Apprenticeships & Theses

ArcelorMittal

TITLE: AUTOMATED TESTING FOR PLC CONTROLLED MACHINES

KEY WORDS OF ASSIGNMENT:

- Change management
- Automated testing
- Unit testing / IO testing
- Test reports

SUMMER APPRENTICESHIP ☐ MASTER THESIS ☒

WORK/SCHOOL APPRENTICESHIP ☐ PROJECT ☐

CONTENT OF ASSIGNMENT (POSSIBLY ILLUSTRATED WITH PICTURES/DRAWINGS):

ArcelorMittal is a steel mill known for its continuous improvement. After research, a software change is requested to implement new features or to improve existing features. Often the results of the research need to be implemented into PLC-code.

Each day, multiple programmers make multiple changes, each time resulting in a slight shift in functionality. This arises two questions:

- Is the new functionality doing what it should do?
- Does the new functionality has an impact on existing features of the machine?

These two questions are critical to guarantee the safety of the people working with the machine & to ensure that incidents are kept to a minimum. The more thoroughly tested, the better.

Currently, test plans are made, (precious) standstills are requested and the software is tested directly on the machine itself. The scope of this thesis is to identify points of the testing workflow which can be automated and to test out some "automated testing techniques". A hands on approach is required.

OBJECTIVES:

- Identify the needs of the PLC-programmer during commissioning and testing
- Conducting market research on existing solutions
- Making proof of concepts to test out some automated testing techniques

EXPECTED COMPETENCES (KEY WORDS):

- ✓ Focus on end user
- ✓ Knowledge of a programming language (Java, C#, Python, …). Experience with GUI's are an added benefit
- ✓ Basic understanding of PLC controllers, or at least the willingness to learn the basics

NUMBER OF STUDENTS:

- 1 or 2

TARGET GROUP : BACHELOR/MASTER/ … & SPECIALIZATION(S):

- Master Of Science in Computer Science Engineering
- Master Of Science in Information Engineering Technology
- Master Of Science in Electromechanical Engineering
  Both "industrieel ingenieur" as "burgerlijk ingenieur"

LOCATION:

- ArcelorMittal Ghent

PROMOTORS:

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- Industrial : Brecht Lauwers
- Academic : /

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