

CORE COMPETENCIES

ENGINEERING, DESIGN AND PRODUCT DEVELOPMENT



Fides designs, manufactures, commercializes and offers turnkey solutions for different sectors and guarantees the incorporation of the latest technologies. The combined experience of the different departments of **Fides** offers the necessary flexibility and technical capability that allow us to develop advanced solutions and transform good ideas into reality for the benefit of its customers.

Our know-how is focused in customized design of cost optimized solutions for different sectors: white-good applications and home appliances in general (based on 8/32-bit microcontrollers), Medical equipments, Industrial, Telecommunication equipments, etc, with a large experience in motor control.

We have been active in home appliances market for more than 20 years. Among the most representative products you can find washing machine, dryer, oven and kitchen hood control circuit, including different types of user interface boards, such as LCD (alphanumeric or graphic), LED, 7-segment display with mechanic or touch keyboards.

Fides covers all the stages needed in the development of a product:

- ✓ New Product Planning, Development and Introduction
- ✓ Comprehensive Lifecycle Support
- ✓ Multi-Disciplined Engineering Teams
- ✓ Co-located Manufacturing Capabilities
- ✓ Single Source for Engineered Products & Solutions

CAPABILITIES

System Engineering and Requirements Management

- Analysis of Alternatives
- Risk Management
- Conceptual Design
- R&D and Proof-of-Concept



Qualification

- Internal capabilities to perform verification and qualification tests of the system.
- Certification. We are prepared to assist our customers during the certification process of the product or to complete all certification process, according to the customer needs.
- Experience in different approvals & markings: CE, IEC, FCC, UL,...

Electrical, Mechanical and Software Engineering

CREATIVE MULTI-DISCIPLINED DESIGN TEAMS

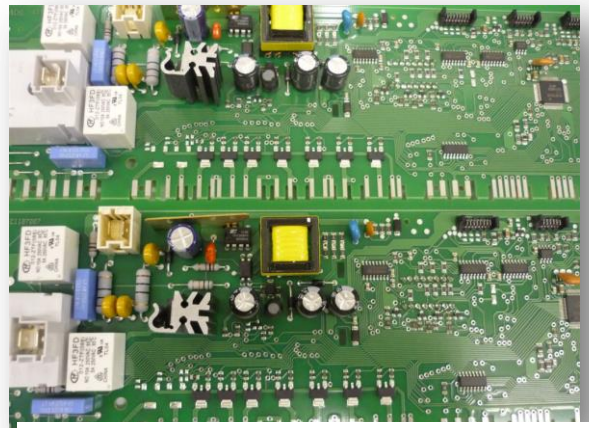
- Analog/Digital Electronic Hardware Development
- Mechanical 3D Modeling, Design, and Packaging
- Drafting - Drawings and Technical Data Packages
- Firmware/Software.
- Embedded System Design: ARM9, Cortex A8, Cortex A5.
- GNU/Linux embedded operating system
- Schematic Capture/PCB Layout Design Services with different SW platforms: Altium, Cad star, Pcad.
- Design simulation using software tools that allow us to simulate the circuit behavior before assembling the prototype
- Communications : SPI, UART, I2C, LIN, CAN, GSM/GPRS, Bluetooth, Zigbee...



- Motor control: Low-cost drivers for ACIM (single-phase or three-phase). PMSM. BLDC and DC motors . The topologies we are more familiar with are: phase control, three-phase inverter, DC chopper.
- Battery systems: We are capable of developing not only the electronics, but also the pack of batteries, including the BMS and the battery charger.

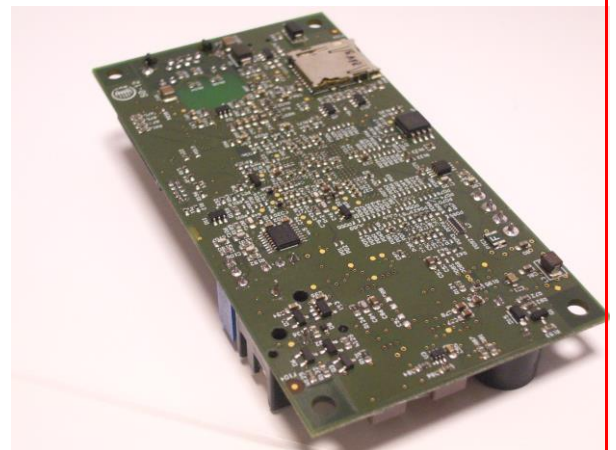
Reverse Engineering and Life

- Cycle Extension
- Part Obsolescence Mitigation and Redesign
- Enhanced Functionality
- Electrical Continuity & Interconnect Drawin;
- Schematic Recreation & PCB/PWB Redesign
- Product conversion to Lead Free/RoHS Com
- System Diagnostics and Repair
- Technical Data Package Development and R
- Physical Configuration Audits



Design Tools:

- Schematic Capture, PCB/PWB Design
- PSpice Circuit Simulation and Analysis
- Solidworks Professional – 3D CAD Modeling and Simulation.
- Virtual prototyping
- Compatible with and experienced in CATIA and Pro/Engineer
- AutoCAD
- Microsoft Visual Studio
- National Instruments Development Suite
- Multiple Embedded Firmware Platforms



Test Capabilities

- In house Custom Test Equipment-Design and Fabrication
- Flying Probe Tester.
- In-circuit test: Jetsystem, Checksum.
- Facilitate EMS/EMC
- Earned Value Management (EVM)



Software Skills

- C and Assembly languages for microcontrollers
- Communication routines
- Self-programming libraries
- User's interface routines (LCD, Led 7-segments, etc.)
- Analog signal measurement as thermocouples RTD, NTC, pressure sensors, strain gauges, hall sensor, voltage and currents sensing devices, PID regulation algorithms with digital sampling, PWM, phase control, self-testing routines and software encryption routines.
- Visual Basic
- Visual C#
- QT, Java
- XML/XSLT
- LabVIEW and TestStand