PHYSICAL MODELLING, VEHICLE DYNAMICS AND CONTROL ENGINEERING

Toulouse, FRANCE

From 2000 to 2021, the Monegasque company Venturi established itself as a pioneer in high-performance electric mobility: breaking world records, undertaking expeditions in extreme environments, competing in Formula E, driving technological innovation, and creating iconic two- and four-wheeled vehicles.

Since 2021, Venturi Space (Monaco–Switzerland–France) has been extending this expertise to space exploration by designing mobility solutions for the Moon and Mars. As the strategic partner of the North American company Venturi Astrolab, Inc., the enterprise is developing critical technologies – hyper-deformable wheels, high-performance batteries, and advanced battery management systems – for Venturi Astrolab's lunar rovers FLIP and FLEX.

Venturi Space is pioneering advanced mobility solutions for lunar exploration and unveiled MONA LUNA in 2025, a 100% European lunar rover designed to support the ambitions of ESA and CNES.

Venturi Space France (Toulouse) is recruiting a Physical Modeling, Vehicle Dynamics and Real-Time Control Engineer to support the development of next-generation lunar rovers.

You will play a key role in the development of high-fidelity multi-physics models and control-oriented simulations for robotic systems operating in extreme extraterrestrial environments. Your work will focus on the design, implementation and validation of physical models developed in MATLAB/Simulink for all systems composing the Lunar Rover, deployed on PC (MiL) and real-time targets (HiL).

The models developed will be used to:

- Design and validate the system architecture
- Design and validate the numerous control laws
- Develop and fine-tune the control of the vehicle dynamics of rovers equipped with hyper-deformable wheels (e.g. traction control, stability, etc.)
- Validate hardware and software developments up to final integration, i.e. on real-time test benches.

Professionals with experience in the automotive field, particularly working on ADAS systems, vehicle dynamics modelling and electric powertrains, are strongly encouraged to apply.

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YOUR MAIN RESPONSABILITIES

- Develop and maintain Model-in-the-Loop (MIL) and Hardware-in-the-Loop (HIL) simulation environments.
- Develop high-fidelity physical and control-oriented models of rover subsystems (vehicle dynamics, wheel–soil interaction, actuators, sensors) using MATLAB/Simulink
- Design, implement and validate real-time models and control algorithms deployed on real-time targets
- Apply data-driven modeling techniques for parameter identification and model calibration
- Contribute to model validation, verification, and documentation in compliance with space and robotics development standards
- Participate in test campaigns and provide modeling and control expertise during experimental activities

REQUIREMENTS

- Master's degree (or equivalent) in Robotics, Control Engineering, Mechanical Engineering, or related field.
- Minimum 5 years of strong experience in physical modeling and simulation using MATLAB/SIMULINK
- Hands-on experience with real-time simulation and HiL systems
- Strong knowledge of vehicle dynamics, mobile robotics and terramechanics
- Strong knowledge of model-based design workflows and real-time constraints
- Ability to work with multi-disciplinary teams in a fast-paced R&D environment
- Strong analytical skills and a structured, rigorous engineering mindset

Why Join Us?

- Be part of a cutting-edge lunar exploration program shaping the future of space mobility.
- Work in an international environment with leading experts and partners across Europe.
- Competitive salary and benefits package.
- Opportunity to lead innovation in one of the most exciting sectors of the space industry.

Ready to take on this technological and space challenge?
Apply now and submit your complete application (CV, diplomas, certificates) directly on our website www.venturi.space/en/careers and join us in this extraordinary adventure!

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