

NEWSLETTER

TLMOTO
TÉCNICO LISBOA



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How did you hear about TL, and why did you decide to join?

I learned about the TL through a friend who had a connection with the former HR leader. At the time she joined, the current leader was looking for people to establish the Human Resources department, and when they opened the recruitment process, she asked me if I was interested. Since I wanted to join a core team, and this area was the closest match to my areas of study, I decided to give it a try.

If you had to choose another area when you joined, what would it have been?

Knowing what I know now, with all the knowledge I gained from the non-technical areas, I would have chosen Marketing. I love that area and think we have the potential to do even more. It's a personal interest of mine, and I usually study and learn a lot about this field, so it would have been a good opportunity to apply that. But if I didn't have that knowledge of the areas, I would probably have chosen Logistics.

Beatriz Marçalo

Beatriz Marçalo was the Business Manager from January to April 2023 and is finishing her master's degree in Social and Organizational Psychology. She currently works in the talent development field in a company, a vocation she discovered through her experience in the TL.

Did you face any difficulties transitioning from the HR area to a management role? What were the biggest challenges?

In Human Resources, my work was a bit easier, not only because it was an area I knew better but also because I was leading people who joined at the same time as me: we had already worked together, knew each other well, and knew our working methods. As a Business Manager, I had never worked with most of the leaders and the areas themselves, so it was more challenging due to my lack of expertise in those topics. Additionally, I regret not having had as much time to invest in these areas because it was a very busy phase of my life, with an internship, thesis writing, classes, job interviews... But I had made a commitment and I would stay as long as possible until we found someone who could take on this challenge for a longer period. So, I think the biggest challenges were dealing with areas I didn't know well and time management. I always made sure to attend the meetings in person, even though I didn't live in Lisbon and didn't study at the Technical University, because I loved the atmosphere, and it made a real difference. And in the end, as a Business Manager, it became more challenging to manage that, and I didn't always have all the time I wanted to be present.

so far has been being a leader who inspires people, and who knows how to say things in the right place, at the right time, and in the right way. Until I became a leader, I thought that being technically good would automatically make me a good leader, but that's not the case at all. I feel some progress, but I know I still have a long way to go to be an exceptional leader.

TLMOTO
TECNEO ESCOLA

CADERNETA

How was your journey in TL?

My recruitment process lasted six months. After about three months as a member, the HR leader at the time had to leave, and my colleagues and the team leader chose me to be the leader. I think it was a very cool experience. I would say I was involved in the first team with more structured tasks: I created sub-areas within our department, established some tasks that we realized should be more frequent... It was an experience that I personally loved.

I was the HR leader for a few months, around seven months, and then the non-technical areas started going through a period of change. Many people left, and those who were coming in didn't have much experience yet. Since I had managed to structure the Human Resources area, Afonso (the current TL leader) saw that I would be able to structure the other non-technical areas. So, he invited me to be the Business Manager for those areas, and I was in that role from January of this year until April, when I started working. But while I was the BM, I was able to step out of my comfort zone a bit; I had to work with three areas (Sponsors, Marketing and Design, and Logistics) in which I had little experience and do a restructuring, understand the roles and objectives of each area and its members. I would say it's still a work in progress, but it was a period in which I could help Afonso understand what is really important.

What was your biggest motivation for continuing in the team?

My biggest motivation was undoubtedly the people. I met incredible people who I will cherish for life and still talk to every week. Moreover, the TL had a great working environment, which was also a significant motivation. Initially, people didn't accept the Human Resources area as much, but then they started accepting it better. We began receiving feedback and realized that people cared about what we were doing. I felt that the role I was playing was valued and taken into account. Feeling heard, I wanted to continue contributing. I had confidence in my work and could always be autonomous and independent in what I was doing, which was the best of both worlds. The old technical director was going to leave, so he made me an offer to be the new technical director. Again, there was a period when we were both in that position, but I got more and more responsibility, and by June, I was on my own.

What skills did you gain from your experience in the TL?

I became less shy. Since we had face-to-face meetings, and sometimes I had to speak in front of people, I feel that I overcame that and it's something important that TL contributed to, although I still have room for improvement. TL also contributed to my team management skills, working with people, and listening to others. I learned to provide a solid foundation for all the ideas and proposals I had, to explain why I believed something would work well. In other words, I developed the ability to communicate at a more strategic level, to convey a vision and influence others. So, in essence, I developed leadership skills, team management, people management, and the ability to handle others in both good and challenging times.

How did TL influence what you are doing now?

Well, I am finishing my master's degree in Social and Organizational Psychology, and typically, most people who graduate from this program go into Human Resources, particularly in the Recruitment and Selection area. I had the opportunity to do that in the TL, but I also had the chance to conduct training sessions. Since then, I realized that I enjoyed discussing things I believe in and trying to promote behaviors in that context, offering different perspectives, promoting reflections. That's when I started to direct my academic path toward training and people development areas. Currently, I'm working in the talent development field in a company, and it was thanks to the training sessions I conducted in the TL that I realized this was what I liked. It's been a great experience. I realized that many of the dilemmas we faced in the TL actually happen in companies, so I think TL is an asset for any university student who has the opportunity to be part of it, especially during challenging times. We learn how to manage certain situations, and the probability of encountering them in the working world is quite high.



Do you feel that TL helped you in entering the workforce?

I can't give a definite answer because I don't know who the other candidates were to make a comparison, but I feel that certain questions I was asked were related to my past experience, which, although not in a typical company, was in a non-profit organization, which is essentially what the TL is. So, I feel that I had a better capacity to answer and understand certain questions. Even the way I presented myself or knew what I wanted was heavily influenced by my experience in the TL.

What advice would you give to someone who wants to join the team?

I think it's important to have a desire to work as a team, to want to help others. You need to consider what is best for the team rather than what is best for yourself. But I would say the most important thing is the willingness to work as a team and to learn. It's also important to approach it with an open mind and take the opportunity to explore things. Embrace the experience and take everything it has to offer, whether positive or negative. That's what will provide you with valuable skills for your professional profile.

Finally, who is your favorite MotoGP rider and team?

Of course, my favorite rider is Miguel Oliveira, and the team is RNF Aprilia, his team.

Participation in Events

10/03

JEEC

On March 10th, we secured our place in another edition of JEEC at IST. It was a full day during which we not only showcased our project to the most interested parties but also exchanged ideas and gained knowledge from the participating companies.



16/03

Aerospace Week

Between March 13th and 17th, another edition of Aerospace Week took place, organized by AeroTéc. This week was characterized by the exchange of knowledge and experiences, providing everyone with the opportunity to connect with various companies in the Aeronautics and Aerospace sector. We participated on the 16th, showcasing our latest prototype and addressing any questions related to it and the project that arose during the event.

19/04 - 20/04

Visit From High Schools

On April 19th and 20th, we had the opportunity to welcome high school students to our workshop. The objective of this initiative was to provide them with a hands-on experience and a practical understanding of our project. During their visit, the students had the opportunity to immerse themselves in the workshop environment and gain insight into the development process of a motorcycle. They learned about each component and how it contributes to the overall functionality of the vehicle.



22/03 - 25/03

Futurália

Between May 22nd and 25th, we represented Instituto Superior Técnico at Futurália. This event is the largest trade fair for education and vocational training in the country, providing us with the opportunity to engage with numerous enthusiastic and curious young individuals who showed great interest in our project and the development of prototypes.



09/05

EGI Days

The Industrial Engineering and Management Days took place between May 8th and 10th at the Taguspark campus. Our team actively participated in this event, which brought together students, alumni, teachers, and professionals from various fields related to the course. It was a great pleasure for us to have the opportunity to share our project with college students and the entire community in attendance once again.

20/05

IST Open Day

On May 20th, the first day of Técnico's Open Day took place at the Alameda campus of Instituto Superior Técnico. This event provided a valuable opportunity for hundreds of students from across the country to visit the college's facilities and gain a better understanding of the courses and associations that make up the institution.

NEW SPONSORS

Since March 2023, TLMoto had the opportunity to partner with five major companies that will accompany the team's journey for another year of work. We introduce Batemo, a gold category sponsor, with whom we have been collaborating since March. Batemo is committed to educating and training the next generation of engineers, empowering young engineers and scientists motivated to find innovative technical solutions that save energy, are CO2-neutral, and combat climate change. They have joined our team, providing the necessary software for battery and cell simulation. Next, Von Roll joined the team in the bronze category, supplying us with insulating material for the high-voltage system of the latest electric prototype. Assisting in the area of aerodynamics and cooling, also in the bronze category, Covema joined the team, taking financial responsibility for their required materials. Fhorex will support inventory needs. Finally, in terms of partnerships, Easy Composites has partnered with the team, supporting us in the purchase of their resins.



FROM COMBUSTION TO SMARTENERGY

In this edition, we will take a sharp perspective on the changes that have been felt in the field of Structures during the transition from a combustion engine to an electric engine. In practice, combustion motorcycles have a lot of supporting information and extensive research behind them, so the design of the TLM01i required only taking the plethora of existing information and adapting it to a unique prototype. The reality is quite different for electric motorcycles... even though they are more sustainable, there is no clear information that tells us, "this is how it is, and this is the best way," so investing in this electric reality required a deeper and more autonomous study of the energies that are undergoing such significant development.



In technical terms, there is another difficulty: organizing all the components in the motorcycle is definitely a challenge, not only due to the size of the battery but also due to all the cables associated with it. In addition to the cables that the combustion prototype involved, an electric model entails all the additional cables associated with the connection between cells and charger, as well as a controller that must be included in some way. There is also a current concern related to the battery - its protection. In a combustion motorcycle, the system is essentially sealed from the start, with all the components connected and welded without necessarily being accessible. With a battery, on the other hand, there needs to be an extra concern to ensure it is perfectly insulated, both from water and dust, without the need for valves to keep the batteries "open" in case of pressure increase resulting from released gases or even some liquid, while at the same time providing the cooling that all motorcycles require.

POWERTRAIN

In Propulsion, the assembly of electrical equipment was carried out in the form of a test bench for the bike's electrical system and a hydraulic test bench for the engine, as well as tests on its operation/cooling. Adjustments to electrical schematics and circuits were also made.

In the modeling and simulation subfield, the simulation model of cells was refined, the propulsion model (CESIUM) was adjusted, the behavior of the electrical system on the track was simulated, and the final transmission ratio of the bike was adjusted.

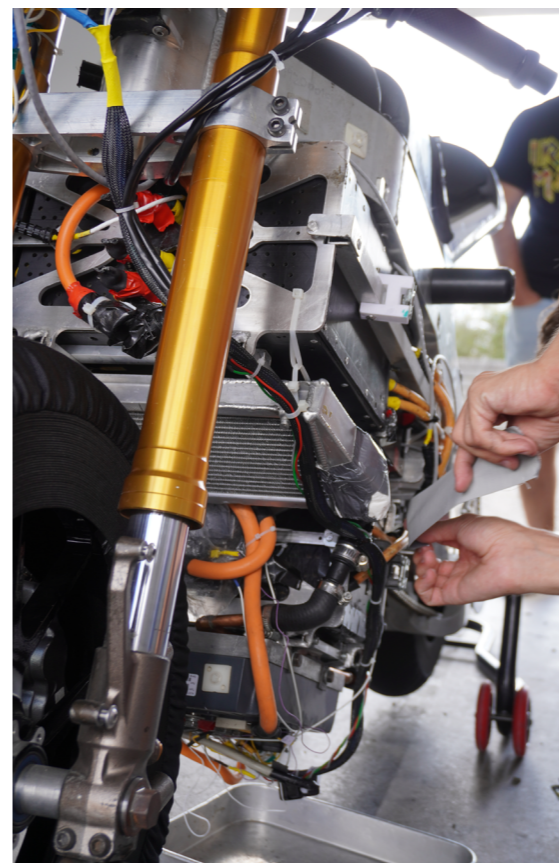
Finally, in the Batteries subfield, some final adjustments were made to the battery pack design, and a method for organizing the cells was developed. Cell tests were performed on the cell tester, and some improvements/arrangements were made to it, along with the development of prototypes for molding battery box modules. There was a change in the manufacturing strategy and material for the modules, and battery box manufacturing has been carried out in conjunction with the Structures area. The battery pack is close to be done.



ELETRONICS

In the BMS (Battery Management System) area, the electronics team focused on the slave boards within the battery box, which were completely redesigned due to the unavailability of necessary electronic components. Initially, two boards were expected, but it increased to four. The master board underwent slight redesigning to replace components that were not procurable, and both final versions of the boards have been soldered. The master board is in the final stages of testing and programming, while the slave board still needs to undergo testing. However, all the necessary tests and programming up to the Dashboard have been completed in May. Simultaneously, the dashboard board was partially redesigned for the same reasons as the BMS boards. It has been fully soldered and awaits testing and programming. An initial version of the LCD layout on the dashboard has also been created, with input from the propulsion team regarding the information to be displayed. Telemetry, on the other hand, has been applied to the following added systems: the ability for the user to define the start and end of the route at the beginning of the program. The displayed data has been divided into three smaller graphs for easier readability. The telemetry board has been soldered, programmed, and tested, and work has begun on adding the inertia sensor. Finally, regarding wiring, a brief schematic of the motorcycle's LVS connections has been created to better understand where each wire should be connected.

STRUCTURES



In the Main Structures subarea, geometries were simplified for manufacturability, and the final shaft responsible for joining the two components of the motorcycle was developed. They were also preparing for static tests.

The Production subarea has been focused on the manufacturing plan for the frame and arm.

In the Connection Parts subarea, manufacturing improvement was made, and the overall assembly of the motorcycle was completed. Meetings with manufacturing partners for parts production were frequent. Since the Production subarea is quite busy at this stage, they also ended up being responsible for modifying some details of the parts.

Lastly, the Battery Box subarea developed the mold for resin curing, and the manufacturing of the battery pack is being finalized.

AERODYNAMICS AND COOLING

In the past three months, aerodynamics and cooling have been focused primarily on the development of components of the TLM04e.

In the design subarea, CAD was used for CFD simulations, minor changes were made and molds for the aerodynamic components of the newly designed motorcycle were created. Regarding the CFD subarea, more rigorous simulations of the new motorcycle were conducted, supporting an overall concept and respective changes compared to the previous motorcycle. Lastly, in the Cooling subarea, cold plates were manufactured in collaboration with the propulsion team, engine tests were conducted, and the system was modeled on the TLM04e. The manufacturing season has begun, and in addition to composite studies and mold preparation, machining of the molds has been carried out, and their set up has commenced.



DYNAMICS

In terms of modelling and simulation, the dynamics department implemented lean/steer and velocity controllers in the Motus. The innovation document, one of the several MotoStudent deliverables, was drafted, and other minor improvements were made to the Motus. Research work was also conducted in order to analyze areas for program improvement. As for testing and dynamic components, adjustments were made to some parts of the linkage system, and both sub areas were occupied with recruitment activities. Furthermore, the modelling and simulation team has started planning the optimization of geometric parameters, which will be performed in a few months, but preparations are already underway.



HUMAN RESOURCES

During the last quarter, the Human Resources department primarily focused on recruiting new members. They handled the entire process, starting from initial planning to conducting interviews and case studies. Additionally, the department took charge of promoting leadership training programs, which equipped leaders and sub-leaders with the necessary skills for improved performance in their roles. Performance evaluations were also revamped, and new training courses are currently being developed for the entire team. It is worth highlighting the department's ongoing responsibilities, such as updating team data, managing access, monitoring each department's activities, and conducting member of the month elections.



LOGISTICS

In the past three months, the Logistics area has been working on the Business Plan, organizing participation in trade fairs, and providing quarterly updates. They also handled orders for some materials and maintained the organization of the workshop, finalizing the inventory.



MARKETING & DESIGN

The Marketing and Design department had the responsibility of creating content and enhancing the team's presence on social networks. They also played a crucial role in promoting various events, including the team's barbecue and the recent recruitment drive that started in March. Over the past months, the department has been actively involved in developing and updating platforms for organizing the team's data. Furthermore, they have been working on enhancing the image of both the new prototype and the team itself, through the creation of new merchandise and a revamped website.

SPONSORS

In recent months, the Sponsors department has primarily focused on seeking and establishing new partnerships, as well as maintaining communication and managing all necessary aspects with existing sponsors. They have also taken responsibility for sourcing suppliers for materials required by other departments and assisting in the ordering process. Furthermore, the department has played a crucial role in the development of the application for the AEIST "Programa de Apoio à Atividade Associativa (P3A)" competition and the preparation of a report required for the MotoStudent competition.





PARTNERS



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