Job Title: Guidance Navigation and Control System Engineer

Req ID **10127** - Posted **09/07/2020**

EUROPEAN SPACE AGENCY

Vacancy in the Directorate of Technology, Engineering and Quality.

ESA is an equal opportunity employer, committed to achieving diversity within the workforce and creating an inclusive working environment. Applications from women are encouraged.

Post

Guidance Navigation and Control System Engineer
This position is classified A2-A4 on the Coordinated Organisations' salary scale.

This position forms part of ESA's Advance Recruitment Scheme which is established to provide appropriate staffing resources when requirements materialise.
Appointments are therefore made for an initial duration of two years upon which you may be appointed to a permanent post at the Agency.

Location

ESTEC, Noordwijk, The Netherlands

Description

Guidance Navigation and Control System Engineer in the Guidance Navigation and Control Section, Control Systems Division, Systems Department, Directorate of Technology, Engineering and Quality.

The Guidance Navigation and Control (GNC) Section provides functional support to ESA projects in the technical field of GNC systems for planetary exploration orbiters and landers, launch and transportation systems, re-entry vehicles, and new-generation space vehicles for in-orbit robotic operations and specialised applications such as rendezvous and formation flying.

The Guidance Navigation and Control Section carries out technological research in the fields of GNC systems for space vehicles, including interplanetary cruise, aero-assistance, precision landing, ascent, rendezvous and docking, re-entry, formation flying and drag-free systems. This covers the following areas in particular: autonomous and fault-tolerant systems (including health-monitoring systems), advanced guidance, control, estimation and optimisation techniques and tools, as well as technology development of GNC sensors, particularly synthetic sensors, sensor fusion vision-based navigation and hybrid navigation concepts.

Duties

You will report to the Head of Section and, within the technical fields described above, your main tasks and responsibilities will include:

• providing expert technical support and consultancy to ESA projects, programmes and general studies in the field of GNC requirements analysis and trade-offs (for system, software and hardware units), GNC performance analyses and budgeting, GNC system, software and unit procurement, GNC systems verification & validation throughout all project phases, including GNC Fault Detection Isolation and Recovery (FDIR);
• participating in feasibility studies (including Phase 0 in the ESA Concurrent Design Facility), project reviews and evaluation of procurement proposals;
• identifying critical development problems and assisting in their resolution;
• contributing to the definition of technology development requirements and work plans for the Agency's technology programmes;
• defining, initiating and managing R&D activities covering both long- and short-term needs and addressing mission-

enabling GNC system concepts, as well as mathematical modelling, uncertainty modelling, multi-physics simulation of complex spacecraft dynamics, advanced guidance, control, estimation and optimisation techniques and tools including validation and verification strategies;
• fostering new application areas for multidisciplinary activities, placing emphasis on innovative concepts, cutting-edge technologies and system architectures;
• laboratory activities for the evaluation and prototyping of new GNC systems and sensors as required;
• monitoring applicable scientific and technological trends and maintaining state-of-the-art expertise;
• contributing to the dissemination of the results of the activities performed and the transfer of knowledge across the Agency.

Duties may also include supporting other activities within your field of competence.

Technical competencies

General background and specific experience in the technical domains covered by the position
Understanding of related technologies, R&D trends and the industrial landscape
Project support experience in a relevant domain
Experience with laboratory or field testing of relevant technical equipment
Experience in preparation of procurement activities for technology development and innovation (statements of work, proposal evaluation)
Experience in the management and monitoring of industrial activities, including participation in reviews

Behavioural competencies

Teamwork
Customer Focus
Innovation & Creativity
Problem Solving
Results Orientation
Planning & Organisation

Education

A Master’s degree in control or aerospace engineering is required.

Additional requirements

Applicants for this post should have a few years experience in the development of GNC systems for orbital spacecraft.

Preference will be given to those with strong expertise in two or more of the following areas related to the position:
• Advanced mathematical modelling and multi-physics simulation techniques together with system identification;
• Classic as well as robust control and filtering techniques;
• Dynamics, guidance and control of spacecraft applicable to interplanetary cruise, aero-assistance, rendezvous and docking, formation flying, or drag-free systems;
• Advanced verification & validation concepts beyond classic Monte Carlo techniques;
• GNC for in-orbit robotic operations (e.g. in-orbit servicing, in-orbit assembly, debris removal);
• Vision-based navigation techniques.

Other Information

For behavioural competencies expected from ESA staff in general, please refer to the ESA Competency Framework.

The working languages of the Agency are English and French. A good knowledge of one of these is required.
Knowledge of another Member State language would be an asset.
The Agency may require applicants to undergo selection tests.

The closing date for applications is 6 August 2020.

If you require support with your application due to a disability, please email contact.human.resources@esa.int.

Please note that applications are only considered from nationals of one of the following States: Austria, Belgium, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, Romania, Spain, Sweden, Switzerland, the United Kingdom, Canada and Slovenia.

According to the ESA Convention the recruitment of staff must take into account an adequate distribution of posts among nationals of the ESA Member States. When short-listing for an interview, priority will first be given to internal candidates and secondly to external candidates from under-represented Member States.
*(*http://esamultimedia.esa.int/docs/careers/NationalityTargets.pdf*)*

In accordance with the European Space Agency's security procedures and as part of the selection process, successful candidates will be required to undergo basic screening before appointment.

Recruitment will normally be at the first grade in the band (A2); however, if the candidate selected has little or no experience, the position may be filled at A1 level.