



Sustainable & modular lithium batteries

28/05/2025 - V03 - TC



Eco-responsible French manufacturing

Management of the **whole chain** in Annonay

Automated production site

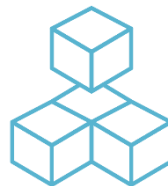
Local sourcing
ISO9001 certification



Eco-designed lithium batteries

TYVA Refill **batteries**
reconditioning technology

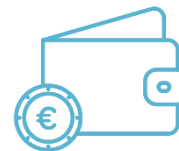
Promote the **circular economy** and reduce our
carbon footprint



Innovative, compact & modular solutions

Flexibility in the
conception of your
custom battery

Assembly in **series** or
parallel



Budget and planning control

**Optimized budget and
timeframe** for standard
systems

TCO optimization

I Our Story

Objective
2030

20 M€



iModbatt H2020
European project



Acquiring of the
ISO9001 certification

12 years of activity
22 employees
Revenues : 3,2 M€

2013

2017

2020

2023

2024

Creation of
TYVA Energie
Inside a garage
Annonay (07)

Building extension
of 450 m²



New Building of
1025 m² with
Robotic line



I Know-how (360° support)



Training



**Contenu « Internet »
Formation In Situ
Livres Blancs**



Specification



**Customer
support**



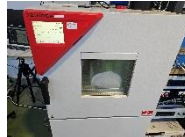
Conception



**Hardware
& Software**



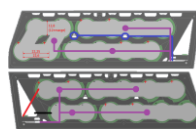
In House Test Lab



**Qualification and
certifications**



Industrialization



**Methods &
industrialization**



Production



**Production
in France**



Maintenance



**Technical support
technique and after
sales**



**Standards
Batteries**



**Customized
Batteries**



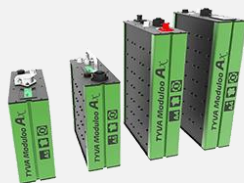
**Genset
and BESS**

Products range



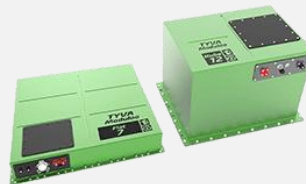
Moduloo 3D

lithium battery
compact and modular



Moduloo Ax

Lithium battery
Autonomous and light



Flat & Kube

Lithium battery
Robust and powerful



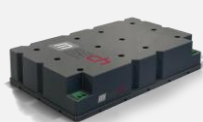
RX

19 inch NMC rack
High energy density



EX

Convenient and ergonomic
portable power station



Ultrion

Ultra fast charge



Lx Ion

Custom-made rechargeable
Li-ion batteries



HCB / Panasonic

Primary lithium battery
- Lithium Socl2
- Lithium MnO2



Haidi

Standard LFP battery

I Our Pride

« All TYVA Energie technologies are developed and industrialized internally by our Hardware and Software Design Office in Annonay in France



TYVA Refill

- TYVA Refill **batteries reconditioning technology**
- Promote the circular economy and reduce our **carbon footprint**



TYVA HARD

- Hardware and software **BMS Design**
- ECU and EMS development
- Battery parallelization / **GATEWAY**



TYVA Pyro Protection

- Solution for **thermal runaway risk**
- Fire protection **protection between cells**



Full support

Requirements definition
 Development of the most suitable battery solution
 Delivery, installation and after sales follow-up



Complete systems

Sustainable solutions
 TYVA Energie's lithium battery embedded to a complete technology



Digital tools

TYVA Smart Dashboard digital monitoring app
 Fleets of batteries management tool



Trainings

Training sessions intended for professionals
 Prevention concerning lithium batteries

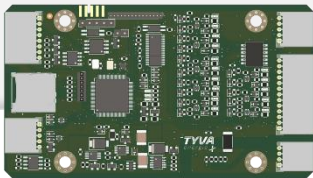


Battery renting

Battery test before its buying and integration
 Adjustments following the log file extracted during the static tests carried out



TYVA Energie's technologies are developed internally by our Software and Hardware Research Unit in Annonay, France



Electronic protections BMS and PDU

- **Smart security tools** **communicating** with the battery
- **Protection** against all types of risks



Gateway CAN for parallelization

- 2 to 10 lithium **batteries** **in parallel**
- Increase of the system's **capacity**



Compact and modular batteries

- Genuine **amount of power** for reduced formats
- Assembly **in series or parallel** for a custom system

Moduloo 3D

Moduloo Ax

Flat & Kube

Moduloo Ex

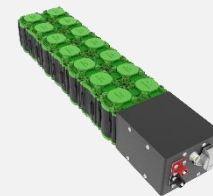
LX Ion

Moduloo 3D Compact and modular battery



- Modular conception in all 3 dimensions, in series or parallel
- LFP or NMC Li-ion lithium chemistries
- Compatible with the TYVA Refill batteries reconditioning technology
- More than 75 000 batteries sold across 20 countries since 2013

Dimensions	75 x 75 x 106 mm
Weight	0.56 to 0.6 Kg
Nominal voltage	3.2 to 29.2 V
Nominal capacity	3 to 26.8 Ah
Nominal energy	41.6 to 97.82 Wh
Maximum continuous charge current	1.7 to 32 A
Maximum continuous discharge current	8 to 240 A



PCB assembly



Busbar assembly



Moduloo 3D

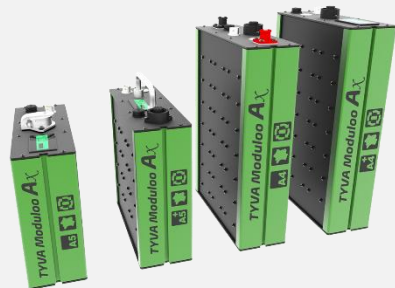
Moduloo Ax

Flat & Kube

Moduloo Ex

LX Ion

Moduloo Ax Light and autonomous battery

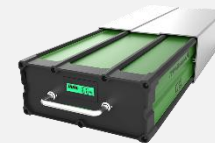


- Modular conception in series or parallel thanks to the Gateway CAN
- Available in 4 different formats and energies: A5, A5+, A4 and A4+
- Li-ion NMC lithium chemistry
- Compatible with the TYVA Refill batteries reconditioning technology
- Finishing touches: core pack, custom or Ax Xtreme (IP67 robust casing)

Dimensions	210 to 350 x 220 x 77 mm
Weight	4.2 to 8.5 Kg
Nominal voltage	14.6 to 51.1 V
Nominal capacity	15 to 117.25 Ah
Nominal energy	770 to 1710 Wh
Maximum continuous charge current	8.5 to 90 A
Maximum continuous discharge current	40 to 90 A



Custom assembly



Moduloo Ax Xtreme



Moduloo 3D

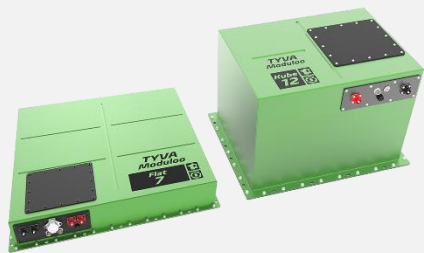
Moduloo Ax

Flat & Kube

Moduloo Ex

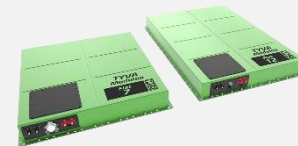
LX Ion

Flat & Kube Innovative and powerful batteries

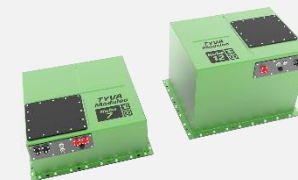


- Modular conception in series or parallel thanks to the Gateway CAN
- Available in 4 different formats and energies: Flat 7, Flat 12, Kube 7 and Kube 12
- Li-ion NMC lithium chemistry
- Compatible with the TYVA Refill batteries reconditioning technology
- Casing or custom finitions

Minimum width	100 mm
Weight	40 to 65 Kg
Nominal voltage	25.55 to 357.7 V
Nominal capacity	30 to 469 Ah
Nominal energy	6.13 to 11.98 kWh
Maximum continuous charge current	17 to 250 A
Maximum continuous discharge current	80 to 250 A



Flat 7 and 12 batteries



Kube 7 and 12 batteries



Moduloo 3D

Moduloo Ax

Flat & Kube

Moduloo Ex

LX Ion

Moduloo Ex Portable power stations



- Modular conception in parallel
- 2 products available: PowerCase (2 kWh) and PowerBox (5 kWh ou 11 kWh)
- Li-ion NMC lithium chemistry
- Compatible with the TYVA Refill batteries reconditioning technology
- Noise level below 60 dB at 1 meter
- Eco-responsible and sustainable alternative to power generators

Dimensions

45 x 26 x 28 cm to
96 x 65 x 59 cm

Weight

19.8 to 110 Kg

Nominal capacity

2 to 11 kWh

Charge temperature

0 to + 40 °C

Operating temperature

- 10 to + 40 °C

Charge time

5 hours

Maximum continuous
discharge power

3 to 10 kW



PowerCase



PowerBox



Moduloo 3D

Moduloo Ax

Flat & Kube

Moduloo Ex

LX Ion

LX Ion Cells and thermo-retractable sheath batteries



- Rechargeable Li-ion solutions
- Assembly from 18650 and 21700 cells
- Spot welding
- Finishing touches: thermo-retractable sheath , plastic casing, metal casing, custom



« Energy » cells

Nominal voltage 3.2 to 3.6 V

Nominal capacity 2 to 3.5 Ah



« Power » cells

Nominal voltage 3.2 to 3.6 V

Nominal capacity 1 to 3 Ah



Swimming pool tool

OUR CHALLENGE

Design of a custom lithium battery to power a motorized pool cover roller

BATTERY SPECIFICATIONS



Capacity
1 Ah



Co-conception
Project engineering



Voltage
24 V



Electronic Protection
PCM

Lithium battery
LX ion custom



Mobile fridge

OPERATIONAL CHALLENGES

Design of a custom lithium battery to power an autonomous ventilated cold trolley for the catering and events sectors:

BATTERY SPECIFICATION



Capacity
20 Ah



Voltage
24 V



Prolonged use
8 heures autonomy



Fire protection Technology
TYVA Pyro Protection



Aluminium casing
Handle



Rackable system
Removable battery

*Lithium Battery rackable
and custom*



Application fields

[Robots](#)[Offroad](#)[Defence](#)[Energy storage](#)[Electric mobility](#)[Marine](#)[Street furniture](#)

Robots



- AGV (Automatic Guided Vehicle)
- AMR (Autonomous Mobile Robot)
- Logistics robot
- Drone

Discover more

Swappable Moduloo Ax lithium battery imbedded inside Wyca's autonomous robot

[Discover](#)

Application fields

Robots

Offroad

Defence

Energy storage

Electric mobility

Marine

Street furniture

Offroad



- Urban vehicle
- Cleansing vehicle
- Construction machine
- Public works and agricultural gears retrofit
- Low emission zone dedicated vehicle (LEZ)
- Railway application

Discover more

Swappable Moduloo Ax lithium battery imbedded inside Gillet Tools' handling rail trolley


[Discover](#)

Application fields

Robots

Offroad

Defence

Energy storage

Electric mobility

Marine

Street furniture

Defence



- Terrestrial, aerial and submarine drone
- Demining robot
- Infantry robot
- Telecommunication
- Backup battery

Discover more

Custom Moduloo Ax lithium battery imbedded inside ALSEAMAR's subsea vehicle

ALSEAMAR
ALCEN

[Discover](#)

Robots

Offroad

Defence

Energy storage

Electric mobility

Marine

Street furniture

Energy storage



- Portable energy solution: suitcase, trolley, etc
- Alternative to power generator
- Energy system with built-in battery
- Cinema and film sets
- Events
- Offgrid
- Construction

Discover more

Moduloo Ex range:

Portable power stations for cinema, events, construction of even offgrid


[Discover](#)

Application fields

Robots

Offroad

Defence

Energy storage

Electric mobility

Marine

Street furniture

Electric mobility



- Car
- Motorbike
- Utility vehicle
- Aircraft
- Boat
- Jet ski
- Kart
- Exoskeleton

Discover more

Swappable Moduloo 3D lithium batteries embedded inside Raphaël Dinelli's Eraole electric aircraft


[Discover](#)

Application fields

[Robots](#)[Offroad](#)[Defence](#)[Energy storage](#)[Electric mobility](#)[Marine](#)[Street furniture](#)

Marine



- Electric boat
- Recreational vehicle
- Beaconing buoys
- Data buoys
- Remotely operated underwater vehicle (ROV)

Discover more

Kube 12 lithium batteries embedded inside MOBILIS' mooring and data buoys

[Discover](#)

Robots

Offroad

Defence

Energy storage

Electric mobility

Marine

Street furniture

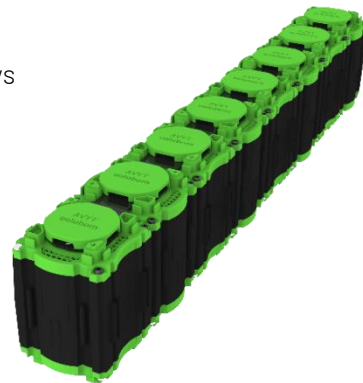
Street furniture



- Solar street light
- Traffic sign
- Lighting beacon
- Bus shelter
- Advertising display

Discover more

Moduloo 3D lithium batteries assembled in series embedded inside street advertising displays





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Thank you for attention!

28/05/2025

