

7.b/7.c Design virtual testing and validation using automatic and simulation tools

Functional Area: Op&Log/R&D/QA

Assessment criteria

LO7b.1. Simulates robotic cells and mechatronic prototypes, validating the design by using simulation software.

Based on a real example of a process/product:

- describe its overall function and the interrelationship amongst the various electromechanical components
- Describe the main issues and problems that could rise (finding the correct variable which could allow to monitor the various effects)
- Describe a hypothetical protocol test

Starting from a described real case:

- simulate it using the correct tool among the presented one
- Justify the tool choice
- Discuss the results

LO7b.2. Determines actions for the implementation and maintenance of systems for quality assurance, for the continuous improvement of productivity in the maintenance and installation of facilities, performing basic concepts and requirements.

- Apply QA controls and procedures to on of above cases (for 7.c)

Knowledge

- Knowledge on the main tools for virtual testing (3d Cad Simulation tools Labview, Matlab, Modelica,etc)
- Abstraction of a processes into a formalized model
- Concretization of an abstract process in to a partial use case
- Fundamental on statistical analysis for data analysis
- Test protocols guidelines
- Design of Experiments
- Basics of QA (for 7.c)
- Parameter capture and correction action for out-of-range data (for 7.c)
- Control and inspection (for 7.c)

Skills

- Simulate a given process/product test
- Ability to set up the more used simulation tools
- Ability to set up the more used analysis tools
- Process data for statistical validation
- Create a test protocol the virtualized model

Transferable skills

- Understand descriptions, specifications, manuals and other info typical of the profession in English and prepare them for

	<p>next phase of project/Customer in understandable manner</p> <ul style="list-style-type: none">• Ability to communicate effectively, orally and in writing with “engineering” community and with “society”, extrapolating concepts for “non-experts” through an abstraction approach
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