

FSFEUP

UPDATE MAGAZINE



NEW CYCLE EDITION

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THE TEAM

INTERNAL CHANGES AND IMPROVEMENTS

RECRUITMENT: OUR NEXT GENERATION

With more demanding dreams, comes higher responsibility and the need for a capable and motivated Team. This FS FEUP 02 Team's cycle started on the right foot, by recruiting 25 new members - creating a high diversity of ages, spanning from the first year of University to the end of the Master's Degree.

Ensuring team continuity, combined with readiness to apply the knowledge acquired in University was the balance achieved, as was previously the intent when each Department specified its requirements for the future

NEW WEBSITE: ADOPTING A NEW VISUAL IDENTITY!

This new cycle features a slight shift in the Team's visual identity - reflected in all its social media and marketing materials. The Team's new Website is a testimony to that. The Website encapsulates the Team's first cycle, which culminated with the team competing at the FSG, Hockenheim in August 2023, as well as general information about the team, its Sponsors, a Newsletter directory, and finally FS FEUP 02 cycle's information.



THE TEAM

INTERNAL CHANGES AND IMPROVEMENTS

RESEARCH & DEVELOPMENT: CREATION OF A NEW DEPARTMENT

The first Team cycle was frankly marvellous and laid the way for more demanding dreams. These will feature an Autonomous-Driving prototype, and also an overall step in terms of technical complexity within the Team. As the Team's long-term Vision becomes clearer and features a Top 10 Classification at the FSG at the end of the decade, a new Department was created, that envisions optimising the path to this achievement - by speeding technical development. This Department also aims at fostering a closer relationship with the Faculty of Engineering, by promoting an environment where the student community can work on FS-related themes, with support from the Team and occasionally the Team's Sponsors, thus providing an impactful learning experience for the students. A total of 26 Bachelor's and 10 Master's Thesis have been or are being done with the team, via this department - with 6 companies linked!

NUMBERS

36 Thesis

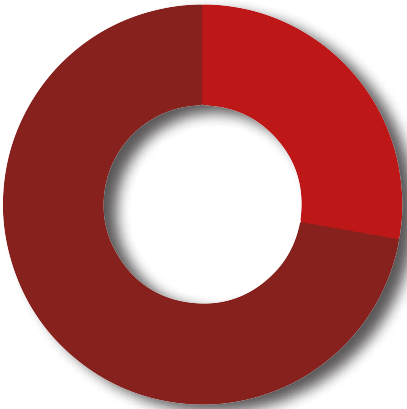
6 Companies Linked

18 Professors Involved

18 Curricular Units

20 Class-Developed Projects

10 MASTER'S THESIS



26 BACHELOR'S THESIS



EXTERNAL EVENTS

GIVING BACK TO THE COMMUNITY!

Having the chance of showing the FS FEUP 01 prototype in events, and talking to people about it and the Team is a very rewarding experience. It's an occasion where people with various interests come and ask questions, the Team has the chance to show appreciation for its Sponsors in these moments - as so much of what was manufactured was done with their precious help!

FEIRA AUTOCLÁSSICO

EXPONOR, OCTOBER 5TH - 8TH 2023

This international Saloon, which has become a reference in the Iberian Peninsula, has achieved 20 years of history. It features various tributes to both automobile and motorcycle history and therefore the Team's prototype strikes an interesting difference, as it belongs more to the future!

One of the outstanding presences on this Saloon was ex-F1 double World Champion Emerson Fittipaldi. The Team had the opportunity to meet and talk with him, receiving interesting pilot feedback regarding the technical development of a Formula-spec prototype.



SALÃO DO AUTOMÓVEL HÍBRIDO E ELÉTRICO

ALFÂNDEGA DO PORTO, OCTOBER 13TH-15TH 2023

This electric-mobility-focused saloon has grown vastly in past years and is a great environment to be in. Several automotive manufacturers are present and are displaying their most recent electric models for the general public.

The team had the chance to make a presentation which focused on the challenges of building an electric racing prototype and competing with it, in such a demanding competition as Formula Student.

TOMORROW SUMMIT

SUPER BOCK ARENA, NOVEMBER 7TH & 8TH 2023

This event, which targets discussions with topics such as innovation, technology, science, education, and sustainability is a great environment for the team to be in. The team had the chance to display its prototype to many young students and share experiences, ours mainly related to our team and prototype.

Once again, a presentation was held, in this instance the focus was more on explaining to the students the opportunities that arise from such a demanding project: personal growth and future careers; and also passing on the message that we should dream and aim high in our life and studies!





FS FEUP 01 TESTING

CHECKING UP ON OUR PREVIOUS WORK!

TESTING

“Reliability” being one of the keywords that will define the next prototype, the first weeks of this 2-year-cycle were focused on trying to understand and mitigate the limitations of our first ever racing car, so that their causes could be initially corrected and then avoided in the second prototype. Therefore, we entered an extensive testing phase, in which we were not only able to test the car to the limit but also gather important validation for the upcoming design phase.

We are confident that this was the right way to go and that the lessons learned will prove crucial to achieving our ambitious goals in this cycle!

AUTONOMOUS DRIVING IMPLEMENTATION

Having finished the testing phase that defined the first cycle, the team began the year with a clear objective for our first prototype: to integrate autonomous capabilities and make it capable of finishing all the DV class events. This was a decision that we believe will be advantageous on multiple levels: not only will we have the opportunity to implement in practice all the software that has been developed over the past year relating to autonomous driving, but we will also have the opportunity to gain knowledge about the real mechanical and electrical implications of integrating autonomous driving capabilities into a formula student vehicle. This, combined with a testing phase for the autonomous FS FEUP 01 starting in May, will allow us to acquire knowledge and gain many months of progress so that, in the end, one of the pillars supporting the objectives of this second cycle can be completed: the successful integration of autonomous driving capabilities into the second prototype, so that in 2025 we can successfully complete all the DV dynamic disciplines in Germany.



FS FEUP 02 PROTOTYPE

WORKING FOR OUR FUTURE!

AUTONOMOUS DRIVING

From the cycle's initiation, we aimed for ambitious targets, which were defined not only by looking at what our objectives would be for this specific cycle but, above all, taking into account our long-term perspective of affirmation as a top team at European level. Therefore, not only will the prototype remain electric, aligning with the industry trends and emphasizing our dedication to sustainable solutions, but we will also push the barriers of innovation even further, with the integration of autonomous driving capabilities on our next prototype, anticipating the evolving panorama of both competition and the automotive industry.

CONCEPTUAL DECISIONS

The conceptual phase of the FS FEUP 02 project marked a period of extensive research and analysis, which culminated with critical decisions at the end of the year that will allow the team to move forward to the next phase with confidence.

The FS FEUP 02 will feature a tubular chassis and one rear-wheel-drive motor, focusing on optimizing the structure and configuration of the previous prototype. In terms of wheel assembly and aerodynamics, the differences are remarkable, as our next prototype will include 10-inch rims and a developed lateral kit, boosting performance and overcoming barriers to future development.

These decisions will significantly influence the trajectory of our prototype and team and were made following our overall vision and specific goals in terms of budget, performance and reliability. Each member of the team contributed significantly and was fundamental in being able to finish with success the first phase of the 02 cycle. We are now looking forward to starting the design phase with reinforced optimism and confidence, with the certainty that the initial expectations will not only be met but exceeded.

START OF THE ITERATIVE PROCESS: PRELIMINARY DESIGN

Having reached the end of the conceptual phase and following the definition of the geometric and dynamic requirements for our second prototype, we kick-started 2024 at full force with the beginning of the preliminary design phase. This stage will extend over the next two months, culminating in the first iteration of FS FEUP 02. It will be an intense period, as each member of the various subsystems will need to give his all to meet the initial requirements set at the beginning of this year and respect the timeline set by the team for this design phase.

The ambitious timeline we have set is crucial to reaching our cycle goals and everyone on the team is aligned to ensure that each milestone is achieved over the next two months, in which our focus is on refining key elements, seeking innovations, and improvements compared to our previous prototype where possible.

We maintain an optimistic outlook on the future of the project, eager for innovation and engineering and excited for the developments over the next two months. Together and phase by phase we are paving the way for the success of FS FEUP 02 in 2025.



2024 COMPETITIONS

WHERE WILL OUR HARD WORK LEAD US?

The great preparation and studying required for the Quizzes (the multidisciplinary exams that select the teams that will participate in competitions) paid dividends and now allows the Team to dream of participating in high-level European competitions.

The Team has set a clear objective for this cycle of: "To Finish all Dynamic Events at FSG in 2025". To validate the technical and team-related decisions and methodologies which will ensure a higher chance of achieving this goal, the Team will participate in Concept Class competitions during the Summer of this year.

Concept Class competitions encompass the Static Events of a typical Formula Student Class competition, these are the Engineering Design Event, Cost & Manufacturing Event, and Business Plan Presentation. Usually, the teams that perform well in these events are the best classified at the competition and thus preparing for these competitions will be a priority, along with the development of the next prototype.

FORMULA STUDENT SWITZERLAND

OBERGOMS, JULY 13TH - 17TH 2024

For the first time ever, the FSCH competition will hold Concept Class and the Team wants to be present right away. In similar moulds to the FSG competition regarding rules and evaluation methods, the Team is keen on participating to receive much-needed feedback regarding the technical and non-technical development thus far..

FORMULA STUDENT UK

SILVERSTONE, JULY 17TH - 21ST 2024

It is with great pride that the Team announces a return to the famous Silverstone Circuit and such a prestigious competition. After winning the Concept Class competition in 2022, and passing all Technical Inspections in 2023 with the 01 prototype, returning comes with great excitement but also a huge sense of responsibility. This competition will be key to validating the technical development of the FS FEUP 02, as was in the past regarding the 01.

As was done in 2023, the Team will also participate in the FS-AI DDT Class, via the Autonomous Systems Department. This class offers teams the opportunity to validate their autonomous system architecture and implementation - by using a prototype without a cockpit whose purpose is to receive code from teams and race with it - autonomously!

FORMULA STUDENT PORTUGAL

CASTELO BRANCO, SEPTEMBER 3RD - 8TH 2024

Finally, at the end of the season, the team will compete once again at FSPT. With the two previous competitions more than one month before, this final competition will be the last chance for the Team to make slight changes and validate these. This competition has great importance for the Team as, much like FSCH, the Judges present have great FS experience and usually provide excellent insights.



FINAL MESSAGES

SOMETHING TO LEAVE YOU ON UNTIL NEXT TIME!

It's rewarding to realize that since the last Newsletter, the team has evolved so much: recruiting the next generation of team members that are already having a high impact on the team, the technical developments done on the FS FEUP 02's development, and finally entering the summer competitions, and so much more! We're sure we are on the right track and in compliance with the self-imposed timeline that we're sure maximizes our chances of success.

Finally, with the aid of the cycle's sponsors and institutional partners, we're sure the team will keep evolving and attain its goals!

-Miguel Damião, Team Leader

The conceptual phase is over and it is with great excitement that we see the potential of this team translated into innovative engineering solutions for the different problems and challenges arising from the conceptualization of an autonomous car. It is with renewed confidence and determination that we now embark on an intense design phase, certain that all the objectives we have set ourselves will be met with excellence. Together, and phase by phase, we are paving the way for the success of FS FEUP 02 in 2025!

-Daniel Guimarães, Chief Engineer



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