

## Training Opportunity for Portuguese Trainees

Reference	Specialist Area	Duty Station
PT-2012-TEC-QEC	Characterisation of EEE Components in Ground Based Facilities	ESTEC
<p><b><u>Overview of the Division missions:</u></b>            The Materials and Components Space Evaluation Division in the Product Assurance and Safety Department of the ESA Directorate of Technical and Quality Management is responsible for the evaluation and qualification of non-metallic materials, processes and Electronic, Electrical and Electromechanical components for space flight applications. This includes the direct technical support of ESA projects and technology programmes for all related product assurance tasks and includes standardization, research and development activities to determine the suitability and reliability of materials and components to withstand the influences of the space environment.</p>		
<p><b><u>Overview of the field of activity proposed:</u></b>  <b>OBJECTIVES</b>            The objectives of the proposed traineeship are to carry out tasks related to EEE Component radiation issues. In particular, the Portuguese trainee shall work in the area of irradiation characterisation of EEE Components, analysis of PROBA2 Technology Demonstration Module (TDM) in-flight component data and the modelling activities related to the integrated radiation effects and component degradation simulation tool.</p> <p><b>Work structure</b>            The first phase of the trainee programme consists of a study phase. Here, the trainee is expected to study the subject of EEE Components, Radiation Effects, Radiation Hardness Assurance, EEE component radiation induced degradation simulation tool and the TDM instrument currently flying on PROBA2. In the second phase of the activity the trainee's efforts are focuses on the TDM data analysis. In the third phase of the programme (running in parallel with the second phase), the trainee is introduced to the subject of Total Ionising Dose characterisation. Here, the trainee is expected, under supervision, to be able to plan, initiate, execute and complete a TID test campaign at the ESTEC 60Co facility.            In the final phase of the programme, the trainee is expected to compile all results obtained in a final report. The trainee programme is culminated with a final presentation at ESTEC.</p> <p><b>Work break down structure:</b>  <u>Phase one (Study):</u></p> <ul style="list-style-type: none"> <li>• Study all aspects of Radiation Hardness Assurance process with focus on:               <ul style="list-style-type: none"> <li>- Radiation effects on EEE Components o EEE Component radiation characterisation</li> <li>- Radiation sources employed for radiation characterisation</li> <li>- Radiation induced component degradation simulation tool</li> </ul> </li> <li>• Study all aspects of the PROBA2 TDM with focus on:               <ul style="list-style-type: none"> <li>- Review of available ground based test data o Review of the TDM function and hardware implementation</li> <li>- Review of the TDM data packages and time tagging</li> </ul> </li> </ul> <p><u>Phase 2 (TDM data analysis):</u></p> <ul style="list-style-type: none"> <li>• Review of TDM in-flight data</li> <li>• Optimisation of the TDM data analysis software</li> <li>• Comparison of ground based data and in-flight data. Here the ground based SEE rates are to be calculated and compared with direct measurement of in flight SEE rates.</li> </ul> <p><u>Phase 3 (TID irradiation characterisation):</u></p> <ul style="list-style-type: none"> <li>• Review of the ESCC22900 steady state TID irradiation test guideline</li> <li>• Familiarisation with the 60Co facility procedures and safety requirements</li> <li>• Planning of Enhanced Low Dose Rate Sensitivity (ELDRS) test campaign on a predefined component.</li> <li>• Execution of TID test campaign</li> <li>• Generation of an irradiation test report based on ESCC22900</li> <li>• Analysis of the results observed during the TID test campaign</li> </ul> <p><u>Phase 4 (reporting):</u></p> <ul style="list-style-type: none"> <li>• Compilation of the results obtained in each of the phases of the activity into one document.</li> <li>• Generation of a summary report</li> <li>• Presentation of the trainee programme findings.</li> </ul> <p><b>Organisational:</b>            The trainee is expected to schedule his activities for the full trainee programme. Additionally, the trainee is expected to generate monthly progress report containing the following:</p> <ul style="list-style-type: none"> <li>- Completed tasks</li> </ul>		

- Ongoing tasks
- Planned tasks
- Activity problems or issues
- Schedule for the entire training period

**Required Education:**

The candidate shall have a BSc or MSc in physics, electrical engineering or equivalent.