

## *Workshop n°4 - Green Vehicle*

Smart & Safe Day – Energy & Mobility  
Paris, june 20th 2019

**TAME-POWER**  
TRONICO

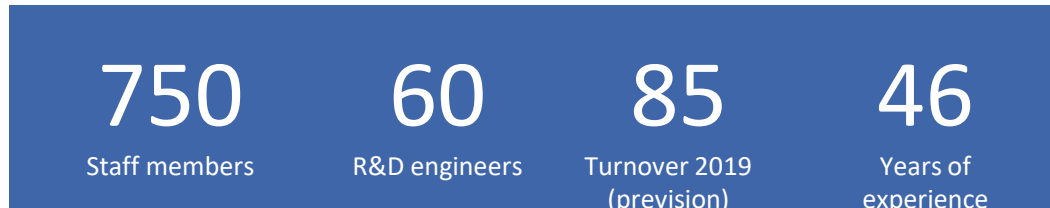
- *Power Conversion : DCDC, DCAC & ACDC*
- *Power Distribution Unit*
- *Battery Management System*

[www.tame-power.com](http://www.tame-power.com)

[www.tronico-alcen.com](http://www.tronico-alcen.com)

# TRONICO'S GENERAL INFORMATION

- Activity
  - Design, manufacturing and integration of complex electronically dominated systems for high value-added equipment throughout their life cycle
- Key figures and sites



# TAME-POWER SKILLS AND EXPERIENCE: Kw RANGE DCDC, DCAC & ACDC POWER CONVERSION

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- **PRODUCTS** : Tame-Power® proposes a range of high-performance DCDC, DCAC & ACDC energy conversion products, ranging from 3 to 60 kW per module.
- **APPLICATIONS** : Tame-Power® DCDC converters are ideally suited for **electric vehicles (mobility) or stationary applications**, they allow an optimal use of innovative technologies like fuel cells, batteries or supercaps.
- **SERVICES** : Tame-Power® proposes **Engineering & Manufacturing Services** to support customers on their whole product lifecycle.
- **STRATEGY** : Tame-Power® growth is part of **TRONICO's 10 years strategy**

# TAME-POWER : kW RANGE DCDC DCAC & ACDC MODULES

- 3 kW...60 kW per module
- 20 V ... 900 V, 360 A max
- Voltage source or Current source
- Control according to :
  - Current or Voltage or Power,
  - Low side or High side
- Efficiency up to 97%
- Parallel connection
- Liquid or air cooled
- Not isolated
- CAN 2.0B.



Single unit

Air cooled

Multiple unit



SINGLE unit

Liquid cooled



DOUBLE unit



# TAME-POWER : MARKET SEGMENTS

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- Electric Mobility :

- Automotive,
- Trucks,
- agricultural machinery,
- construction machinery,
- Off-road vehicles,
- Fork lifts,
- Boats



- Charger



- Defence

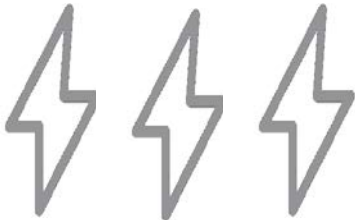


- Aeronautic & Space

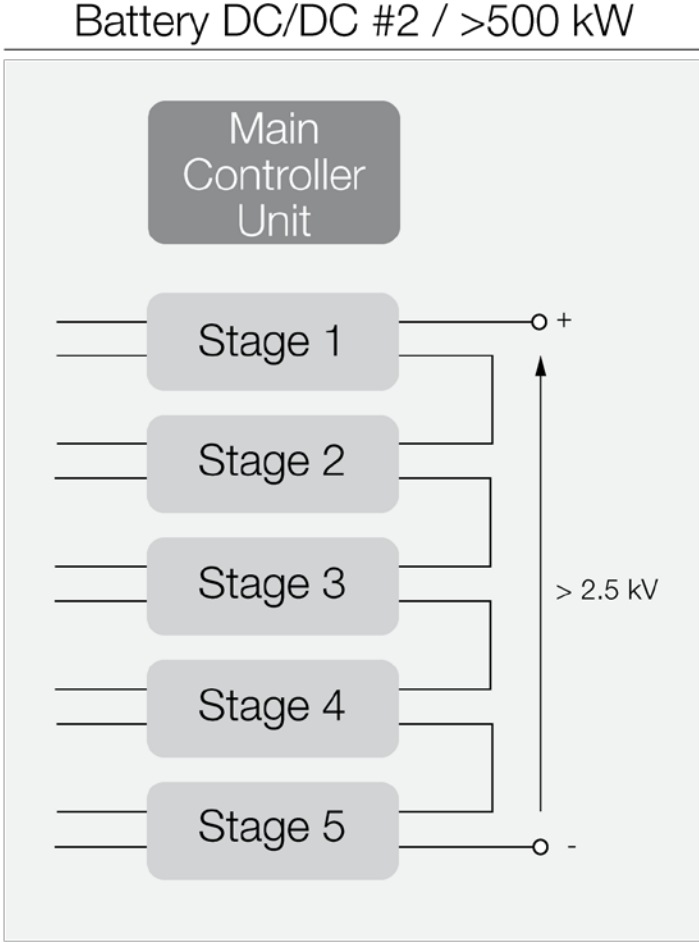
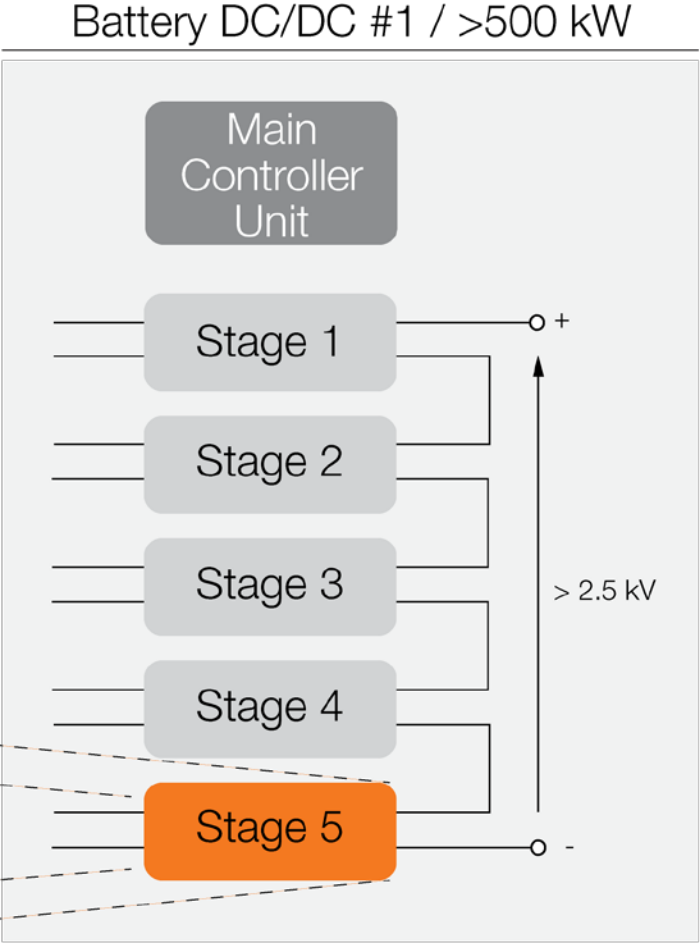


- Industrial

# TAME-POWER: OUR ADDED VALUE = HIGH POWER & FLEXIBILITY

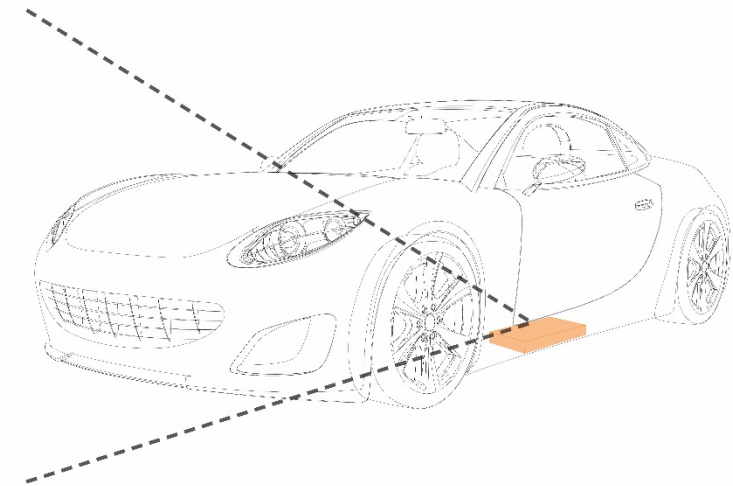
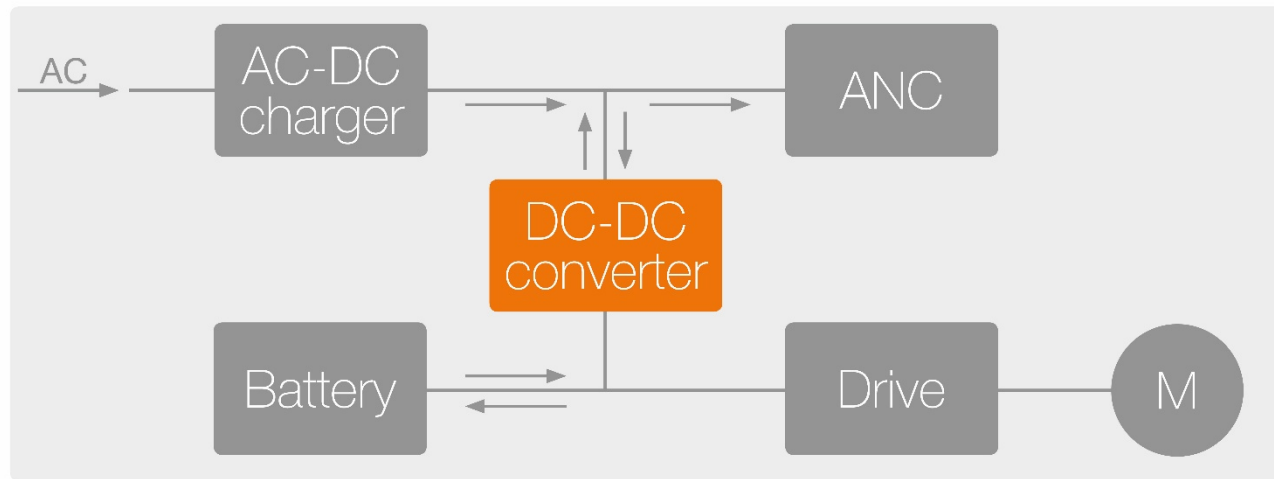


$P_{tot} > 1 \text{ MW}$   
 $V_{DC} > 2,5 \text{ kV}$



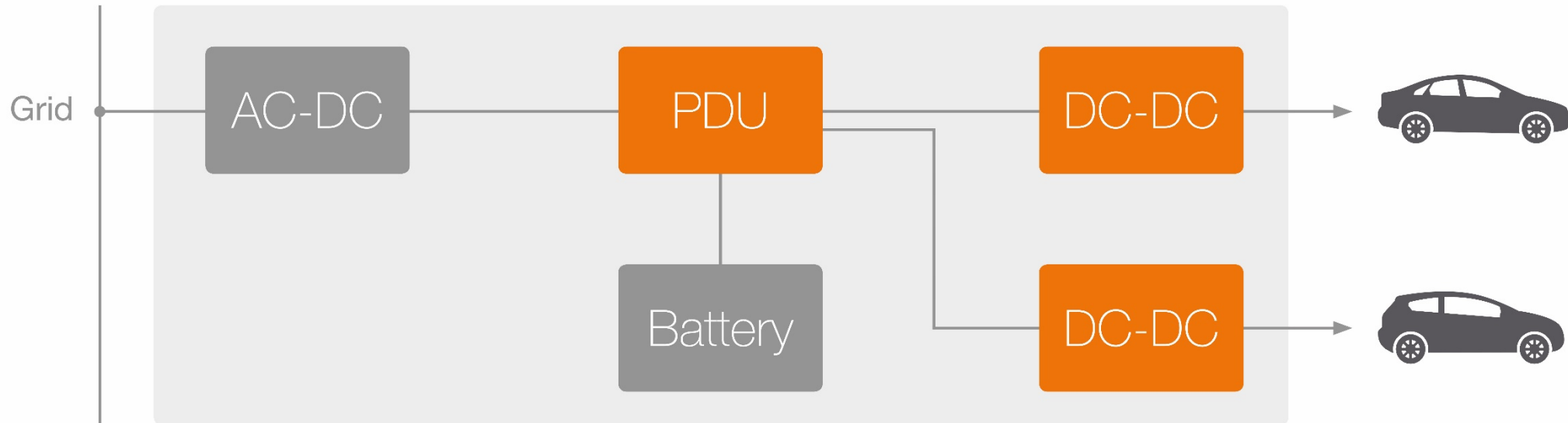
# TAME-POWER CUSTOMER REFERENCES : USE CASE MOBILITY

- Electric mobility :
  - Tame-Power DCDC converters are suited for **multi-voltage** electric architectures.
  - Tame-Power DCDC converters are **bi-directional** so they can be used to supply ancillaries and to charge batteries



# TAME-POWER CUSTOMER REFERENCES: USE CASE HIGH SPEED CHARGING STATIONS

- Chargers:
  - Tame-Power DCDC converters have programmable **Voltage / Current control modes** suited for EV battery charging .
  - Tame-Power DCDC converters can be **parallelized** to increase current per port.
  - Tame-Power Power Distribution Unit assume a **simple Device-to-Device interconnection**.





# TAME-POWER CUSTOMER REFERENCES – USE CASE AERONAUTIC

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## CONVERSION FROM THE FUEL CELL TO THE AIRCRAFT NETWORK

### \* PIPAA - DC/AC Converter

Partners:



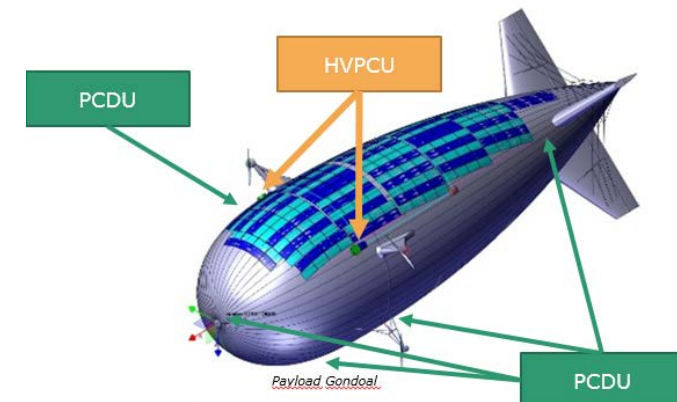
easyJet



### \* STRATOBUS – DC/DC et DC/AC Converter

Thalès

■ HVPCU and PCDU locations

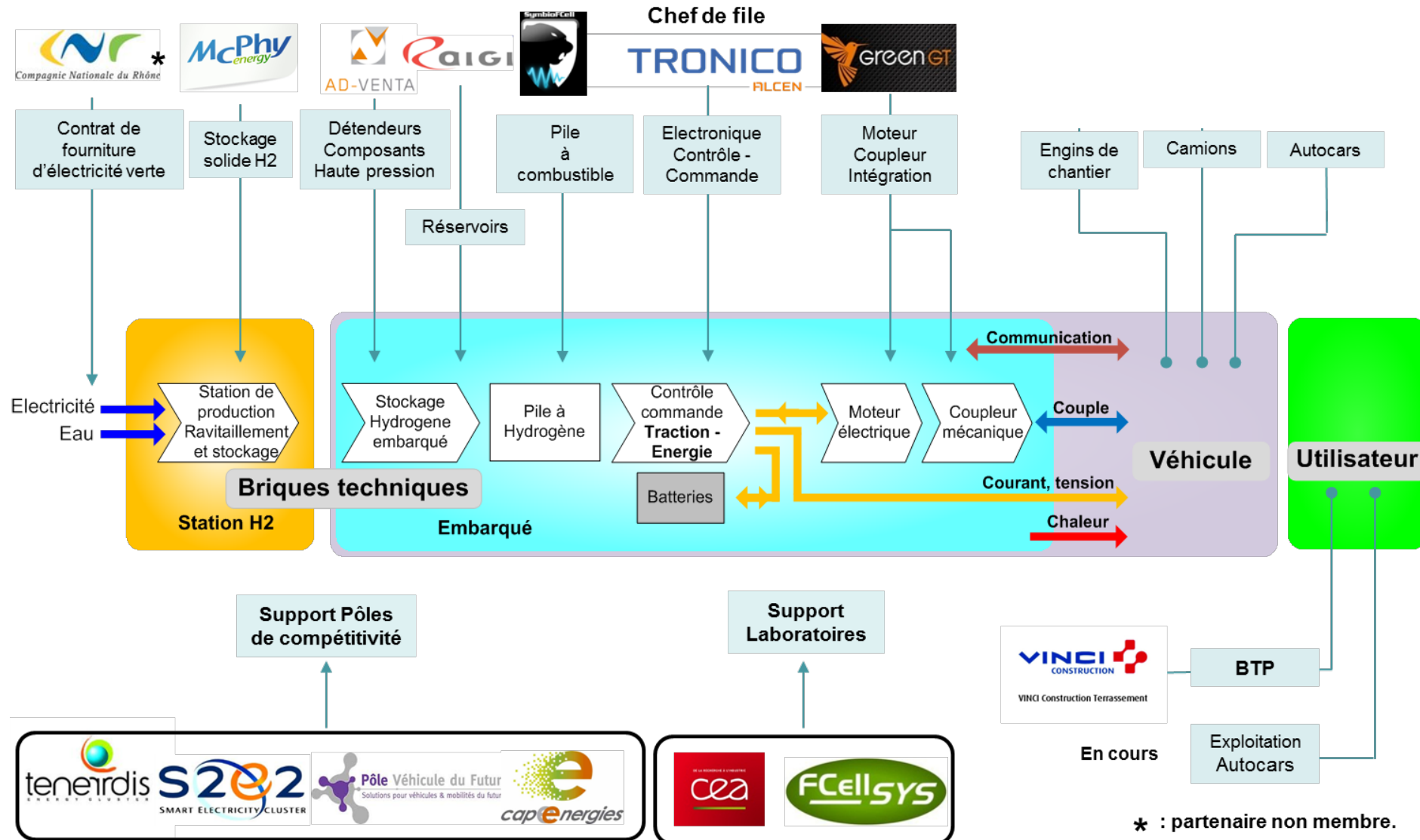


## TAME-POWER : WHAT WE OFFER

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- **To contribute launching the industry sector for green vehicles:**
  - Converters (DC/DC AC/DC and DC/AC) : design new converter ranges and increase power density (kW/Kg and kW/liter) and reliability
  - Power Distribution Unit : design new power distribution features and increase power density (KW/Kg et KW/liter) and data collect
  - BMS : improve processing algorithms and security
  
- **In order to comply with expectations for electric mobility** (including hydrogen electric vehicles and power stations)

# TAME-POWER : EXPERIENCE DE CONSORTIUM HYTRAC



## H2020 PROJECTS WE CAN BECOME PARTNER:

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- LC-MG-1-13-2020: Decarbonising long distance shipping
- LC-MG-1-15-2020: Towards sustainable high-speed global air transportation
- MG-3-4-2020: Innovative electric network architectures and systems, optimising global energy, electrical power, data and communication for aviation
- LC-GV-07-2020: Reducing the environmental impact of hybrid light duty vehicles

# Contact Information

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*TRONICO is a partner in projects concerned with improving the environment (hybrid hydrogen vehicles, ERAOLE® aircraft without CO2 emissions...)*

