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POLARIS : ad astra - sky's the limit !

«Make your life a dream, and your dream a reality». These words of Antoine de Saint Exupéry, Vincent Martin has adopted the adage. This 5th year computer engineering student has always been fascinated by space and has embarked on a crazy project: designing and flying a rocket propelled by a hybrid engine! Interactions met this future engineer who has his head in the stars but his feet firmly planted on the ground.

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POLARIS : ad astra - sky's the limit !

How did you come up with the idea of designing a rocket with a hybrid engine?

"I have always been passionate about space, so during the spring of 2019, I wrote a review on the feasibility of students designing a hybrid rocket engine. This type of engine is simpler and much less dangerous to handle than a conventional engine, but it is still very interesting to study for engineering students. I concluded in my work that it was quite possible to embark on such a project at the UTC. In autumn 2019, I left for an internship, but when I came back to UTC, in February 2020, we launched the project "UTC Rocket Propulsion Laboratory" with Patrice Simard. The objective was to design and launch to between 20 and 30km altitude a rocket propelled by a hybrid engine of 10 kN of thrust, engine also designed by UTC students.

How does your project look today?

Today we are about fifteen students, from different UTC specialities (computer engineering, mechanical engineering, process engineering, common core...), divided into various teams to enable us to work more efficiently. There is the mechanical engineering and design team, the launch and landing team, the avionics and systems team, the multiphysics fluid simulation team, etc. This semester we are really starting to get down to business: for example, we have successfully carried out a first parachute test, launching a two kilogrammass from the third floor of a building. The next parachute test is planned for the near future, and this time a slightly heavier mass will be thrown from the top of Benjamin Franklin. The IT team has had a PCB (printed circuit board) printed and delivered for the on-board computer, and they have also ordered an antenna. There are still a lot of problems to be solved and a lot of work to be done, but the project is generating a lot of enthusiasm from the students involved.

The project schedule

- Spring of 2021 : designing and assembling the 1 kN prototype -static test firing
- Autumn of 2021 : designing and assembling the 5kN, optimization the engine design, first launch
- Spring of 2022 : designing and assembling the Polarisversion (10kN), building the engine and launch config. assembly static test firing

- Autumn of 2022 : Polaris launch, to attain 20 km altitude

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