

NEWSLETTER

TLMOTO
TÉCNICO LISBOA



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Bernardo Silva

Bernardo Silva initiated his journey at TLMoto in April 2021, serving as a member of the Marketing and Design department. He is currently concluding his role as the Marketing and Design lead to transition into the field of Aerodynamics and Cooling. Bernardo holds a bachelor's degree in Aerospace Engineering from Instituto Superior Técnico and is now in his first year of the master's program in the same field.

How did you find out about TLMoto and why did you decide to join?

During my first year of college, I wasn't very motivated due to COVID, remote learning, being far from home, and other factors. I felt the need to make some changes in my life, something that would inspire me and give me the desire to continue studying. In the second semester, I saw on social media that TL was recruiting for Marketing and Management positions. Since I was creating advertisements for some companies on social media to help with expenses, I thought I had the video editing and graphic design skills TL was looking for, so I decided to apply.

If you hadn't joined Marketing and Design, which other department would you have chosen?

As a student of aerospace engineering, if they had opened recruitment for Aerodynamics and Cooling at that time, I would have applied. However, in hindsight, I am pleased with my decision because Marketing and Design provided the creative outlet I needed and gave me the opportunity to meet and build an incredible team. Moreover, at that time, I was a much more valuable member to the team in the Marketing and Design department than I would have been in Aerodynamics.

What do you think led you to become Marketing and Design leader?

Before becoming the Marketing and Design leader, I was appointed as the Design sub-leader, where I had the chance to enhance my leadership and organizational skills, which were not well-developed at the time. I believe that these qualities, coupled with my immense dedication to the team, creativity, and vision for what I wanted TL to become, played a crucial role in my progression to a leadership position.

Was it easy to balance TLMoto with your studies?

At first, it wasn't very easy, but over time it became part of my routine and I started planning everything taking into account the time I spent on the team.

What advice would you give to someone considering joining the team?

Join us! It's a truly enriching and unique experience.



What were the biggest challenges you faced while holding this leader position?

I faced some challenges when it came to organizing the work of an entire team, but over time, I believe I've been improving, and it eventually became a routine, which made things much smoother. However, undoubtedly, the most challenging aspect was maintaining the motivation of team members. Since much of our work was online (with some members unable to attend the workshop regularly), it made the team experience less engaging, thus making it more difficult to keep the team motivated.

If you had to describe your experience on the team in a few words, what would you say?

Incredible. I've met people I'll carry with me for the rest of my life, had the opportunity to implement my ideas, helped build the best MotoStudent marketing team IST has ever seen, participated in an innovative project, experienced the exciting atmosphere of a competition, all in the company of friends who share the same enthusiasm and passion. It was a unique experience that made me grow a lot and gave me the will and motivation I needed to always give my best. I owe much of who I am to this team.

Do you feel that you have gained any skills since joining the team?

Undoubtedly, beyond the technical design knowledge (which proved more valuable than I initially thought in an engineering course), I developed strong team organization, time management, and leadership skills. I learned how to give and receive feedback, improved my teamwork abilities, enhanced my communication and expression skills, all of which are essential for effective teamwork. These experiences have made me a much more capable individual in an engineering environment.

Do you have any professional dreams that you hope to fulfill one day?

Thanks to my experience with TL, I realized that in the future, I would like to be involved in some type of engineering competition. It's an energetic and exciting environment where creativity and ingenuity are highly valued.

Favorite MotoGP rider and team?

Certainly, our Miguel Oliveira at Aprilia.



31/10

DEM's Industry Day

On October 31st, another edition of Industry Day took place, organized by the Department of Mechanical Engineering (DEM) at Instituto Superior Técnico. This event was designed to engage the student community, highlighting IST's student groups along with faculty members and various specialized companies in the field. It was a great privilege for the team to be part of this celebration, where they had the opportunity to showcase the project, receive feedback, and exchange ideas with professionals in attendance. TLMoto regards this day as an enriching experience and looks forward to participating in future editions.

16/11

High School Visit to the Workshop

Once again, the team had the opportunity to welcome high school students to our workshop. The initiative aimed to introduce this new generation of students to our project and how it operates in a more practical sense. During this visit, they could experience the atmosphere in the workshop and also learn more about the motorcycle components and how they are developed.

19/12

Visit to MCG's Factory

On December 19th, the team was invited to visit the machining facility at MCG in Carregado. This Portuguese company specializes in the development and production of metal-based and other composite material products and solutions. Their collaboration is a significant asset to the team. TLMoto embraced this opportunity with great pleasure and gained insights into these processes.

15/12

DEM's Seminar

TLMoto was invited to collaborate in energizing one of the seminars organized by the Department of Mechanical Engineering (DEM) at Instituto Superior Técnico. This took place on December 15th and involved presenting each of the participating groups, introducing their projects to a group of guests, including notable professors and professionals in the field. It was a great opportunity to enhance the team's visibility.

RECRUITMENT

New challenges require a talented and motivated team. Therefore, on November 20th, TLMoto initiated another recruitment process with the aim of ensuring the team responsible for driving the project in the coming years. This time, vacancies were available for the areas of Aerodynamics and Cooling, Electronics, Management, Marketing and Design, Powertrain, and Human Resources. After collecting applications and the team's presentation session to interested individuals, the first selection phase began. Each candidate underwent a brief interview and a case study to assess their motivation and soft skills. After completing this stage, the chosen candidates now move on to the next one, where group tasks will be carried out to better understand the entire team, its history, and its purpose. Finally, candidates will be allocated to their respective areas of interest, where they will perform a set of tasks to comprehend each person's capabilities and, most importantly, their commitment. Subsequently, they will be selected based on the team's needs. This second selection phase is currently underway, and it's worth highlighting the crucial role of the Human Resources department in the entire process, being responsible for planning, executing, and monitoring each candidate.



FROM COMBUSTION TO SMARTENERGY

The Dynamics department, responsible for optimizing dynamic parameters, structures and components, brings us the fascinating aspects of transitioning from a combustion engine to a prototype powered by electrical energy. This department is divided into two branches: Modeling and Simulation, focused on improving geometric and behavioral parameters of the motorcycle; and the second branch, dedicated to the physical components of brakes and suspension, seeking to optimize the motorcycle's behavior to ensure maximum comfort for the team's rider.



With the positive turn in transitioning to smartenergy, Dynamics felt a significant difference in the weight of the motorcycle and its implications. The center of mass of the prototype changed as the battery pack was introduced, making it considerably heavier than the combustion motorcycle. Therefore, adjustments to the linkage system, the rear suspension part, were necessary. Care had to be taken to accommodate everything properly and ensure that there were no unwanted interferences with other components. This change also affected track monitoring, requiring the team to keep tire warmers on the tires to maintain the optimal temperature when they hit the track or to test the suspension effectively.

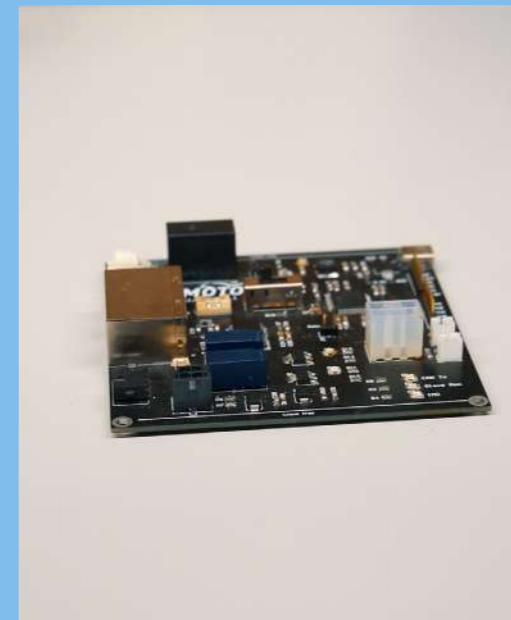
NEW SPONSORS

TLMoto is an ambitious team that always strives for excellence in everything it does, and this is only possible thanks to the partners who have been by its side throughout its journey. With great enthusiasm, the team introduces its latest sponsor, Galp (gold category). Galp is one of the leading companies in the energy sector in Portugal, but it goes beyond that. Galp is increasingly recognized as a driver of sustainability and innovation, aligning its objectives and values naturally with what the team aims to achieve in the future of the project. TLMoto wants to express gratitude to Galp for the vote of confidence and looks forward to the opportunity to share a story together.



ELECTRONICS

Throughout the last quarter, the Electronics department was responsible, concerning the BMS, for programming and debugging the boards, as well as developing a more efficient way to test them without needing the battery pack strings mounted. Regarding the dashboard, issues with the board of the new prototype, TLM04e, were identified, and adaptations were made to the TLM03e board to enable its use in tests. Additionally, in collaboration with the Structures department, the configuration was defined, and the wiring of the electronics box began. This box houses a significant portion of the motorcycle's boards and low-voltage system components.



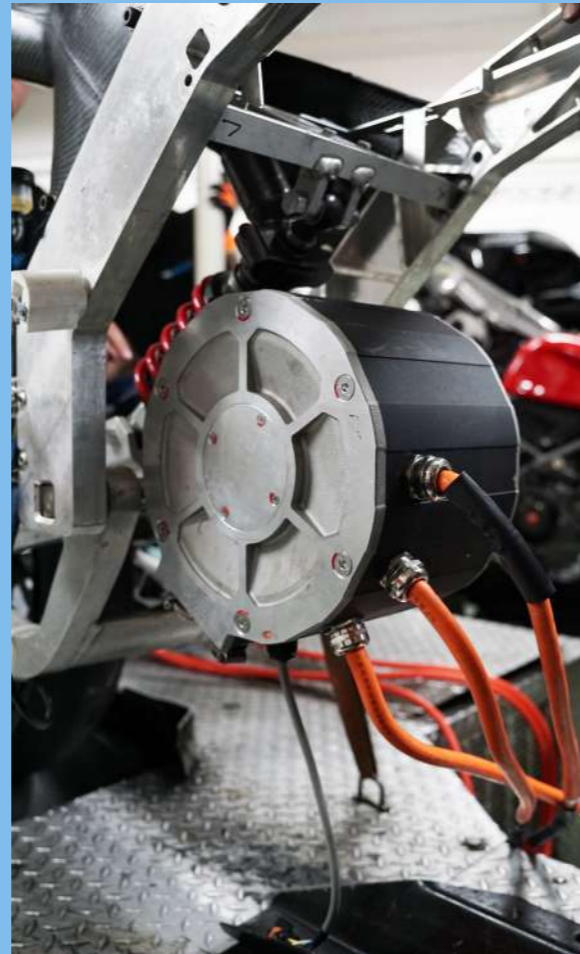
AERODYNAMICS AND COOLING

Over the past few months, the Aerodynamics and Cooling department completed the manufacturing phase, concluding the construction of fairings. They also began discussing new design concepts for the next prototype, TLM05e. The Cooling subarea continued testing the cooling system developed for TLM04e and conducted simulations to test new materials for battery cold plates. Meanwhile, the CFD subarea continued simulations of the motorcycle on the track to optimize results. Additionally, the department was responsible for structuring the upcoming recruitment phase.



POWERTRAIN

In the Powertrain department, within the Batteries subarea, new production methods for the pack and batteries of the upcoming prototype, TLM05e, were studied. Due to difficulties observed in the wiring placement for the BMS in the current pack, efforts were made to optimize this process, and new cable welding methods were identified. Additionally, a testing system for the battery pack was developed, allowing the study of cell behavior to improve efficiency and estimate characteristic parameters. In the Motor and Controller subarea, a visit to the AG Racing workshop was conducted to analyze the motor and controller behavior. These tests facilitated necessary adjustments to the controller to ensure stable motorcycle performance on track. Finally, in Modeling and Simulation, feasibility studies were carried out on the use of SimScape models, developed by MatLab, in the propulsion model (CESIUM).

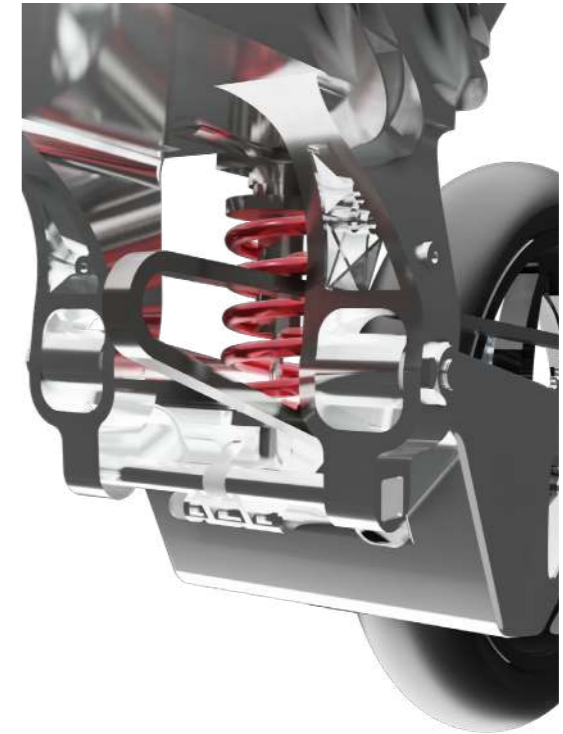


STRUCTURES

In the last quarter, the Structures department completed its work for the latest prototype, TLM04e. All necessary parts for this prototype, including the swingarm, frame and seat are being finalized in the Main Structures subarea. Additionally, the Connecting Parts subarea completed the printing of the electronic box and the motorcycle's dashboard. Currently, this department is initiating the development process for the next prototype, TLM05e, collaborating with other areas on concepts and design where the primary focus is on main structures such as the swingarm, frame, and seat.

DYNAMICS

Throughout the last quarter, members of the Dynamics department went through the research phase on linkage systems, already initiating their modeling process in Adams software. They were also responsible for all planning and the initial phase of optimizing geometric parameters, as well as modeling a system analogous to the linkage for the team's software. To conclude, they are currently in the early stages of modeling the motorcycle in Simscape.



HUMAN RESOURCES

In recent months, the Human Resources department has been in charge of planning the entire recruitment process. This includes setting deadlines and recruitment formats, structuring the process, creating tasks, and selecting positions. The department also handled the update of team data and the software used, such as Airtable, Swit, and SharePoint. Additionally, it conducted regular follow-ups with departments, leadership transitions, and the new direction, as well as exit interviews with former team members.



MANAGEMENT

The Management department was responsible for developing all the necessary material for the team's awards applications and receptions, including the creation of the report and activity plan for the upcoming year. It also handled the creation of a team roster and distribution of new merchandise. Additionally, this department ensured the finalization of several partnerships, such as with Galp, and took charge of all logistics behind the team's participation in events like Industry Day organized by DEM and the high school student workshop visit as part of NAPE promotion. Lastly, it organized teambuilding activities for the entire team, with highlights being the Christmas dinner and the secret Santa event.



MARKETING & DESIGN



In the last quarter, the Marketing and Design department focused on updating the team's image, particularly in the development of the new website. It was also responsible for promoting the recruitment, designing the vinyl decals for the new prototype, and managing the entire voting campaign for them. Additionally, the department continued its routine work, including content creation, image collection, and engagement on the team's social media platforms.



SMARTENERGY



PARTNERS



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