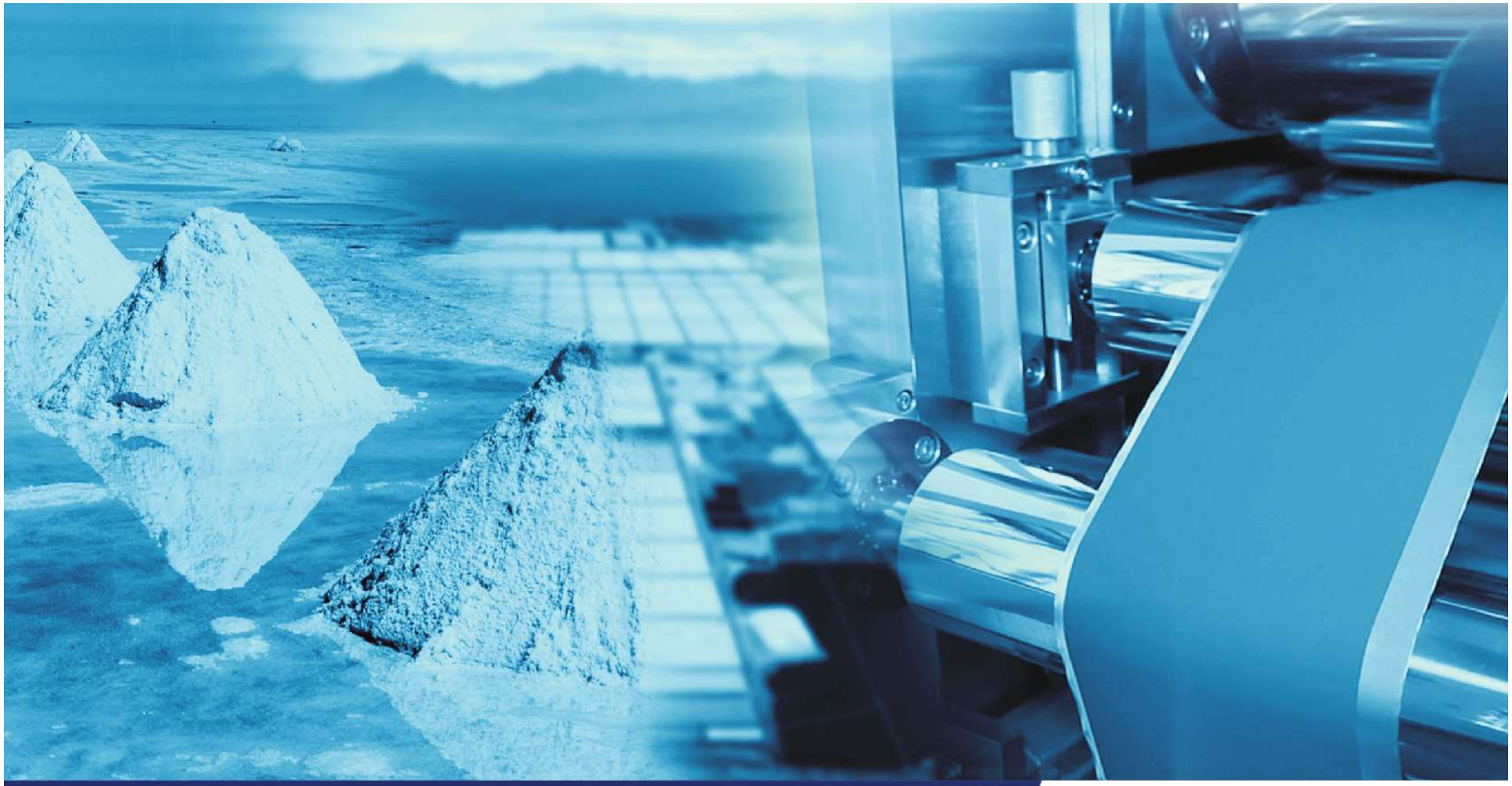


THE GROUP AT A GLANCE

SERI industrial GROUP

Executive Summary: SERI Industrial at a Glance

PRODUCT RANGE

Plants

Molding of plastic components

PP Compounds

Lead-acid batteries

Smelter – Lead Recycling

Lithium batteries

INDUSTRIAL FOOTPRINT

Canonica d'Adda (BG)
Pioltello (MI)
Avellino
Gubbio (PG)
Arras - FRANCE
Peronne - FRANCE
Warsaw - POLAND

Manfredonia (FG)
Monterubbiano (FM)
Nusco (AV)
Teverola (CE)
Torino
Yixing - CHINA

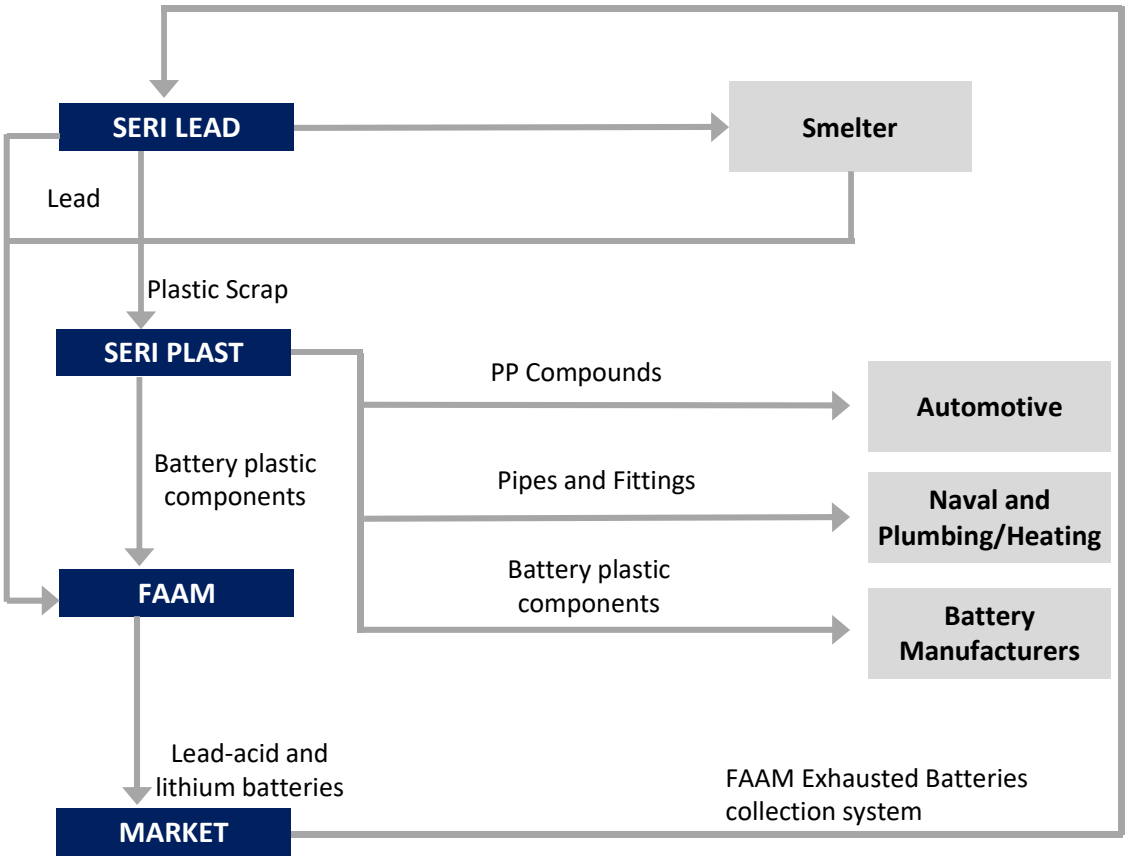
Alife (CE)

Alife (CE)

Calitri (AV)

SERI Industrial is a fully integrated Group along the supply chain of electric accumulators

SERI INDUSTRIAL: The REAL Circular Economy



R&D

R&D Division:

- Plast Research & Development;
- FAAM Research Development (former Lithops) ;
- Seri Plant – LiFePo synthesis

SUPPLY CHAIN CONTROL

SERI LEAD

Design and construction of turn key plants for the production of secondary lead from exhausted batteries

Production of secondary lead

SERI PLAST

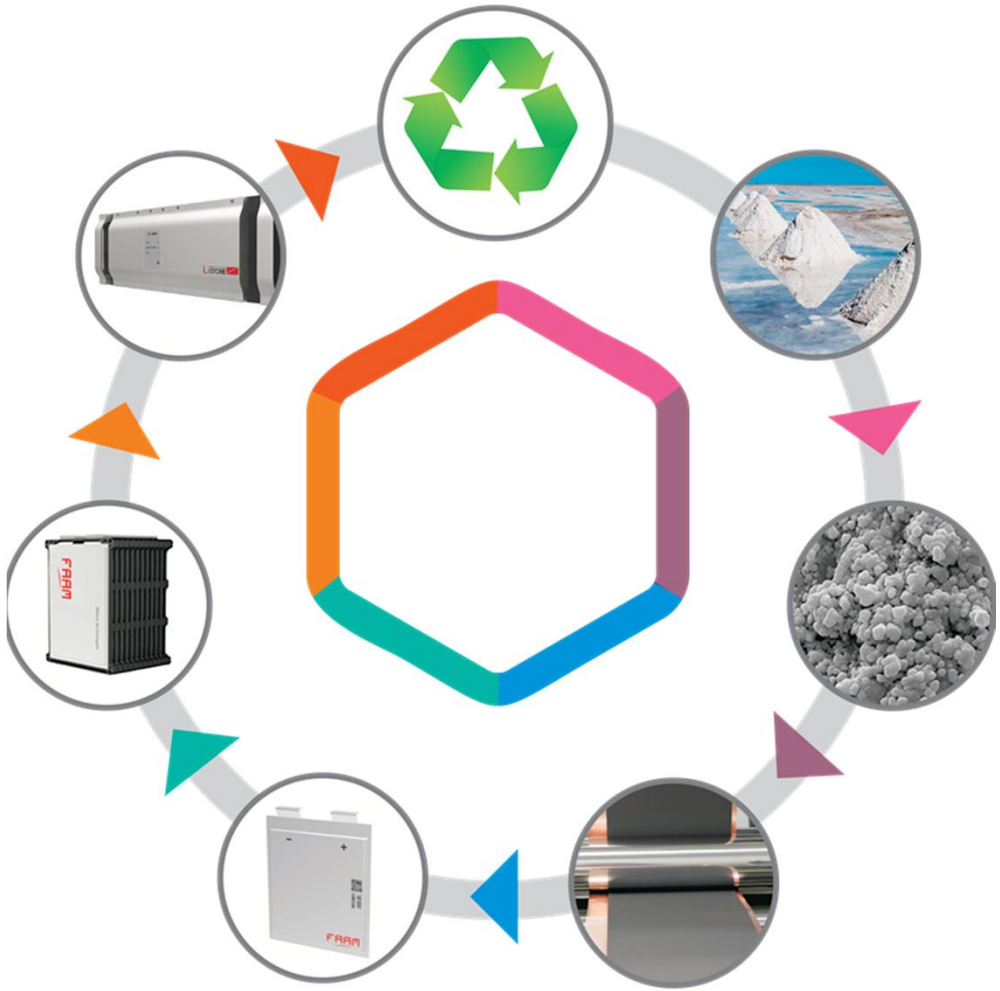
- Production of battery plastic components.
- Production of Hydro-thermo sanitary applications, plumbing, fittings.
- Production of PP compounds for automotive and lead acid batteries market.

FAAM

Production and distribution of lead acid and lithium batteries

**COES activity has been integrated in ICS starting as off January 2019*

NEXT STEPS… Li-On batteries Circular Economy Concept



Li-On VALUE CHAIN

LITHIUM SEGMENT

ACTIVE MATERIAL PRODUCTION

Joint Venture in Argentina

CELL PRODUCTION

Teverola plant – production kick off October 2019.
Step 1 - 200 Mw capacity – up to 600 Mw

MODULE PRODUCTION & ASSEMBLY

Li-On Modules

BATTERY PACK

Motive Power/Storage/Special applications
Batteries – BMS - Integration

RECYCLING

R&D projects on the way

Research & Development

JOINT R&D for SERI Industrial Group with three companies:

- FAAM Research Center
- Plast Research & Development
- SERI Plant R&D Department

Research and Development Centers

PLANT DIVISION

Main targets & current projects:

- Lower emission recycling processes
- Lithium batteries recycling

PLAST RESEARCH & DEVELOPMENT S.R.L.

Main targets & current projects:

- Specialty products in the pipes and fittings segment (e.g. Sliding Push Fit: a new fitting for the adduction of sanitary water;
- Organo sheet (thermo-plastic PP pre-impregnated products for automotive, industrial and naval).
- New coloured compounds for automotive applications

FAAM RESEARCH CENTER

Main targets & current projects:

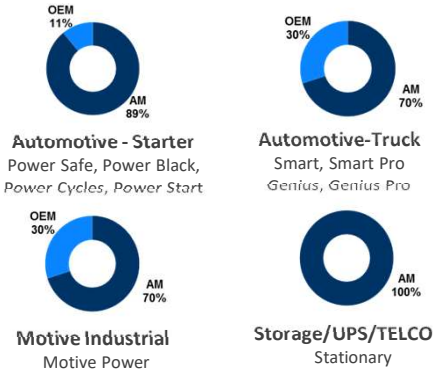
- Full involvement of the R&D team in the development of Teverola lithium cells productive plant
- Enhance of the latest technology for the lithium batteries
- Pilot plant already in function

Lithium Project

FAAM – Key Highlights

Background

FAAM is specialized in the design, manufacturing and sale of lead acid batteries for industrial, storage and starter applications.
Main customers: OEM in industrial motive power segment and, mostly, After-market



FUTURE PROJECT

- Start – up of Teverola Plant – 200 Mw Li-on batteries
- Start up of active material production through the JV in Argentina
- Lithium Special projects: Military, Naval, Public Transport, Digital Energy, Battery Rental
- IPCEI project for the production of next-gen batteries (for Automotive and Storage applications)

Footprint & Operations

Plants

Monterubbiano: 7.500 sm (indoor), 7.000 sm (outdoor); **Employees:** 67 FTE

Monte Sant'angelo: 8.000 sm (indoor), 6.000 sm (outdoor); **Employees**: 69 FTE

Nusco: 2.600 sm (indoor), 1.800 sm (outdoor);
Employees: 29 FTE

Teverola: 37.000 sm (indoor),120.000 sm (outdoor);
Employees:75 FTE

Key Highlights

CARBAT is a B2C network supplying automotive batteries to end customers. CARBAT is also an "on time" battery replacement provider to end cutomers.
FS is a service company providing after sales assistance to FIB customers.

Lithops And **FAAM Research Center** are focused on Li-ion R&D.

MAIN CUSTOMERS

Lithium Project: Teverola's site & JV in Argentina

In March 2017, FAAM acquired from Whirlpool Corporation the former Indesit complex of Teverola. In the area, SERI will build up a factory for the production of lithium cells with an **initial installed capacity of 200MW**, **easily scalable to 600 MWh**.

In March 2018, FAAM signed an agreement with Italian Development Ministry concerning **the granting of subsidies for a total of € 36.7 million** (of which € 16.8 million non-refundable) to be located in Teverola's site re-industrialization.

Technology selected by Seri: i) **Megtec**, for electrode production line supply, ii) **Manz**, for cells and modules assembly line supply and iii) **Kataoka**, for lithium cells' production and/or charge automatic plant supply.
The three suppliers are currently representing BAT on the market.

Initial Production capacity: **200 MWh/year** (Li-ion cells) – to be scaled up to **400** and **600 MWh/year**

Main markets: **Storage, Motive Power, military and special applications**

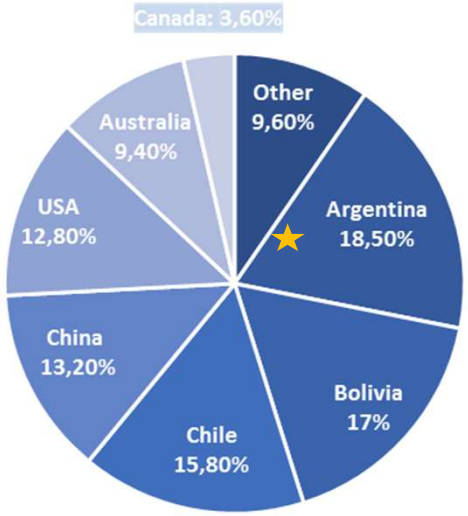
Staff: ca. **75 employees**

Area: ca. **37,000 sqm** (112,000 sqm external included)

First European lithium cell production plant in Europe, for industrial batteries applications

In December 2017 the Group started a JV with JEMSE and established Jujuy Litio SA (FAAM 40% and JEMSE 60%) in order to realize a plant **to manufacture active materials LiFePo**

FAAM will provide the know-how in terms of production and trading processes, while the Argentinean Jujuy province (JEMSE) will make available to Jujuy Litio SA the lithium carbonate produced in the Province of Jujuy.
The JV provides to Seri the 5% of the Total Production of the Salary under JEMSE concession (about 22kton/y lithium carbonate production – scalable to 45kton/y in the near future). The JV will guarantee SERI access to raw materials at competitive and more stable prices, with significant savings on cells' production costs.



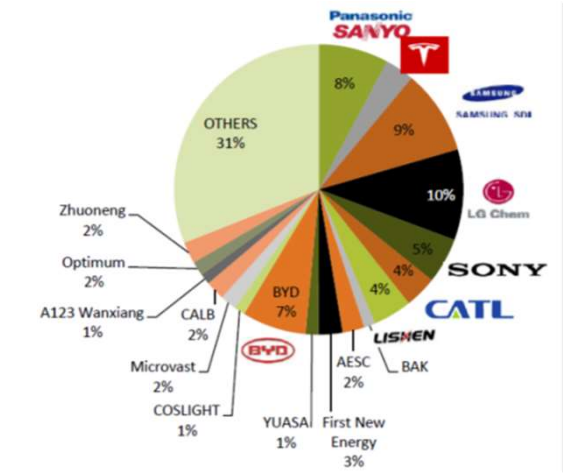
Direct control over the raw material

★ Argentina is the World's biggest Lithium Carbonate producer

The IPCEI Project

- The EU has engaged in a comprehensive update of its **energy policy framework to facilitate the transition away from fossil fuels** towards cleaner energy and to deliver on the EU's Paris Agreement - December 2015 - commitments for reducing greenhouse gas ("GHG") emissions.
- Battery cells are therefore the utmost importance for both the roll-out of **clean mobility** and the **stabilization of the power grids** integrating high share of variable renewable energy sources.
- This Integrated Project takes place in the context of challenges to be tackled by the European Union ("EU"). Against this background, it aims at developing a competitive, innovative and sustainable **battery value chain in the EU**.
- As partner of the IPCEI on batteries, **FAAM is developing a new, greener and advanced lithium-ion technology for next-gen battery production (gen 3a/3b/4)** and applications (**especially Automotive and Storage**), targeting an High performing lithium-ion electrode production based on new and innovative active materials, a Polymeric electrolyte membrane development and scale-up, Low environmental impact production processes for electrodes, cells and modules and eco design of cells and modules to facilitate their reuse and recycling at end of life, by collaborating with several cell-makers, components makers and end-user in Europe;
- Initial installed capacity of more than 2,5 GWh/year on an First Industrial Deployment.

Company Market Share



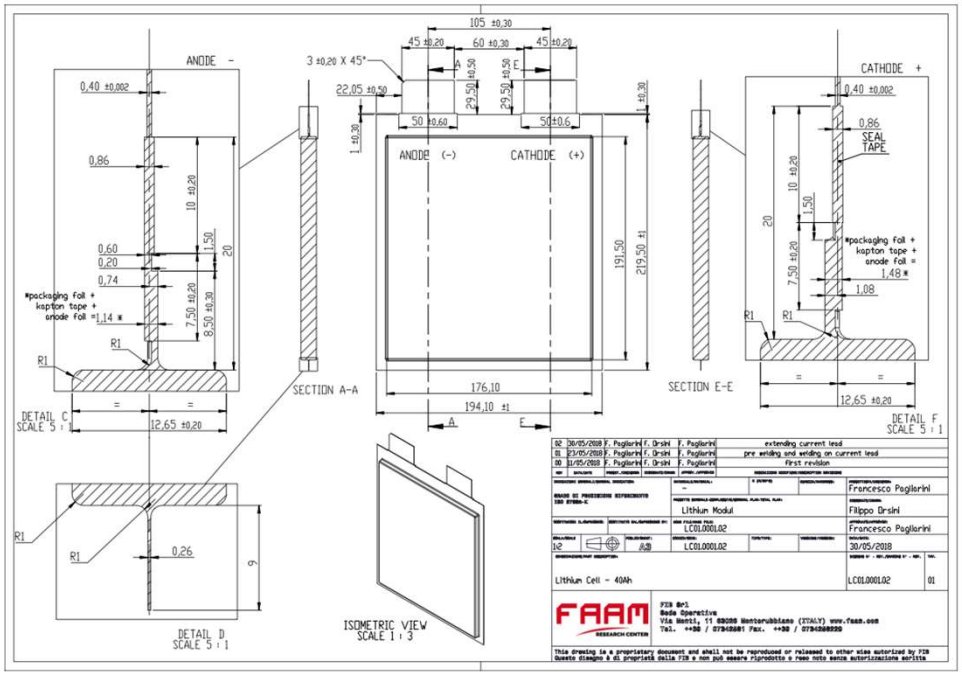
The Main producers are serving the Automotive and are mainly located in Asia. Europe doesn't have significant cells producers. The aim of EU is to reverse this trend, by making a complete and integrated value in the lithium battery market. FAAM will be one of the leading company.

FAAM Lithium Technology

KOMBI Modular System

SERI industrial GROUP

Li-ion battery cell



Key features

- 40 Ah pouch cell format
- 218 x 194 x 12.5 mm (L x W x t)
- LFP based (gen 1) – 3.2 V nominal tension
- Low carbon footprint: water-based process, no organic solvent used
- More than 4.000 cycles (80% DOD)
- Max current in discharge 3C (Peak 5C-10s)
- Max current in Charge 1C
- - 20°C to 55°C operating temperature

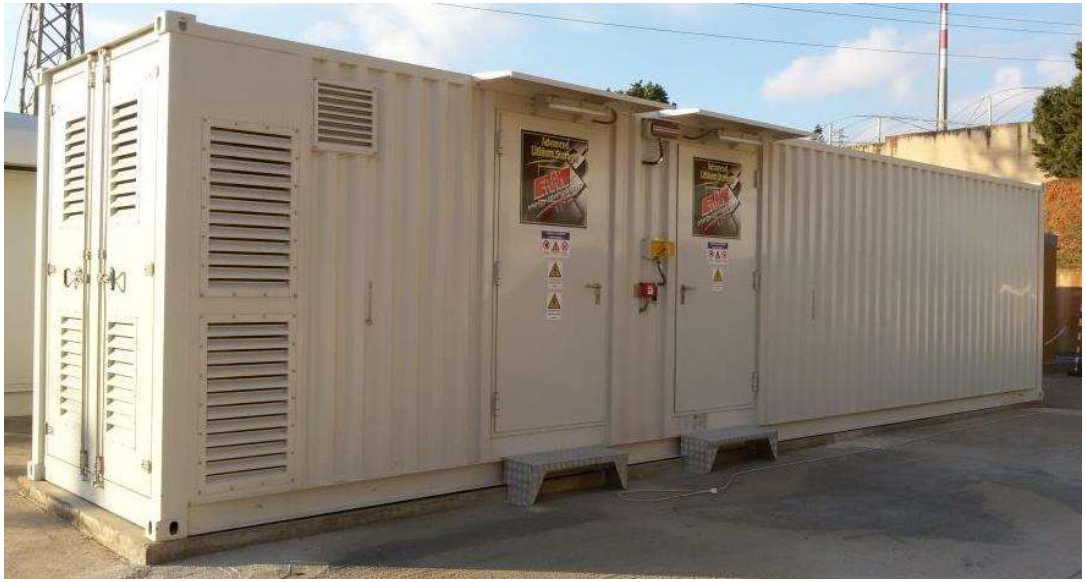
Why choose a FAAM Lithium Product?

Thanks to the high innovation, in the new Teverola plant, SERI will produce, through a fully automatic process, complete modules without the need of additional boxes/containers to manufacture the battery. This technology will allow a huge saving in the battery cost and a simple installation in traditional racks. Main producers are using cylindrical/prismatic cells that need assembly in battery pack through semi-manual plants or complex and expensive automatic production lines (which requires standard applications like automotive). FAAM will customize the battery, without any additional cost in a view of a full tailor made concept.

One of the first ESS in Italy

Integration between EE network and storage (from renewable sources)

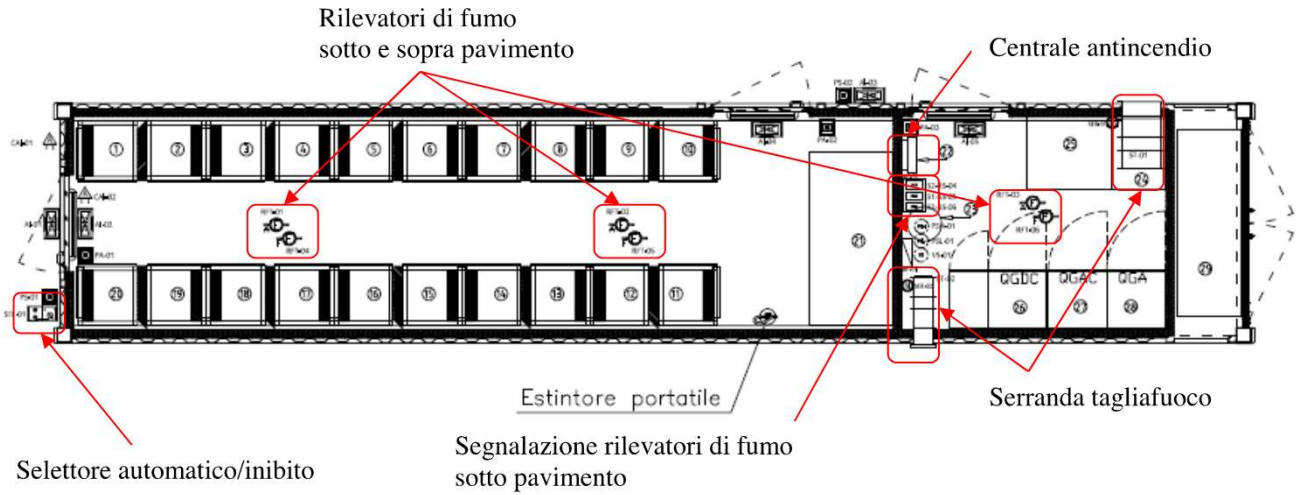
High efficiency, high power 1MWh storage - 2 MW power.

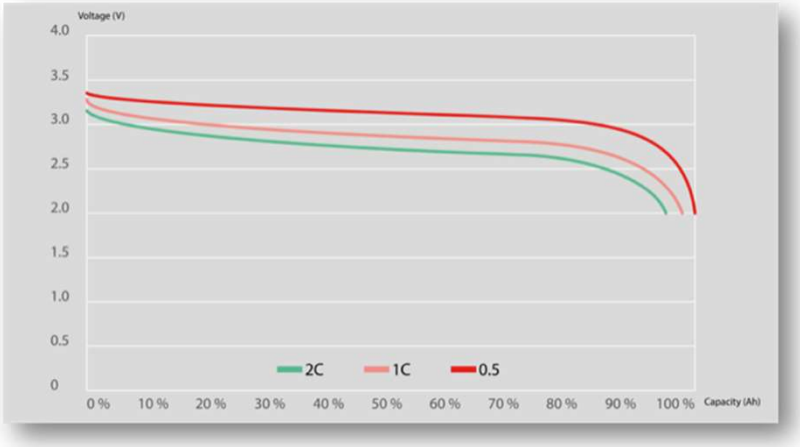


N. 2 Sherlter (tot. 1MWh – 2 MW)

Caratteristiche di ogni Shelter

- Uscita di potenza DC
- Energia utile 500kWh
- Tensione nominale 960Vdc
- Tensione minima 750Vdc
- Tensione massima 1050Vdc

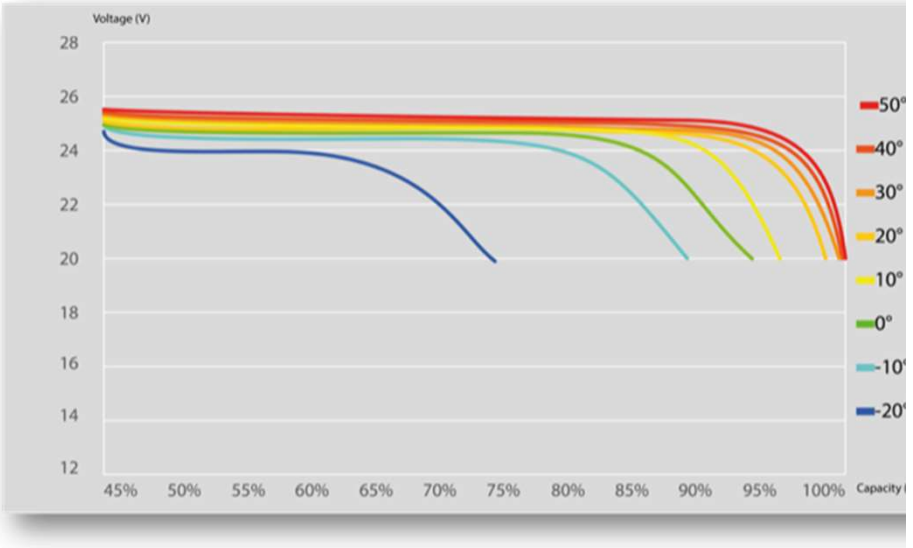



Voltage (V)
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0
2C
1C
0.5
0 %
10 %
20 %
30 %
40 %
50 %
60 %
70 %
80 %
90 %
100 %
Capacity (Ah)

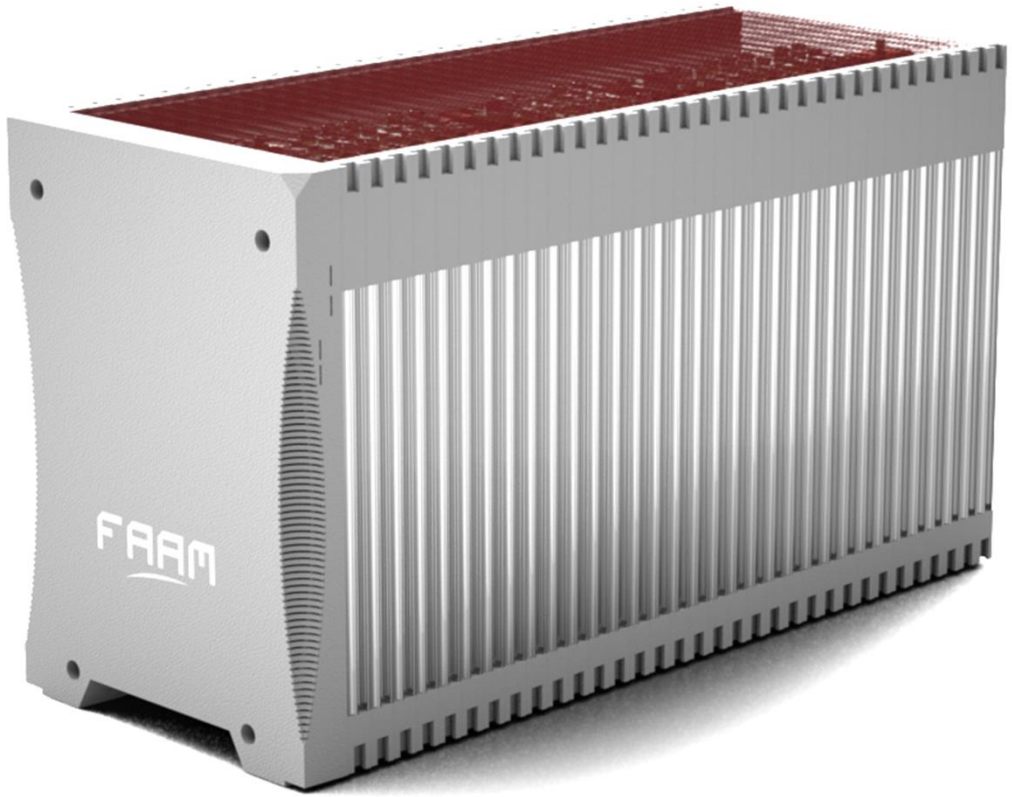

LITHIUM
TECHNOLOGY


LITHIUM


LITHIUM
LITHIUM


Voltage (V)
28
26
24
22
20
18
16
14
12
45%
50%
55%
60%
65%
70%
75%
80%
85%
90%
95%
100%
50°
40°
30°
20°
10°
0°
-10°
-20°

FAAM Lithium Technology KOMBI



THANKS FOR YOUR ATTENTION

SERI industrial GROUP

FAAM

Esperienza Veicoli Elettrici - Revamping

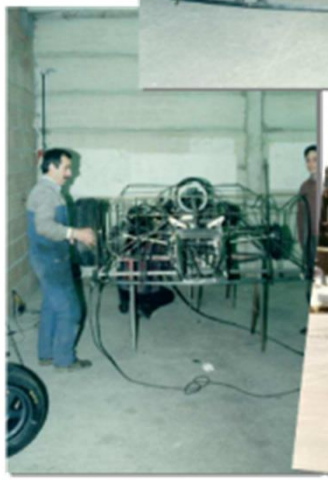
Company of

SERI GRUPPO

1991: L'AVVIO DELL'ATTIVITÀ DI PRODUZIONE

Trasporter NU 91

ANNI 90: L'ERA DELLE CORSE

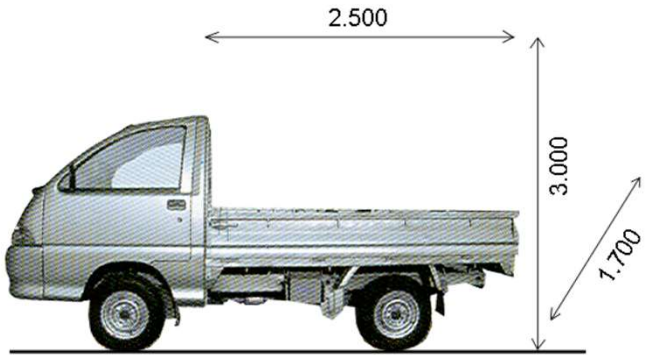


GLI INIZI

1991
Jolly 600

1997
Jolly 1200

ANNO 2003



Motore:	**AC trifase**
Potenza max:	**31 kW**
Coppia max:	**328 Nm**
Velocità max:	**80 km/h**
Massa totale a terra:	**2200 kg**
Portata autotelaio:	**1200 kg**
Passo:	**2080 mm**
Batteria:	**Li-ion 96V 300Ah**
Autonomia:	**80 km**

ANNO 2004

SMILE

Quadriciclo elettrico

Versatile : infinite soluzioni di allestimento

Massa totale a terra:	**1100 kg**
Massima potenza:	**9 kW**
Velocità massima:	**45 km/h**
Portata :	**300 kg**
Larghezza:	**1230 mm**
Lunghezza:	**2850 mm**
Autonomia:	**70 km (BTR Pb)**
	120 km (BTR Li)

ECOMILE/JOLLY 2000

Specific use for cleaning town and delivering

N. 26 Garbage trucks for City of Rome

N. 22 for Barcelona Town

N. 6 for Barcelona town

Platform trucks for Cities in Germany

35 SMILE FOR OLIMPIC GAMES IN BEJING

Equipped with system to check level of pollution

Regione Wallonia & Sita Belgio 2011

Progetti logistica Olanda 2011

Consegne nel Comune di Londra 2012

VEICOLO **SMILE ELETTRICO**

ESERCITO

POLIZIA MUNICIPALE

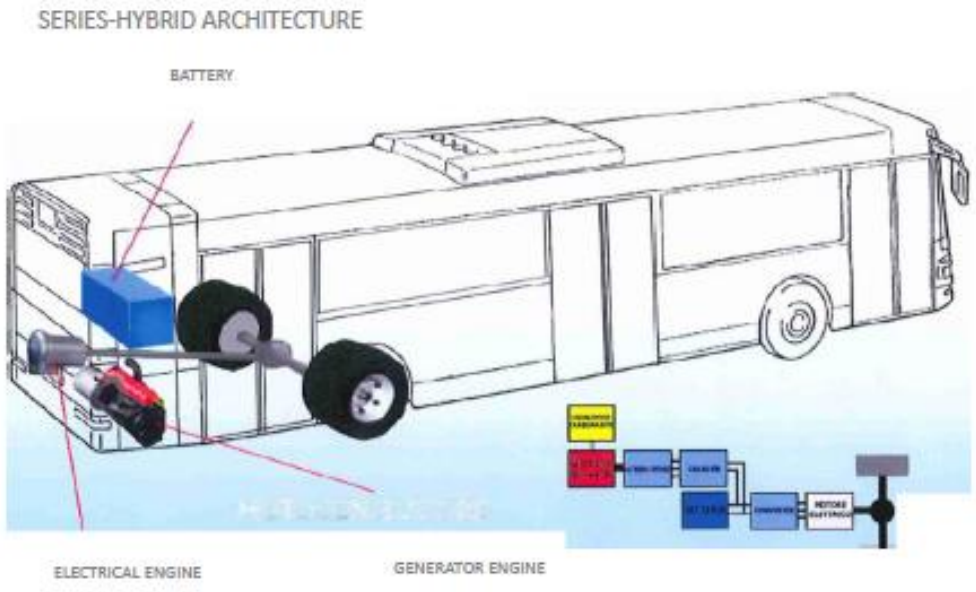
POMPIERI

OLIMPIADI TORINO 2006

PININFARINA – FAAM – MAGNETI MARELLI PRESENTANO HYBUS

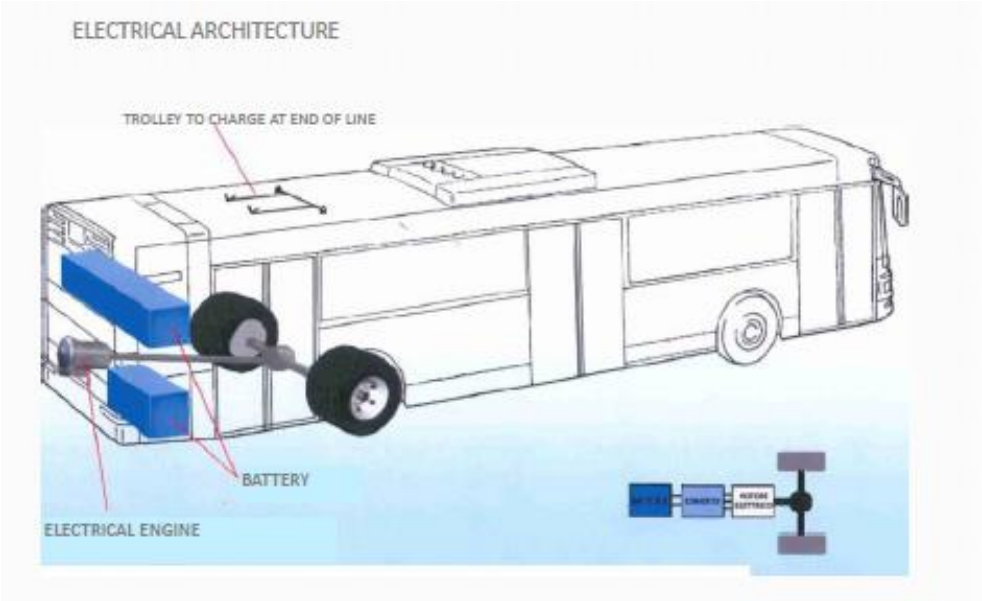
(24/10/2011)

riconversione di autobus equipaggiati con motori Euro 0-1-2 in autobus con motorizzazione ibrido seriale



OPZIONI

VEICOLO IBRIDO - SERIE



VEICOLO EV – FULL ELECTRIC

REVAMPING
TEST EFFETTUATO

- RICONVERSIONE DI AUTOBUS EURO 0 - 1 - 2
- TRASFORMAIZONE IN ELETTRICO – IBRIDO CON MOTORE TERMICO A PUNTO FISSO PER LA RICARICA DELLA BATTERIA DEI SERIVIZI IDRAULICI E PNEUMATICI (1,3 – 69KW EURO6)
- RECUPERO ENERGIA IN FRENATA
- RIPRISTINO COMPLETO CARROZZERIA ED INTERNI ED ADEGUAMENTO ESTETICO
- RIPRISTINO COMPONENTI ELETTRICHE/ELETTROMECCNICHE/MECCANICHE
- NUOVO CLIMA
- NUONO ABS – ESP

OBIETTIVO RAGGIUNTO

RISPARMIO DEL 60% RISPETTO ALL'ACQUISTO DI UN AUTOBUS NUOVO IBRIDO

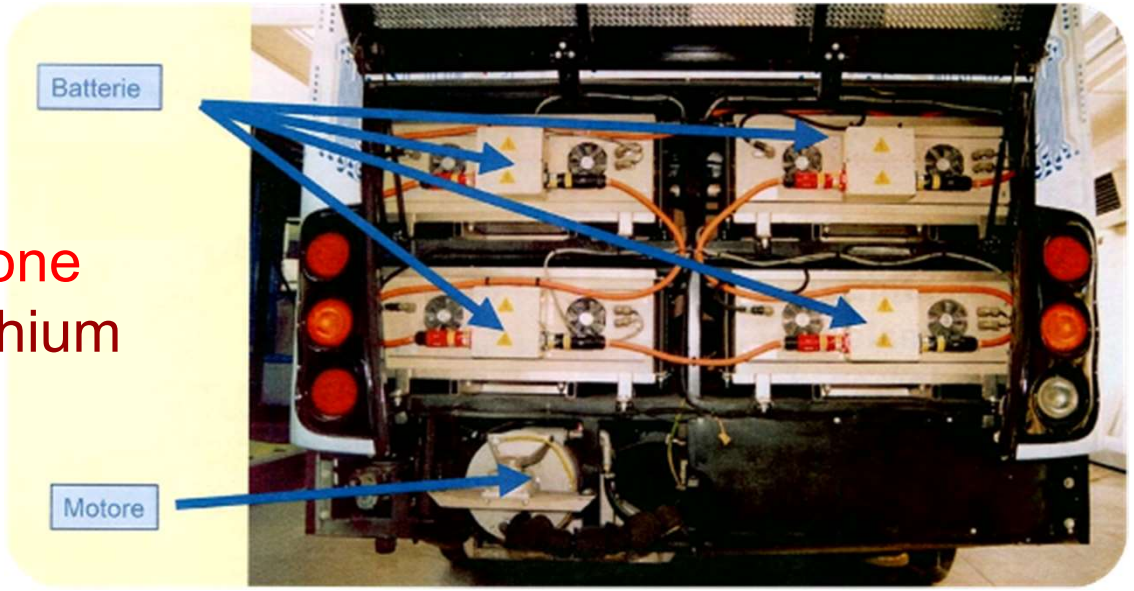
Custom Project

2008 TEST – 2014 FORNIUTURA

GTT
GRUPPO TORINESE TRASPORTI

'ELFO' EPT-CACCIAMALI ELECTRIC BUS

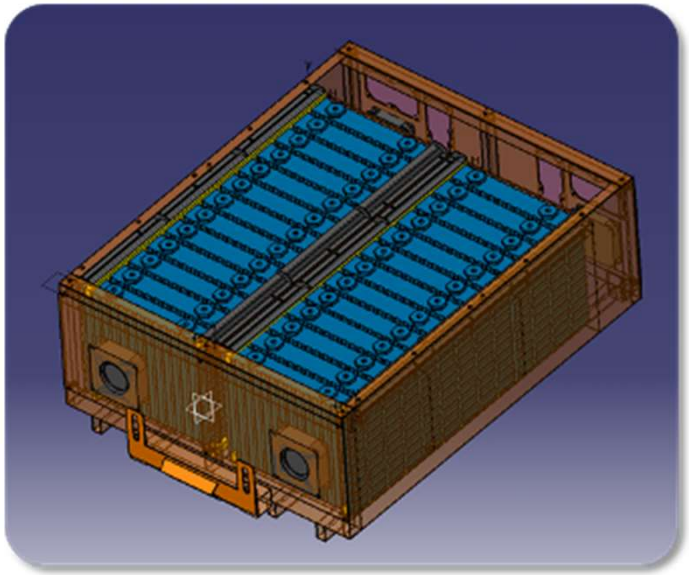
Trasformazione
Lead Gel→Lithium



Custom Project

GTT
GRUPPO TORINESE TRASPORTI

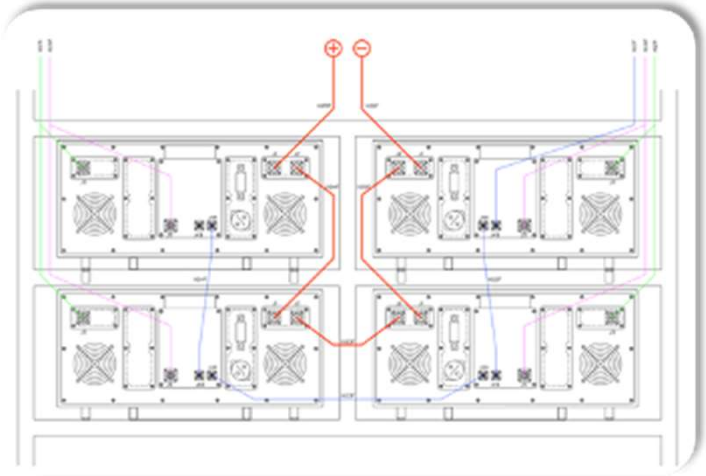
ELECTRIC BUS →'ELFO' EPT-CACCIAMALI



Custom Project

GRUPPO TORINESE TRASPORTI

BUS ELETTRICO →'ELFO' EPT-CACCIAMALI



PROJECT 1

$LiFePO_4$ Litio Ferro Fosfato

FLT-LFP 300

Faam Lithium Technologies

Total system energy 99,8 kWh

Module Capacity 300 Ah

Risultati Ottenuti

	Soluzione Precedente	Soluzione FAAM
Tipo di veicolo	BEV	BEV
Autonomia con singola Carica	72 km	132 km
Ore di servizio con singola carica	6 ore	12 ore
Tempi “biberonaggio” Autobus Fine linea	12 min ogni 45 min di servizio	6 min ogni 1,30 ore di servizio
Recupero max. Frenata Rigenerativa	13,5 kW	40 kW
Manutenzione Sistema Frenante	ogni 20.000km	Ogni 40.000km
Cambio Pacco batteri ogni	40.000km	150.000km

Thank you for your attention!

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