Training Opportunity for Belgian Trainees

Reference	Title	Duty Station
BE-2022-HRE-LS	**Chemical Propulsion System Engineering and Modelling**	**ESTEC**

Overview of the mission

The ESM Team, part of the Human Spaceflight and Exploration Directorate, has the mission to procure the European Service Module (ESM) for the NASA Orion Multi-Purpose Crew Vehicle. Orion is an exploration vehicle built to transport humans beyond low earth orbit. The European Service Module, under ESA responsibility, provides position and attitude control for the Orion spacecraft via its propulsion system, stores consumables for the crew module (oxygen, nitrogen and water), and provides thermal control and power. The ESM Team operates as the ESA procurement authority and assures the technical and programmatic follow-on of the European Service Module Industrial Prime Contractor.
Ultimately, the ESM team will also support NASA Orion flight operations during the upcoming Artemis missions. After the planned flight in 2022 the post flight analysis will be a major task to be performed.

Overview of the field of activity proposed

You will be integrated in the ESM Team and be involved in the Artemis 1 post flight analysis. The largest and most complex subsystem of the ESM is the propulsion system. The bi-propellant system consists of 33 engines (smaller thrusters for attitude control and auxiliary thrust and the main engine, which has Space Shuttle heritage) a high-performance pressurization system and a complex propellant isolation architecture. During the flight valuable data will be generated which will be used to analyze and confirm the performance of the propulsion system.

Based on these needs you will be in charge of developing a software tool / model that will allow a performance analysis, verifying this tool against the Artemis 1 flight telemetry data, and exploring the propulsion system parameter space as necessary for the post-processing activity.
In addition, you will be actively involved in the general evaluation of the ESM flight operations activities, supporting reviews at propulsion system level and ESM level, and contributing to the relevant technical processes within the ESM Propulsion Engineering team.

The activity will be supervised by the ESM personnel involved in the post flight analysis, specifically the ESM Propulsion Engineering team and the responsible system engineers, but also be coordinated with the ESA Directorate of Technology and Engineering for the modelling aspects.
The outcome of the activity could support the future evolutions of ESM, as well as other space exploration projects of the Agency.

Required education and skills:

- Master's degree in a technical or scientific discipline
- Good interpersonal and communication skills
- Ability to work in a multi-cultural environment, both independently and as part of a team
- Fluency in English and/or French, the working languages of the Agency