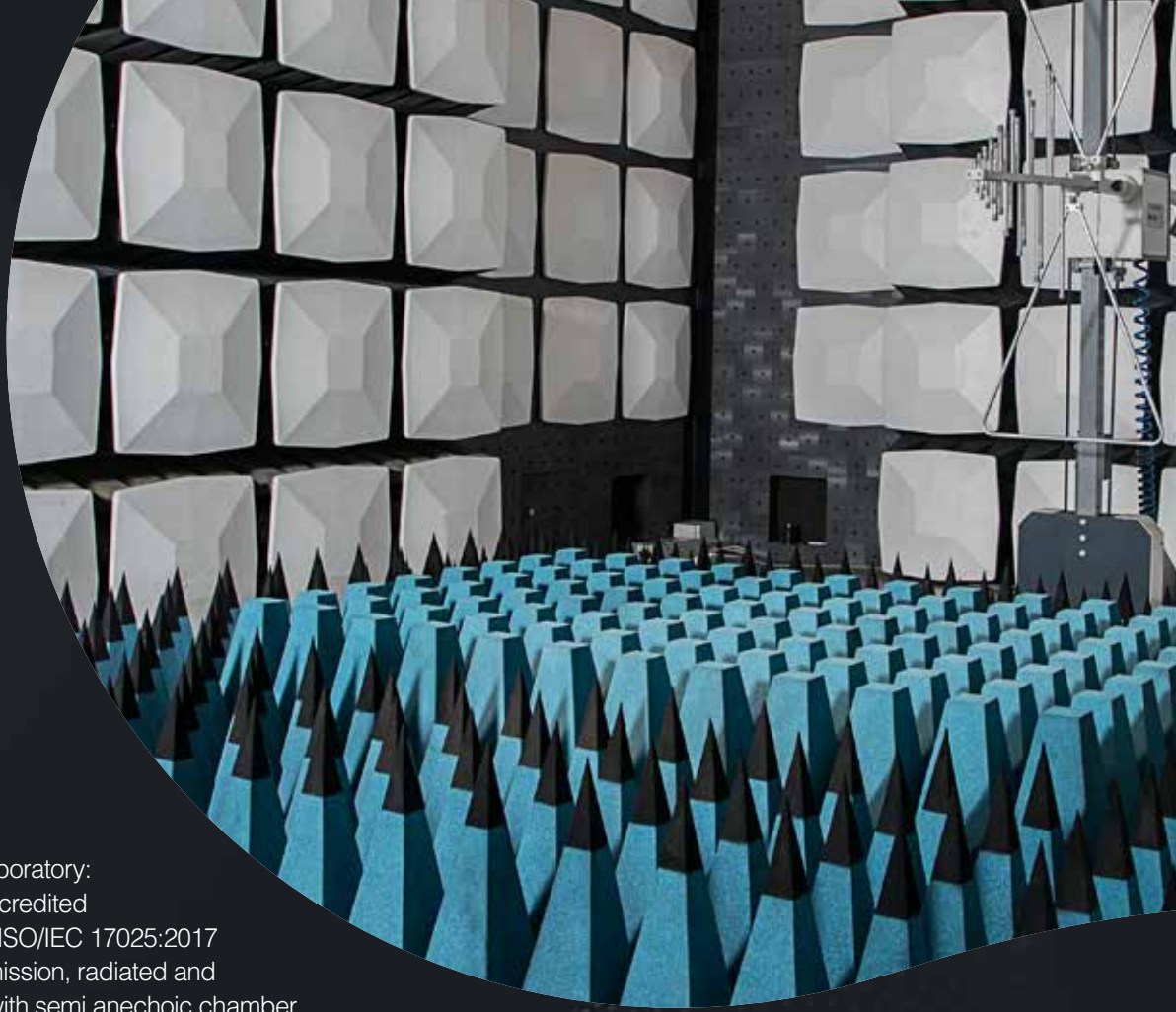
TURNKEY
PRODUCT DESIGN

Successful products designed from the beginning as experiences, keeping in mind every key point: product, gestures, habitat, services, aesthetics and communication. This is why we start each project involving the completely interdisciplinary team, customer included. We develop mechanical solutions starting from style and ergonomic studies to the engineering of cinematic mechanical components, complete plastic enclosures, modular rack applications, cabinets, packaging.
Our mechanical lab grew into the Innovation Lab: a physical place where digital technologies are tested and developed in order to reach the highest control levels and usability. Despite our passion for technology itself, we strongly believe that it must fulfill real human needs and create outstanding human experiences.



TEST **STRATEGY**

Test strategy drives products quality and total cost performance at every step of the life cycle.
We deeply analyse the products at board level or integrated one starting from performance specification, simulating the best test and controls strategy for process and products. Test coverage defined at design level with specific test tools like Test Way and other specific software package.
Test equipment design (In Circuit Test, Boundary scan, Functional Circuit Test, Dielectric tools, Burn-in systems) are efficient and useful test equipment, they are the key to keep under control production and supporting after sales assistance services.
High performance products need professional designers, flexible and reliable platforms, compliance with the major industry standards; we offer long life maintenance service through best advanced and remote workstation interactive operation, to install and upgrade the customers applications.
Our Test experts will support the customers to define the best strategy, specification, implementation and maintenance of the tooling, more than two thousands projects have been deployed on worldwide base.



LABORATORY

Internal Test Laboratory:

- EMC tests accredited according to ISO/IEC 17025:2017 (immunity, emission, radiated and conducted) with semi anechoic chamber, generators, amplifiers, antennas, receivers, CDNS.
- Safety tests (temperature measurements, fault tests, insulation) with thermocouples, data logger, IR camera, insulation testers.
- Vibration tests (random, sinusoidal, shock) with shaker, controller, amplifier and accelerometers.
- Climatic tests (cold, dry heat, damp heat, humidity test, temperature changes) with climatic chambers, walk-in thermostatic chamber, ovens, etc.

Elemaster offers customized solutions ensuring the highest level of expertise
in every phase of the production process.
With our international EMS centers, sales offices and R&D departments, we can support customers worldwide.

HEADQUARTERS · RESEARCH & DEVELOPMENT · MANUFACTURING CENTERS · SALES / SERVICE OFFICES

AREAS OF SPECIALIZATION

MEDICAL & HEALTCARE	INDUSTRY & ENERGY	HIGH-TECH MOBILITY	AVIONICS & DEFENCE	RAILWAYS & TRANSPORTATION	ENVIRONMENTAL	LABORATORY
ISO 13485:2016	ISO 9001:2015	IATF 16949:2016	AS/EN 9100:2018	IRIS ISO / TS 22163:2017	ISO 14001:2015	ISO/IEC 17025:2017

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