

VACANCY NOTICE FOR A TRAINEESHIP

AREA OF ACTIVITY	REMOTE HANDLING SYSTEM
REFERENCE	F4E/TRA/2017/041
START AND END DATE - DURATION	01/10/2017 – 30/06/2018 - 9 MONTHS
LOCATION	BARCELONA (SPAIN)
PUBLICATION DATE	28/03/2017
CLOSING DATE FOR APPLICATIONS	26/04/2017 AT 12:00 PM (BARCELONA TIME)

1. DESCRIPTION OF THE DEPARTMENT/PROJECT UNIT

The RH Project Team is responsible of the procurement of several Remote Handling systems which are used for the maintenance of ITER, in particular of the following packages:

- Divertor Remote Handling System (DRHS)
- Cask and Plug Remote Handling System (CPRHS)
- Neutral Beam Remote Handling System (NBRHS)
- In-Vessel Viewing System (IVVS)

The design and procurement of these 4 packages is supported by the ITER compatibility of Remote Handling Equipment (ICARHE) programme, which currently focusses on the radiation hardness of the embarked maintenance equipment, involving specific designs of radiation tolerant CMOS-based cameras and front-end electronics. This ICARHE program also contributes to the Nuclear Integration Unit, managed by IO.

2. DESCRIPTION OF TASKS

Depending on the selected candidate's background and experience, the trainee will be required to carry out and/or contribute to the following tasks (either 1 or 2&3):

1. The In-Vessel Viewing System (IVVS) is a remote handling system which uses a laser-based scanning head to take both 2D and 3D images of the inside of the Tokamak. The IVVS is a key tool for identifying damage and erosion of first wall components that can occur after loss of control of the plasma inside the vessel.

For the design of this complex system, F4E apply the principles of System Engineering, using clearly defined requirements to specify and later validate the system design. While the high level metrology requirements of the IVVS are clear, the definition and flow-down of these requirements to the system performance will be a key element in the success or failure of the IVVS design.

The main goal of this traineeship will be to support the systems engineering of the IVVS system, assisting in development, review and update of the requirements database in the area of metrology. A key part of the development of metrology requirements is the use of fiducials. The traineeship will include simulation of point clouds, using an in-house code, and registration of these point clouds using different elements in the ITER reactor chamber as fiducials.

2. In support to the current R&D activities of the ICARHE program, in particular related to the communication interface of a CMOS-based radiation hardened camera, the trainee will review the digital communication interface specifications, and select the most appropriate solution for transferring digital data at 25-100MHz over 100 m, considering potential radiation-induced degradation. This work shall validate the currently considered LVDS test structure for data transmission over 100 m, else identify potential alternatives. In addition, the trainee will further develop the image acquisition software interface, introducing control of gain, brightness, contrast, color temperature, image size and averaging, as well as more elaborate de-noising features, to support the exploitation of current CMOS-based solutions under development.
3. The NIU coordinates, among its five main domains, ITER activities on electronics nuclear radiation compatibility (NRC domain), involving all domestic agencies. Thereto, it recently developed the Electrical, Electronic and/or Electromechanical (EEE) Nuclear Radiation Compatibility Handbook, which needs to be implemented by technical project officers across ITER. This traineeship will contribute to this implementation, whilst acquiring organizational skills and a broader insight in the ITER project.

3. ELIGIBILITY CONDITIONS

- Be a national of one of the Member States of the European Union or of a Third state fully associated with the Euratom fusion programme (Switzerland);
- The candidate must have finished his/her university degree at least 3 years attested by a diploma. The university degree must have been obtained within the last 3 years before the closing date for applications;
- In order for the trainee to fully profit from the traineeship and to be able to follow meetings and perform adequately, candidates must have good knowledge of English, the main working language of F4E.

Applications will not be accepted from candidates who:

- have already benefited from any kind of in-service training within a European institution or body, or
- who have had or have any kind of employment within a European institution or body.

4. QUALIFICATIONS REQUIRED

Essential (fulfill at least two of these essential criteria)

- Degree or Master degree in Engineering/Physics/Computer science/optics/
- Experience in Programming, including basic computer graphics with polygon objects
- Experience in ASIC design and simulations

Advantageous experience:

- Optical/electrical simulations
- Matlab
- Point cloud software such as Polyworks, Leica Cyclone, Geomags or Faro scene
- Qualification of Electrical, Electronic and/or Electromechanical components

5. WHAT WE OFFER

Trainees are awarded a monthly maintenance allowance. The monthly allowance for 2017 amounts to €1087,39.

Additionally, trainees may receive a travel allowance, subject to budget availability, to compensate for travel expenses incurred from the place of residence to the seat of F4E and vice versa. Trainees whose place of recruitment is less than 50 km from F4E's offices shall not be entitled to a travel allowance.

Detailed information about the F4E traineeship procedure as well as trainees' rights and duties can be found in the Decision of the Director of 'Fusion for Energy' on the Acceptance of Traineeships published on our website. We strongly recommend applicants to read them carefully.

Accommodation costs will be covered by the trainee.

6. SUBMISSION OF APPLICATIONS

The online application process starts upon clicking "**CLICK TO APPLY**" on the traineeships page: <http://www.fusionforenergy.europa.eu/careers/traineeships.aspx>.

Applicants must register their applications online through the F4E traineeship's tool by creating a valid F4E user account and choosing the vacancy notice they wish to apply to.

Please note that the online traineeship application tool is the *only* acceptable means of sending applications. Applicants are responsible for keeping their e-mail addresses and personal details up to date in their profile in F4E online application tool.

The mandatory fields in the profile marked with an asterisk should be duly filled in. Candidates are requested to submit the following 2 documents:

- A detailed Europass curriculum vitae in **English** (can be obtained at the following address: <http://europass.cedefop.europa.eu/en/documents/curriculum-vitae>)
- A motivation letter of 2 pages maximum in English

Applications must be sent by 26/04/2017 (closing time 12:00 pm Barcelona time).

In case you encounter technical problems when trying to submit your application via the traineeship application tool, please make a screenshot and send it to: traineeships@f4e.europa.eu.

It is the responsibility of the applicant to inform 'Fusion for Energy' about any technical problem without delay within the deadline mentioned above.

Please, do not send any supporting documents (i.e.: copies of your ID-card, educational certificates, etc.) **with your application at this stage if not specified in the Traineeships Notice.**