

The background features a complex network of glowing blue and cyan lines, some straight and some curved, creating a sense of motion and connectivity. There are also several semi-transparent green and blue circular shapes scattered throughout. The overall color palette is dominated by blues, greens, and whites, with a dark blue/black background in the upper right.

**3**

**3BMac**

# A world in progress

In a constantly evolving world, with increasingly advanced technologies, it is often necessary to provide answers to initial production needs. Engineering, testing and prototyping are the basis of good design, and 3BMac has **the right solution** that you hadn't found yet.





# Are you ready for a new step?

In recent years, 3BMac has had the opportunity to follow BMS development projects at 360°, gathering experience that today allows it to provide specific services (electronic development, testing, cell characterization, simulation, creation of proto and mockup modules, etc.) in the context of the customer.

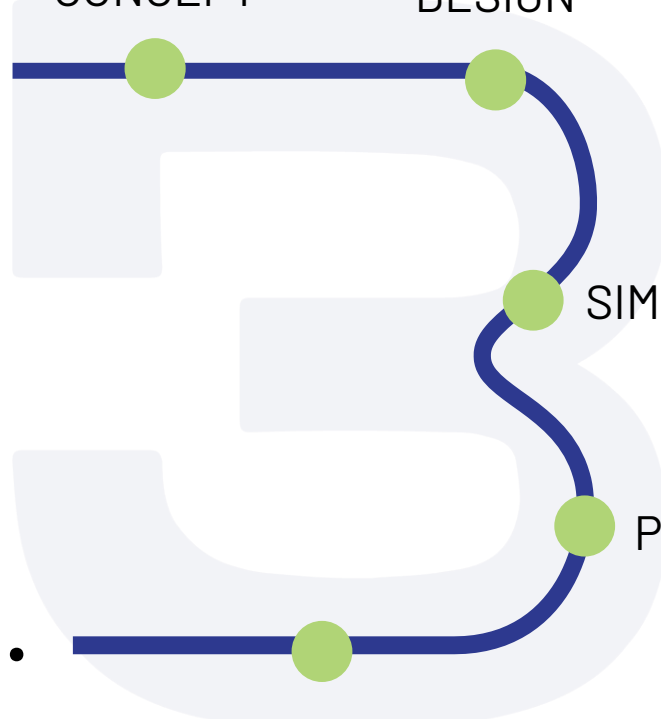


**A laboratory  
with a new concept  
of testing and  
prototyping**

**From IDEA...**

CONCEPT

DESIGN



SIMULATION

PROTOTYPING

**to PRODUCT...**

VALIDATION



**Testing lab on  
electrochemical  
services**

**Design & creation  
of proto and  
mockup modules**

**Electronic  
development**

**3D  
Printing**

# APPLICATION AREAS

- **Electronic**
- **Electrical**
- **Mechanical**
- **Electrochemical**
- **Prototyping**
- **Testing**



# Testing lab on electrochemical services



**We have  
three  
laboratories:**

# Lab 1.

Area for Cells or Module Characterization:

- Internal Resistance
- EIS
- Real State / Real Capacity
  
- Itech Power Supply (up to 60V – 9Amp)
- Itech Electronic Load (up to 20Amp)
- Labview Tools



**We have  
three  
laboratories:**

## Lab 2.

Area for Module and/or BMS Testing:

- Itech Bidirectional Power Supply (up to 80V - 250Amp)
- Labview Tools

NI Instruments:

- 16 Channel Analog In
- 08 Channel Termocouples
- 02 CANBus FD/HS
- 04 RS485/422
- 08 Digital I/O



**We have  
three  
laboratories:**

## Lab 3.

Area for BMS Pre-Validation  
and/or Electronic parts:

- Siglent 3 chanel Power Supply
- Siglent Multimeter
- Siglent Waveform Generator
- Hot Chamber



## Test benches

In collaboration with I.P.R. System Srl (<https://www.iprsystems.it/it/>) the experiences deriving from the experimentation activities that determine strict protocols of applied methodology are transformed into test benches.



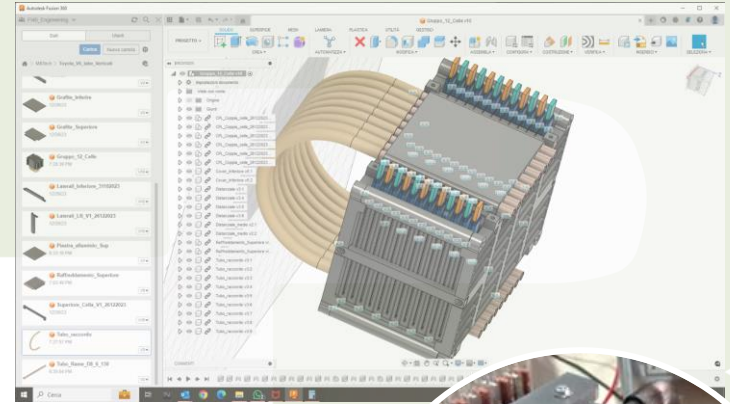


**Design & creation  
of proto and  
mockup modules**

## Module design

The experience gained over the years allows us to approach the engineering of modules and/or battery packs with equipment also suitable for the management of Thermal Management and control through BMS.

The prototyping and testing technologies at our disposal allow not only development but also validation.





**Electronic  
development**

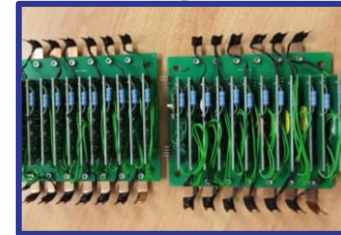
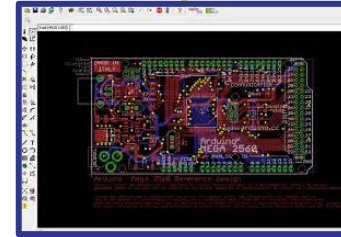
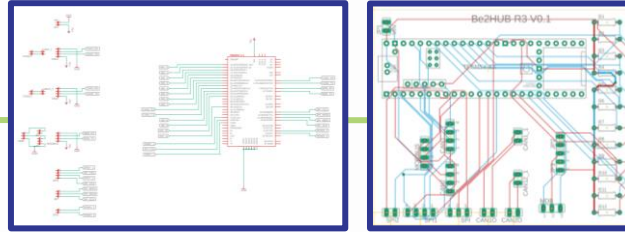
**Support service**  
in Risk Analysis,  
DFMEA, PFMEA,  
PL and/or SIL  
Certification



3BMac accompanies its customers in all phases of design, from the "concept" to the prototype for testing, up to the pre-industrialization with the creation of Mini-Series, also with SMD technology



➤ Project



➤ Proto

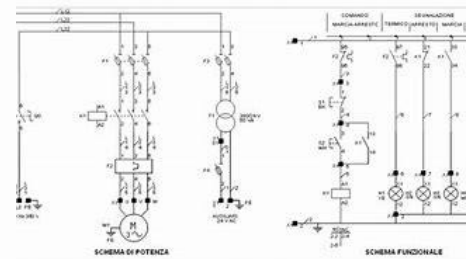
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PL and/or SIL  
Certification

# Low-medium voltage

To give continuity to the activities that over time have made it possible to make new investments in new areas, 3BMac, supported by suppliers specialized in wiring and on-board machines, supports its customers with the design of Medium and Low Power electrical panel.



The experience gained in the field of mechanical design, in particular for the construction of test benches, today is mostly aimed at prototyping with 3D printing.





# 3D Printing

# Our printers (FDM)

Materials:

PLA

ABS

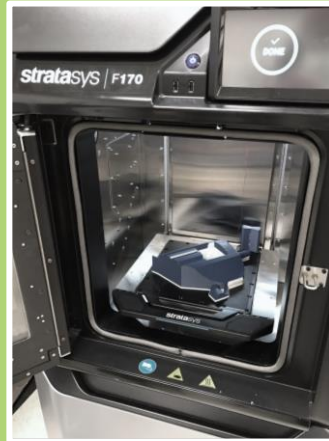
ABS CF10

ASA

NYLON CF10

TPU

DIRAN



# 3BMac timeline

2008

Until today:  
16 years of great  
commitment  
**dedicated to the  
needs of our  
customers** have  
allowed us to build a  
professional and  
flexible organization

2021

**3BMac** is born  
as Project  
Manager in  
System  
development  
Industry 4.0

2022

**3BMac** is  
involved in a  
project to  
develop a high-  
performance  
BMS. Gained  
experience  
generates new  
opportunities

2023

**3BMac**  
invests in the  
world of  
electrolytic  
cells

2024

ISO9001:2015  
Certification in  
the following  
fields:  
Electronic  
Design, 3D  
Printing,  
Testing



# 3 3BMac

3BMac S.r.l.



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14050 Moasca(AT) - ITALY



[www.3bmac.it](http://www.3bmac.it)



[3b-mac-srl](https://www.linkedin.com/company/3b-mac-srl)

## Contacts



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Thanks  
for your attention