ALPHITEK

Customize your Engineering

Presentazione aziendale

Indice

Chi siamo

Ing. Fabio Rastrello, PhD
Co-Founder & CEO

Ing. Amedeo Pizza
Co-Founder & CEO

Alphitek S.r.l. è una **startup innovativa** che realizza soluzioni di **ingegneria elettrica ed elettronica** all'avanguardia e customizzate, con l'obiettivo di evolvere ed innovare i prodotti e i processi agricoli e industriali.

Vision

- *Aiutare le aziende a soddisfare i loro bisogni tecnologici, rendendo ordinaria ogni richiesta straordinaria.*

Mission

- *Implementare sistemi custom per le aziende nell'ambito delle schede elettroniche, progettando hardware, sviluppando firmware e software e producendo il sistema finale, del testing e dell'automazione industriale.*

Cosa facciamo

Linee di Offerta:

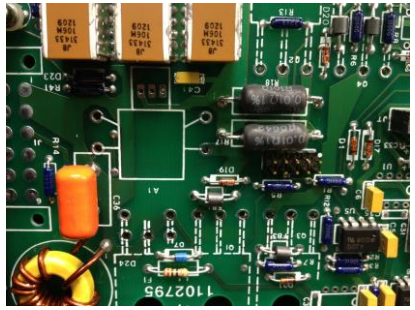
- Sistemi Embedded
- Testing e Validazione
- Automazione Industriale

Il nostro mercato:

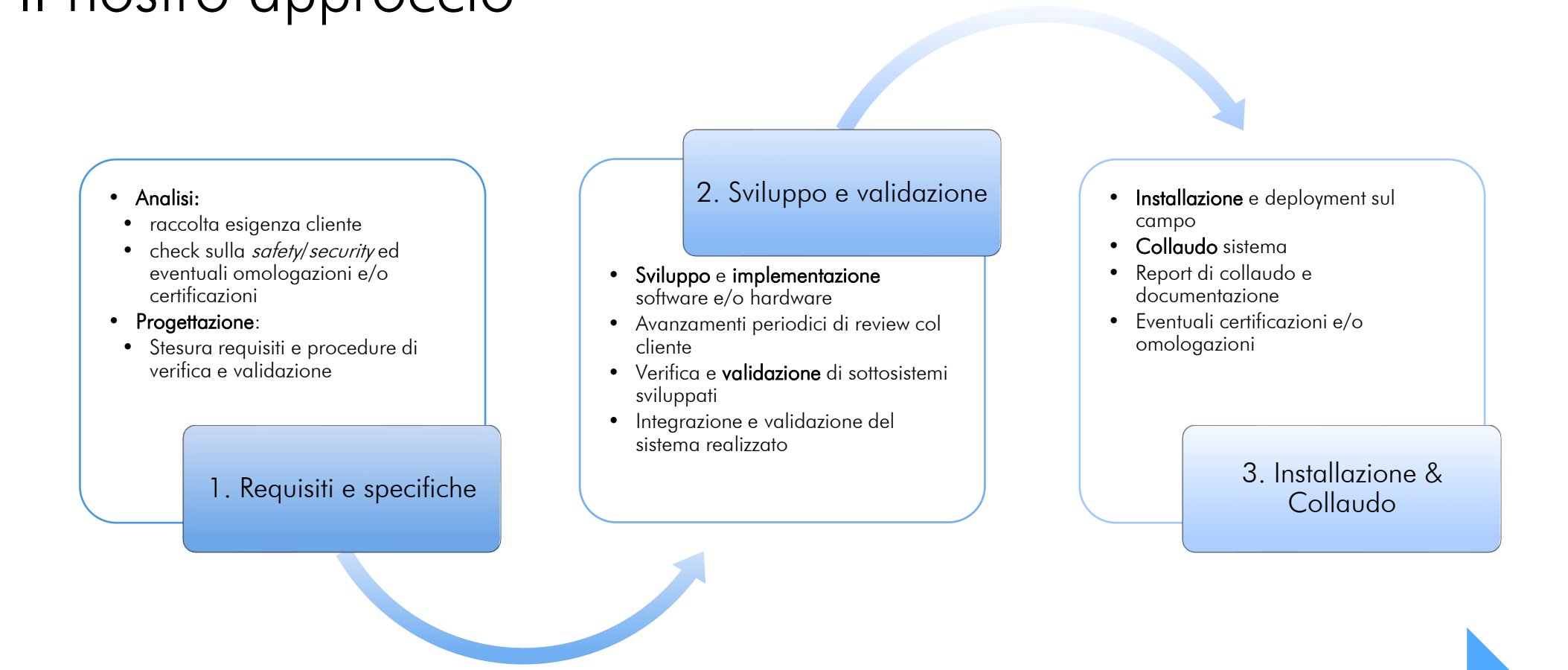
- Automotive
- Produzione industriale
- Green Tech
- Energetico
- Aerospaziale
- Ferroviario
- Elettrodomestici
- Biomedicale

I nostri punti di forza:

- Conoscenza dei processi industriali
- Tecnologie avanzate per la produzione elettromeccanica *in house*
- Approccio multidisciplinare
- Competenza ed esperienza



Il nostro approccio



Project Management

- Gestione del team e del planning di progetto
- Gestione acquisti e fornitori
- Gestione budget di progetto
- Interfaccia col cliente e gestione avanzamento lavori

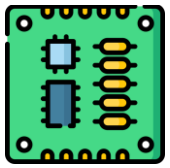
Portfolio

- Più di 10 anni di esperienza nel campo del testing e della validazione, automazione industriale, progettazione elettrica ed elettronica. I nostri clienti operano in quasi tutti i settori di mercato, in Italia e non solo.

Icone: Flaticon.com

Servizi&Soluzioni: Sistemi Embedded

- Progettazione e assemblaggio di schede elettroniche (PCB) di potenza e di segnale.



- **Progettazione HW e sbroglio PCB**
- **Produzione**, assemblaggio e validazione prototipi PCB
- Progettazione PCB combinata alla progettazione MCAD.

- Programmazione Firmware e applicazioni Real-Time

- Implementazione algoritmi di controllo e/o acquisizione dati
- Approccio **Model Based** (Matlab/Simulink) o testuale (C)

Principali Brands & Tools:

ALTIUM DESIGNER

SOLIDWORKS

Texas Instruments

C C++ C#

python™

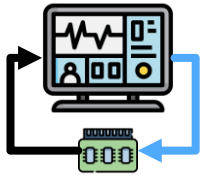
Icone: Flaticon.com

Servizi&Soluzioni: Testing e Validazione

- ATE (Automatic Test Equipment) e Test Automation

- **Configurazione HW e SW del banco di test**
  - Progettazione meccanica, elettrica ed elettronica
  - Programmazione logiche di test
  - Costruzione e montaggio del banco
- **Test Automation OTS (Off The Shelf) o customizzata**:
  - Definizione HMI e scheduler
  - Definizione file di input e Test Editor

- Hardware-In-the-Loop



- **Scelta e setup HW** (i.e. simulatore, cablaggi e load box)
- **Configurazione SW** della simulazione
- **Modellazione** fisica e comunicazione restbus (CAN, LIN, Ethernet, FlexRay)
- Setup ambiente di **Test Automation**

- Verifica & Validazione

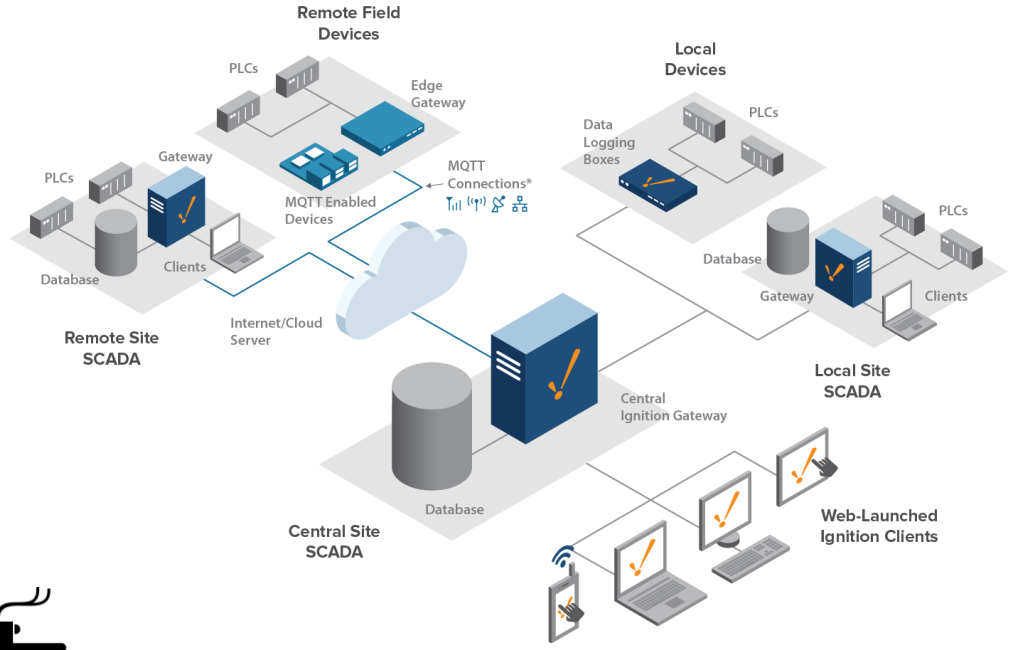
- Coordinazione team di validazione
- Implementazione di **test procedure automatiche**

Principali Brands & Tools:

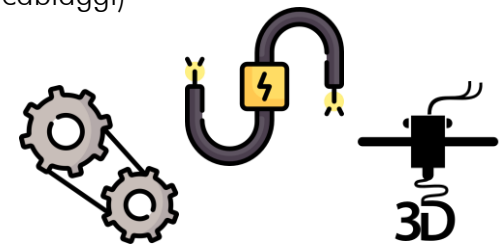
Icone: Flaticon.com

Servizi&Soluzioni: Automazione Industriale

- Sistemi HMI-SCADA e Industrial IoT per automazione di livello 1 con predisposizione per Industria 4.0
  - Architettura del sistema: **PLC**, **bus di campo**, **protocolli**, **sensori**, **azionamenti** e **attuatori**
  - **Programmazione** logiche di controllo e **connettività**



- Prototipazione e produzione elettromeccanica
  - **Progettazione e produzione meccanica** (rack, stampa 3D) **ed elettrica** (quadri, cablaggi)



Principali Brands & Tools:

NI
SIEMENS
EMERSON
SOLIDWORKS
FLASHFORGE 3D PRINTER

Icone: Flaticon.com

Sede operativa: laboratorio di elettronica

- 50m^2
- Prototipazione e produzione elettronica
- Misure e testing
- R&D

Sede operativa: laboratorio di elettromeccanica

- 80m^2
- Prototipazione e produzione elettromeccanica
- Rack e cablaggi
- Prototipazione 3D

Contatti

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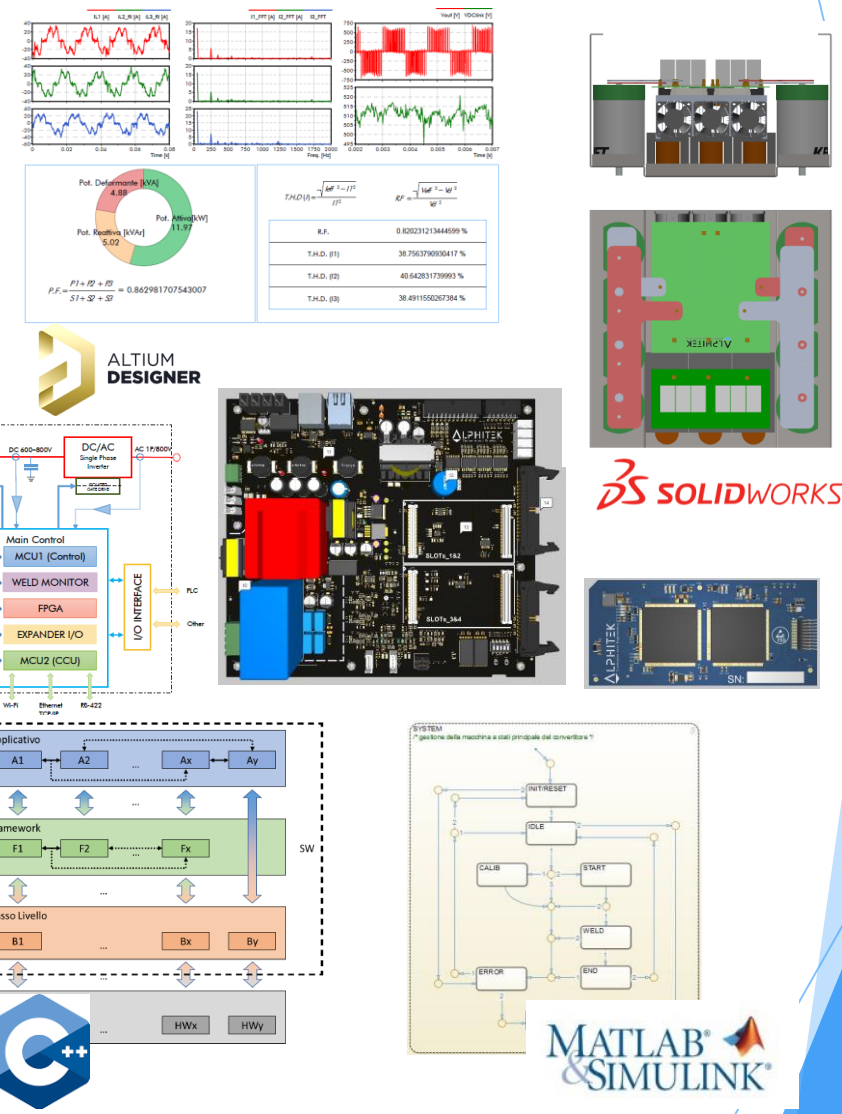
Referenze tecniche

AC/AC Power Converter design

Customer: Cevolani

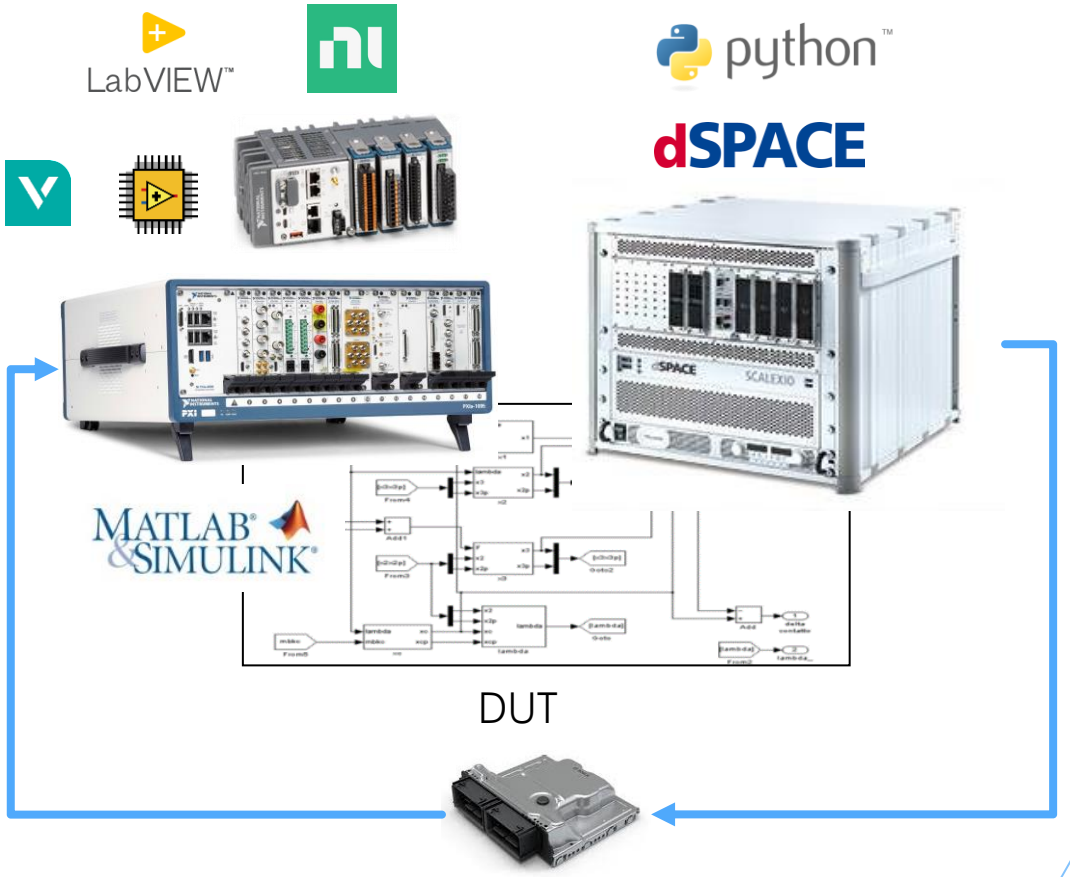
- Context & Request
  - Re-design of a power converter for industrial welding
  - 3 phase input, 1 phase output with PWM output current parametrization (1.2kHz, 350A_{Ipeak})
- Approach & Results
  - Analysis and benchmarking of the old power converter (e.g. PF, THD, PWM control, ecc.)
  - Definition of both HW and SW requirements
  - Improvements of the electrical characteristics and working conditions
- Technical Details
  - Test setup for voltage and current analisys on a working machine
  - Altium designer for digital and power electronics
  - Solidworks design for power dissipator and box
  - Matlab/Simulink and C/C++ firmware programming
  - Xilinx FPGA programming



HIL systems for V&V (Automotive&Industrial)

Customers: Capgemini engineering, CNH INDUSTRIAL

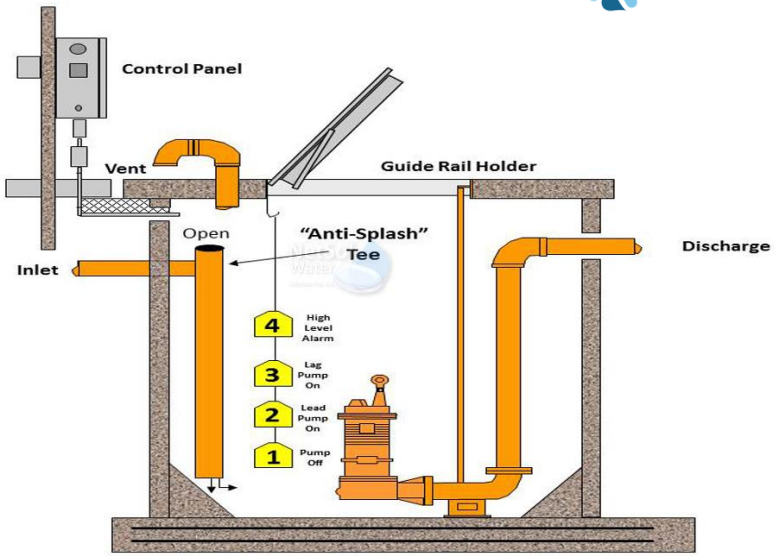
- Context & Request
  - Verification and validation of engine, vehicle and driveline ECUs
  - System setup and configuration
  - Maintenance and upgrades
- Approach & Results
  - Hardware and software configuration
  - FPGA I/O management
  - Plant model and Closed Loop implementation
  - Support for Test Engineers
- Technical Details
  - dSPACE and NI HIL systems
  - Matlab/Simulink model development
  - LabVIEW and Python programming
  - LIN, CAN communication (FD, J1939)

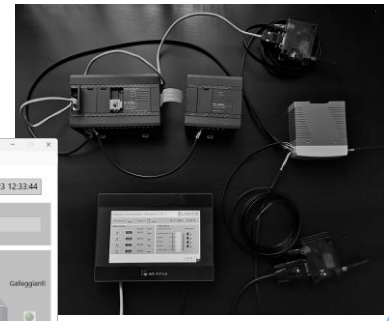


Pump lift station SCADA system

Customers:

- Context & Request
  - Revamp of 17 pump lift wastewater station
  - Automation monitoring and control
- Approach & Results
  - Architecture design
  - HMI and PLC firmware programming
  - Remote communication configuration
  - Lab prototyping and testing
  - Deployment on 17 stations
- Technical Details
  - HMI custom IDE
  - PLC LD and ST programming
  - LabVIEW SCADA system
  - GSM communication (kept for technical and economical reasons)





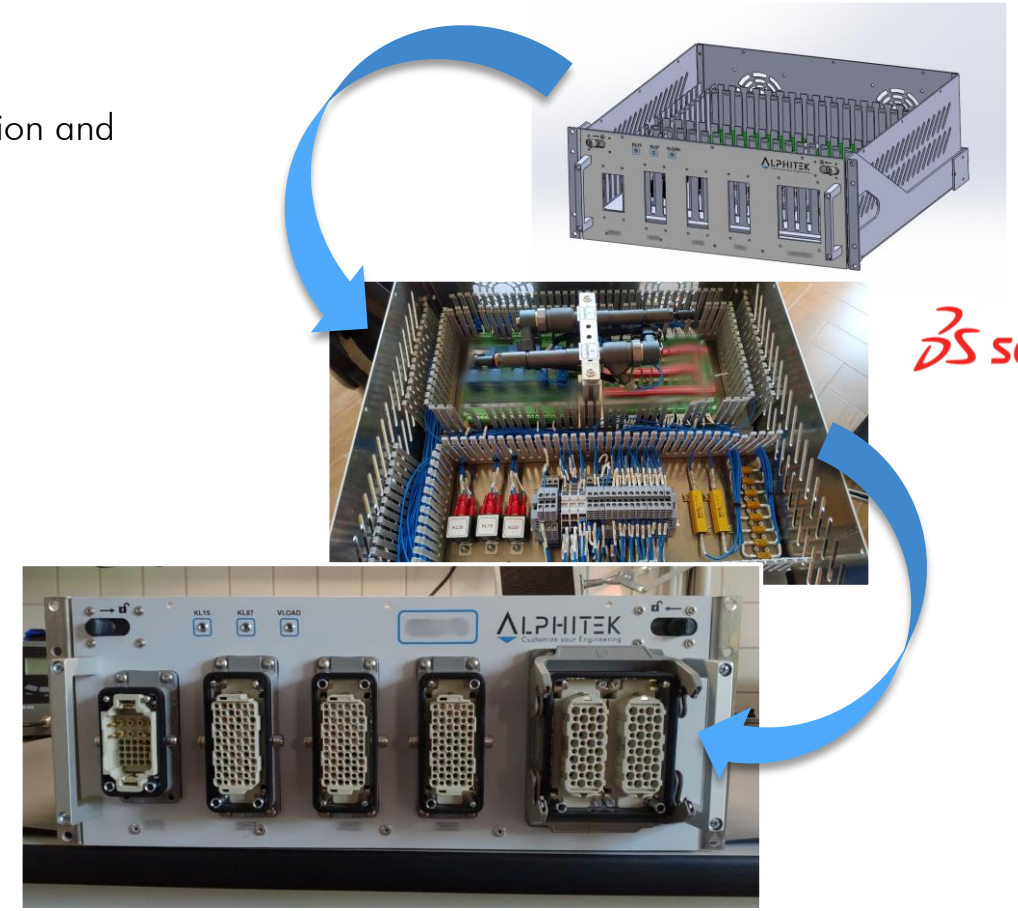
Load Box for Automotive HIL application

Customer: ELDOR CORPORATION

- Context & Request
  - Load Box for Automotive HIL application
  - Mechanical design and electrical schematic definition and realization

- Approach & Results
  - 19'' sub-rack design
  - Schematic design
  - Rack mounting and wiring realization

- Technical Details
  - Solidworks Design
  - Custom board mounting

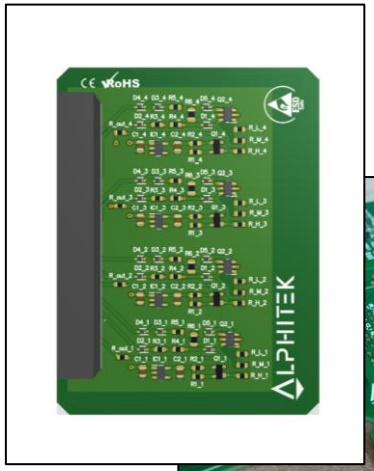


SOLIDWORKS

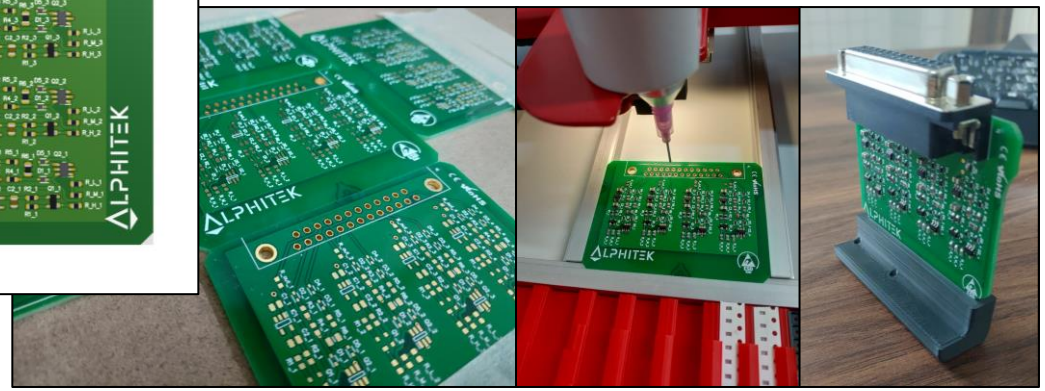
Wheel speed sensor simulator

Customer: Capgemini engineering

- Context & Request
  - Wheel speed sensors
  - TTL driven current PWM generator
- Approach & Results
  - Electronics design
  - PCB mounting and 3D printed custom packaging
  - Testing and validation
- Technical Details
  - Altium Design
  - High frequency generation (till 100kHz)
  - Wide R_{Load} range: 1÷120Ohm



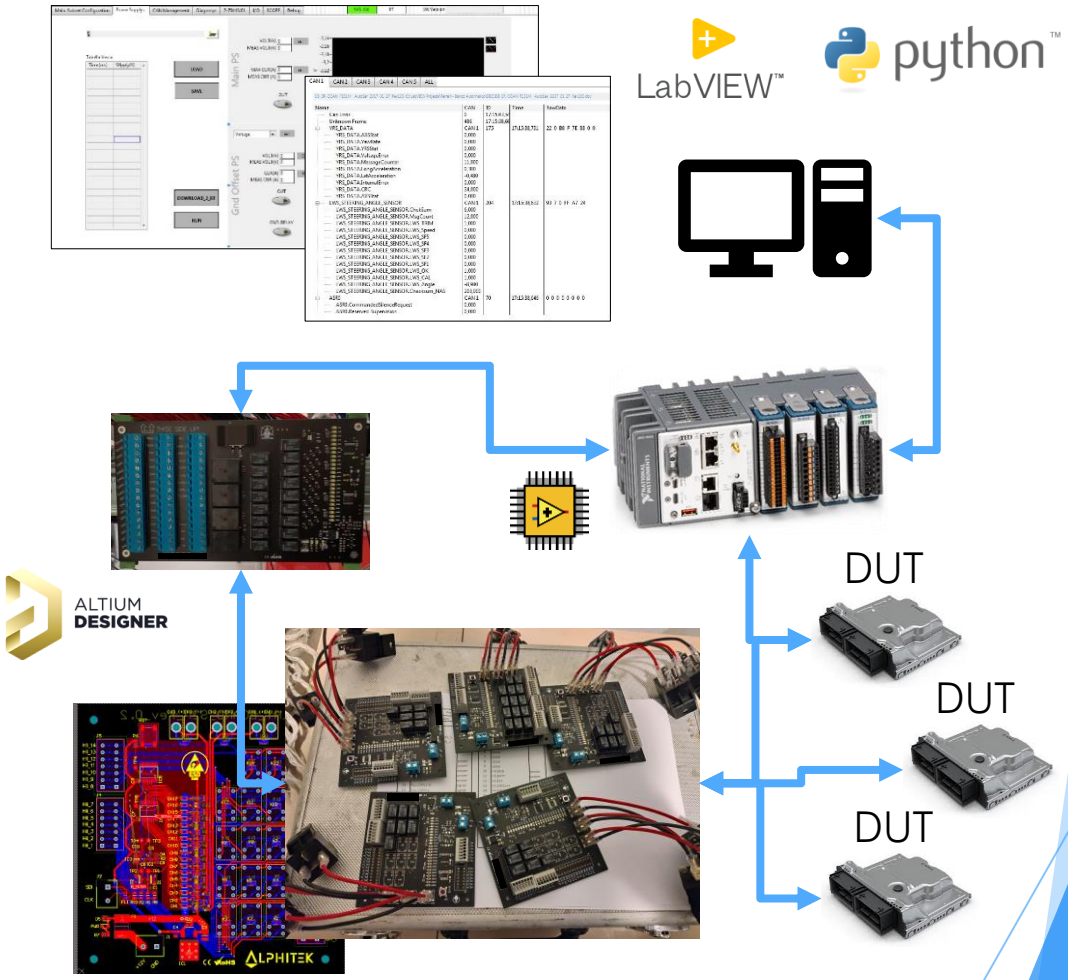
ALTIUM DESIGNER



Distributed automation for CAN networks validation

Customer: N.A.

- Context & Request
  - Multiple Automotive CAN networks verification & validation
  - Ground and power shifts, fault insertion, GUI monitoring
  - Automatic testing and data logging
- Approach & Results
  - Custom relay boxes design for distributed actuation
  - Power and signal lines routing
  - Custom rack with power supplies design and realization
  - Test automation with GUI for test launch and signal monitoring
- Technical Details
  - Windows, Real-Time and FPGA programming with NI LabVIEW
  - Python test automation
  - Altium Designer for custom hardware design

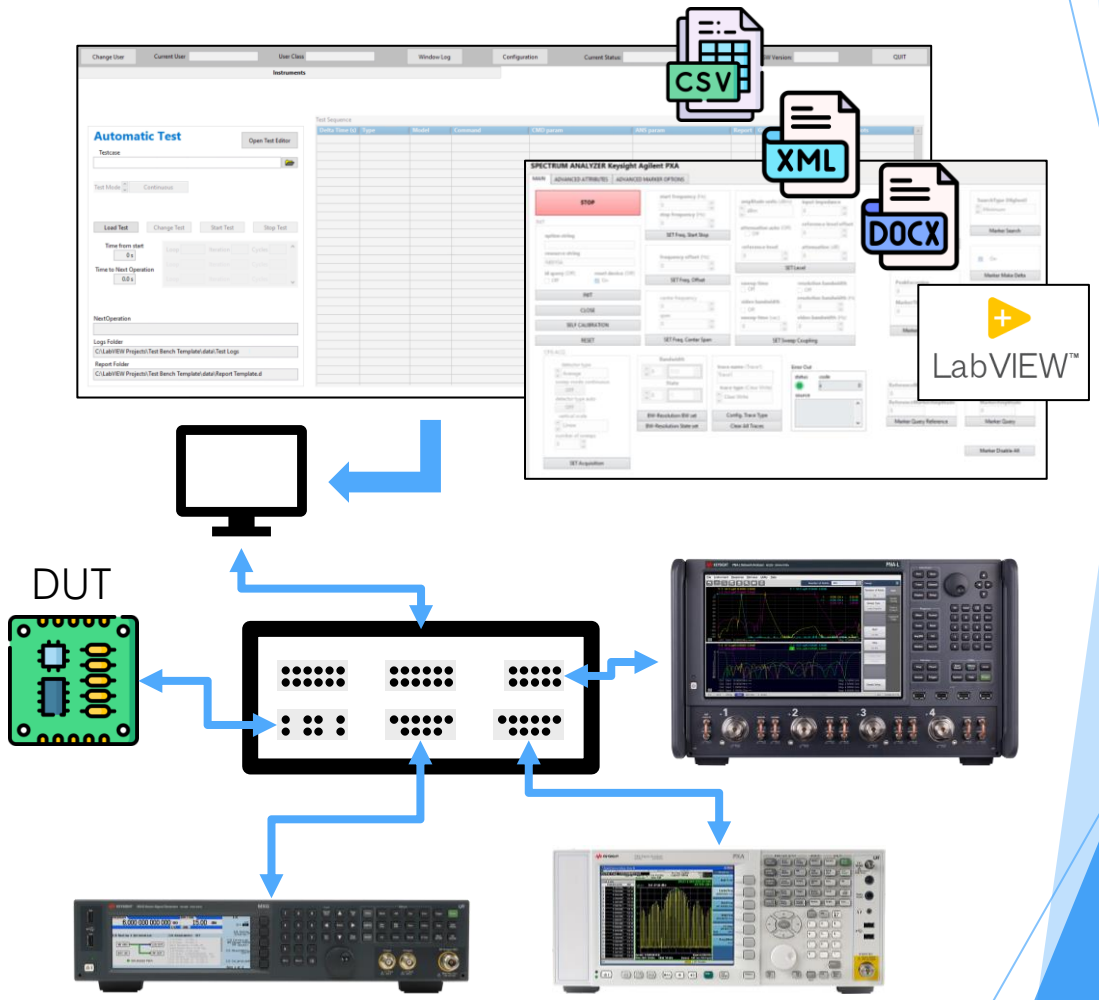


Icone disegnate: Flaticon.com

Automated test bench for RF devices

Customer: N.A.

- Context & Request
  - Test Bench to implement and execute automatic tests for RF devices (Attenuator, UP/Down Converter, Radar simulator, etc.)
  - Remote control and management of commercial instruments (Generators, Spectrum Analyzers, Network Analyzer, Power Meter, Oscilloscopes)
  - GUI (Graphical User Interface) and Test Automation
  - Automatic report generation
- Approach & Results
  - Realization of an USB-C HUB with multiple interfaces for instrumentation and DUTs
  - GUI for test editing and instrumentation control
  - Communication drivers implementation for DUTs and instrumentation
  - Test Automation implementation with custom report and data logs
- Technical Details
  - NI LabVIEW programming
  - Managed interfaces: Ethernet TCP/IP, Ethernet UDP/IP, USB, RS232, RS422, LVDS, GPIB, TTL
  - SCPI protocols and custom protocols implementation



Icone disegnate: Flaticon.com

Grazie!

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«Considerate la vostra semenza: fatti non foste a viver come bruti, ma per seguir virtute e canoscenza.»

Dante Alighieri