



Company presentation

August 2022



Power electronics
System engineering
R&D teams

Objective : Create **power converters** and **global solutions** for
an **optimized management** of **electric energy flow**



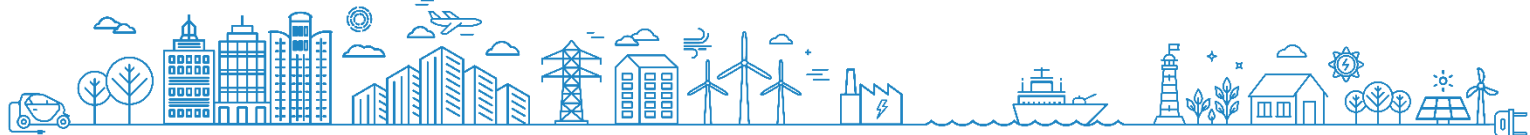
CIRTEM - Sainte-Foy-d'Aigrefeuille (Toulouse)

Manufacturing



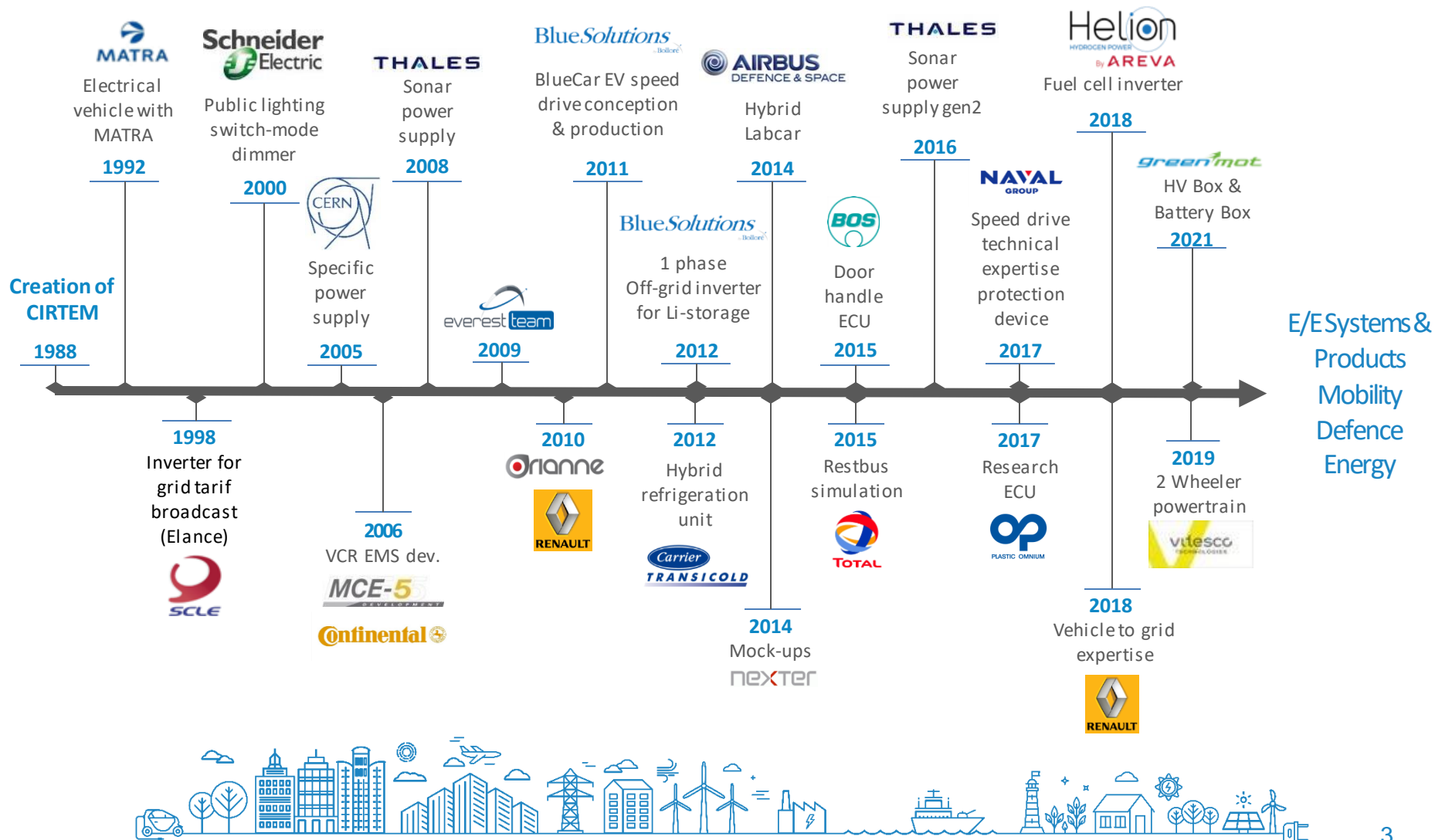
- ✓ Revenues 3,7 M€
Activity incl. Funded projects 5 M€
- ✓ 39 employees, incl 23 R&D
- ✓ Premises 2 400 m²
- ✓ Small & Medium volumes
- ✓ Location Toulouse area
- ✓ ISO 9001 (2020)
- ✓ Innovative applications
- ✓ Demanding markets

French Clusters



History

Company key events



Markets

Multi-sectorial approach



Mobility

Speed drives

DC/DC & Chargers

ICE & Hybrid Control

Supervision



Defence

Onboard network

Powertrain

Storages

Protections



Electric infrastructures

Smart Grids

Micro Grids

Railway

Fast charging



Industry

Process Power Supply

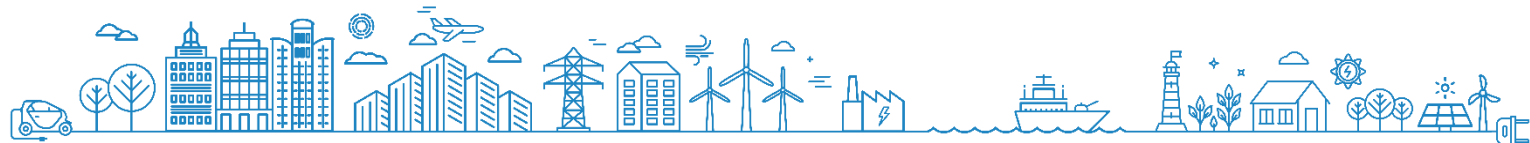
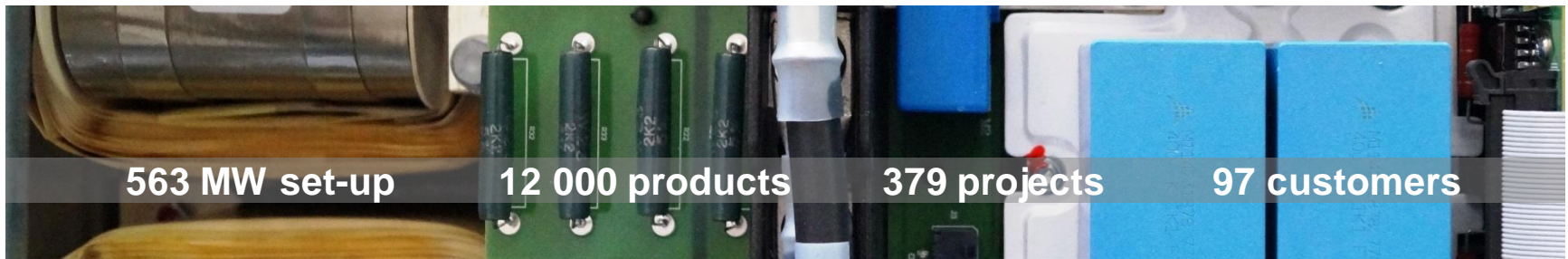
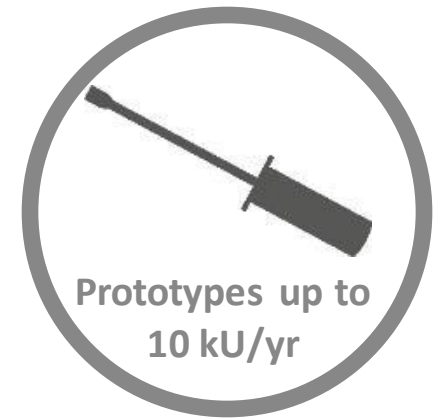
Ozonation

HV power supply

Induction



Power Converters and Electronic Equipments



Mission

Added value

System Engineering

Architecture optimization
Tailored help
Preliminary specification

Development

Simulation
Power design
Mechatronics
Software
Qualification

Production

Small and mid series
One-shot product
Prototypes

Build-to-print

Specialized subcontracting
Test bench development



Pre-study

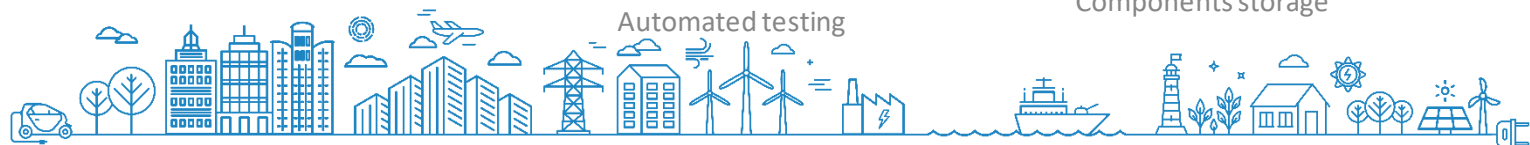
Technical feasibility
Budgetary cost
Detailed specification

Industrialization

Optimized supplies
Semi-automated assembly
Automated testing

MCO

Obsolescence monitoring
Redesign
Components storage

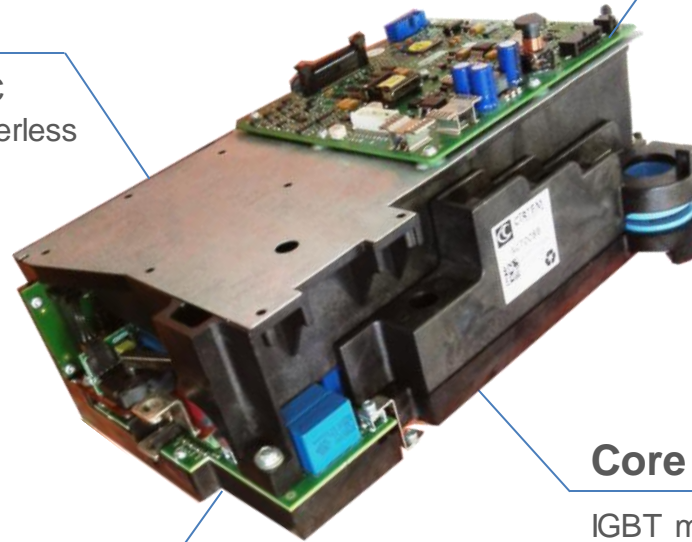


Architecture

Reversible AC-DC et DC-DC
LF, HF Isolation or transformerless
Hybridization of storages

Control

Real time regulations
Sensorless motor driving
Hybridization
Regenerative systems

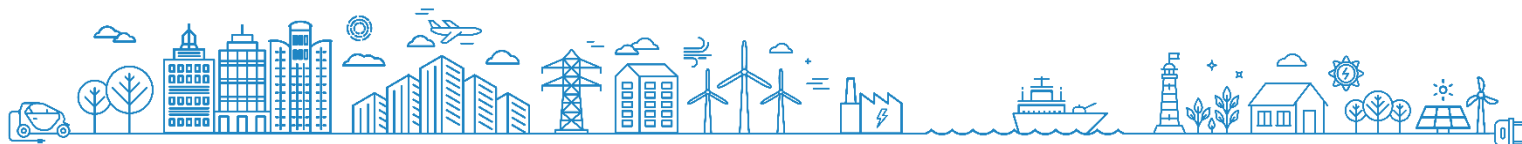


Ranges

Low voltage from 50V to 1500V
High voltage up to 50kV
Power from 1kW to 10MW
High speed up to 50 000 rpm

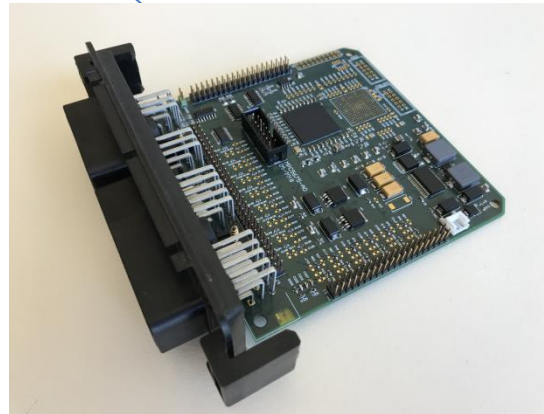
Core technologies

IGBT modules & MOS
SiC & GaN
Multilevel technologies
Planar transformers
Air or liquid cooling



System engineering

From definition to validation
ICE Management
Groupe motopropulseur électrique
et hybride
Validation & test HIL



Hardware engineering

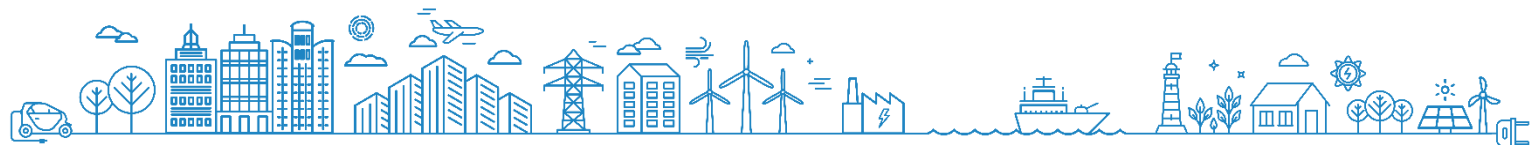
Architecture à base numérique
Conception du Hardware ECU
Conception et réalisation de harnais

Test bench development

Motor test bench
Vehicle environment simulator
ECU programming

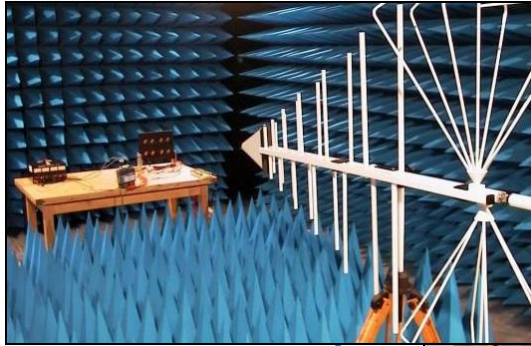
Real time software

Software architecture
Basic software
Application software
Communication layers



Test means

From simulation to physical test benches



EMC Lab
ACEMIP



Test platform
150 kVA - 3 MVA

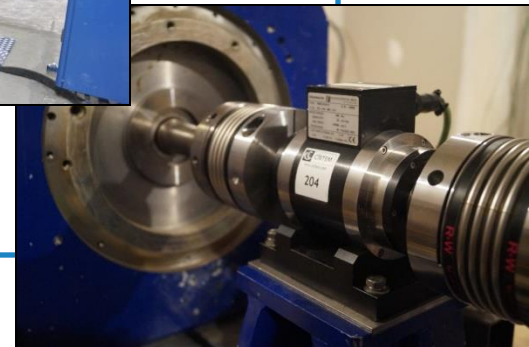


Chassis dynamometer
400 kW



HIL bench
Opal RT

Motor bench
Electrical 200 N.m



Manufacturing means Full control in power electronics

Semi-automatic
ASSEMBLY



Full
TRACEABILITY

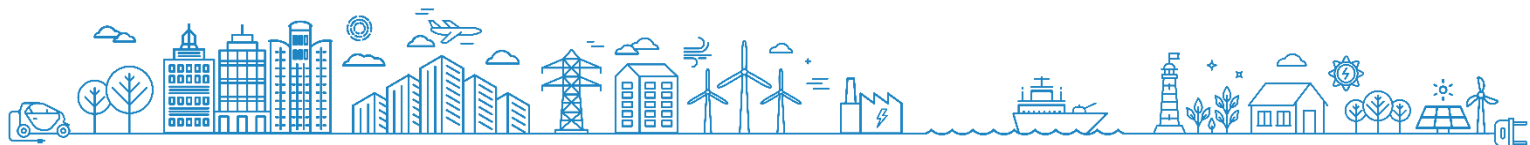
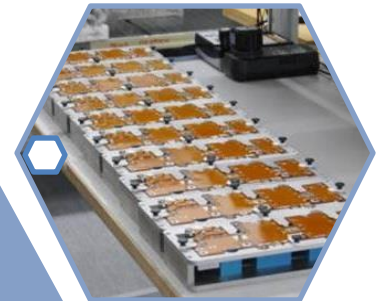


In-house designed products production
Flexibility : 1 to 10 000 units / year
Built-to-print Manufacturing
Maintenance in Operational Condition
(Up to 30 years)

Automatic
TESTING



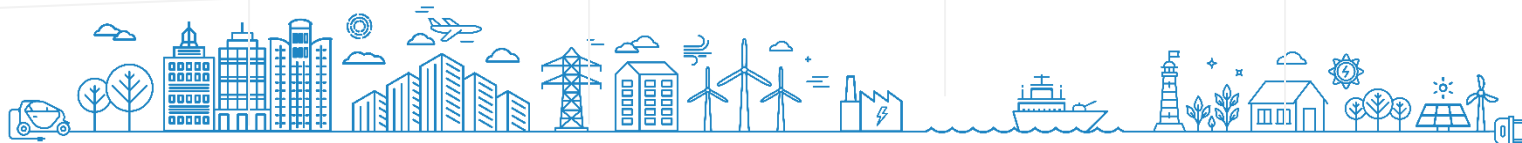
Busbar
HIGH RELIABILITY



Customer portfolio

They trust our expertise



Contacts

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