TEAM AND TERRITORY

Città di
Bologna

Alma Mater Studiorum

Emilia Romagna Motor Valley
UniBo Motorsport is the racing team of the Alma Mater Studiorum University of Bologna, born 11 years ago thanks to the passion for the automotive world of some engineering students belonging to the CTM association (Club Tecnica e Motori). Today the team boasts about the presence of 190 students from different faculties of the University of Bologna: the multifaced training and the different skills allow the team to have a corporate organization aimed at optimizing the use of human and economic resources.
Formula SAE, organized by the Society of Automotive Engineers, is the automotive competition that focuses on students’ ability to create a racing prototype. They are not only called to create a performing vehicle, but also to focus on economic issues, evaluated through specific tests. Students, putting themselves to the test, combine the knowledge learned from studies with practical skills expendable in their future professional career.
Motostudent, promoted by Moto Engineering Foundation and Technopark Motorland, is a university motorcycle competition divided into the MotoStudent Petrol and MotoStudent Electric categories.

Starting with a kit provided by the organization, students must create a fast and performing vehicle also paying attention to the economic aspects, thus putting into practice what they have learned in their studies.
FORMULA SAE MAIN PARTNERS

SQUADRA CORSE
MOTOSTUDENT MAIN PARTNERS

FONDAZIONE DUCATI

Engines Engineering

3D METAL
ADDITIVE MANUFACTURING

Alma Automotive

MARPOSS
PARTNERS
NEW ELECTRIC FS PROTOTYPE

- Self-developed touchscreen dashboard with graphic interface
- Carbon fiber monocoque
- 500 V Battery Pack with self-developed BMS
- 4 in-wheel permanent magnet synchronous motors
- Cooling system with heat channels within the motor housing
- Torque vectoring system
ALPHA LEONIS

- Self-developed touchscreen dashboard with graphic interface
- Lithium-ion battery and Self-developed BMS
- Carbon fiber fairings
- Optimized swingarm made in additive manufacturing SLM
- Electric engine heat exchanger made in additive manufacturing
- Bidirectional real-time telemetry system on LabView Self-developed software
- Chassis frame made of carbon fibre
MotoStudent Aragòn 2018

- 3\textsuperscript{rd} place Overall Electric
- Best Rookie Team Electric
- Best Acceleration Electric
- Best Gymkhana Electric
- 2\textsuperscript{nd} place in Brake Test Electric
- 3\textsuperscript{rd} place in Best Design Electric
With what criteria we assembled the battery pack:

• Electrical resistance: the target value for the connection between cells has been set to be $\leq 50\times 10^{-6}$ $\Omega$.

• MotoStudent 2018 Regulations: It is not allowed the direct connection between cell terminals.

• Structural solidity of the package: Mechanical resistance to possible impacts.

Thanks to the support of the University of Bologna, it was decided to start an inter-university collaboration with Gruppo Laser for the welding of the cells of our battery packs.
Test samples of the 2018 battery pack

Realization of the 2018 specimens:

- Cell tabs made of copper and aluminum on Copper buckles.
- Flat surface welding with possibility of perpendicular welding.
- Mask added for optimal welding.
## Test samples of the 2020 battery pack

<table>
<thead>
<tr>
<th>Power [W]</th>
<th>Linear speed</th>
<th>Breadth [mm]</th>
<th>Overlap [%]</th>
<th>Vtan [mm/s]</th>
<th>Frequency [Hz]</th>
<th>Inclination</th>
</tr>
</thead>
<tbody>
<tr>
<td>850</td>
<td>40</td>
<td>0,6</td>
<td>60</td>
<td>471</td>
<td>250</td>
<td>30</td>
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THANKS

FOR THE ATTENTION