From Laboratory to Racetrack: Engineering the Fast Lane

Laser Welding of Battery Modules: RMA & Poznań University Collaboration

Sometimes all it takes is a spark of collaboration to ignite a true wave of innovation. That's exactly what happened when **RMA** joined forces with **PUT Motorsport from Poznan University of Technology.**

One Goal, One Team.To create a more efficient and reliable power system for an electric race car set to compete in the prestigious Formula Student competition.

Technology that fuels performance

For years, **RMA** has been delivering cutting-edge solutions to the battery industry — particularly in the field of laser welding, which enables exceptionally precise joining of components. It's a technology that increasingly forms the backbone of modern electromobility.

The collaboration with **PUT Motorsport** created the perfect opportunity to combine academic insight with industrial expertise. The student team **designed a battery based on Pouch cells** — a solution growing in popularity in modern electric systems.

RMA specialists supported the team in **laser-welding aluminium–copper connections,** which require outstanding precision and strict process control.

The result? A durable **assembly of 140 pouch cells into 10 modules**, with work that previously took weeks completed **in just one day.**

"The laser-welded joints met — and even exceeded — our expectations. They are incredibly precise and highly repeatable," emphasize the PUT Motorsport team.

Faster, safer, better

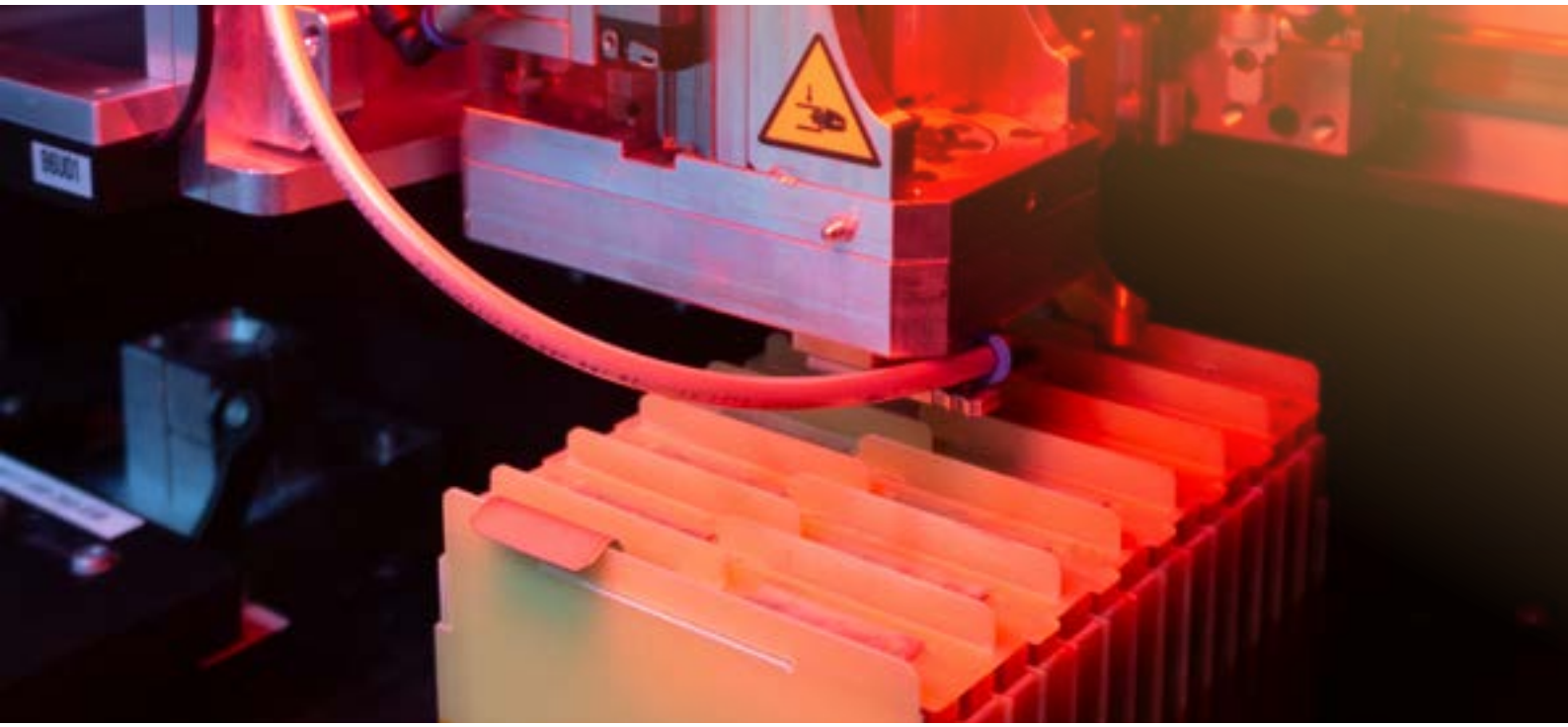
In previous years, students had to manually spot-weld hundreds of cells — a demanding and time-consuming process. Thanks to RMA's technology, **battery production accelerated by 1–2 months**, and the team was also able to prepare additional spare modules.

Automated laser welding also significantly improves safety — it reduces the risk of short circuits and burns, while producing joints with lower resistance. This translates into lower energy losses and reduced operating temperatures. As the students themselves admit, *"our latest battery performs much more consistently than previous designs — even during the most demanding runs."*

Knowledge in motion

The **PUT Motorsport** team has been active since 2014. Driven by a passion for engineering and motorsports, the students design, build and test race cars that later compete on tracks across Europe. For them, Formula Student is more than just a competition — it's a future-focused laboratory where they learn teamwork, project management and the application of advanced technologies.

"*Working with RMA helped us understand industrial standards and see how high-quality components are really made. It's experience that will undoubtedly benefit us in our future careers,*" the team members highlight.



Success breeds success

In the 2025 season, PUT Motorsport competed at the legendary **Hockenheimring** during F**ormula Student Germany**, as well as at **Autodrom Słomczyn** during **Formula Student Poland.** The team returned to Poznań with several achievements — including **3rd place in the Autocross event and one of the top Endurance times.**

Yet results aren't the only thing that matters. This is tangible proof that collaboration between industry and academia truly works — enabling young engineers to turn knowledge into practical solutions, while companies like RMA can test their technologies under the most demanding real-world conditions.

A shared direction: the future of electromobility

The joint project by **RMA and PUT Motorsport** demonstrates how much can be achieved when passion, science and technology come together. From precise laser welding in the lab to competitive performance on the racetrack — every stage of this collaboration marks a step toward a more sustainable and advanced future of mobility.

Because it's exactly at the point **where knowledge, precision and determination meet that true innovation is born.**

In brief:

- RMA supported PUT Motorsport in developing the battery by utilizing precise laser welding.
- 140 cells were assembled into 10 modules in just one day.
- This technology enhanced the battery's safety, performance, and stability.
- The collaboration between academia and industry translated into tangible successes for the team in Formula Student.