

Automated Testing

Graduate



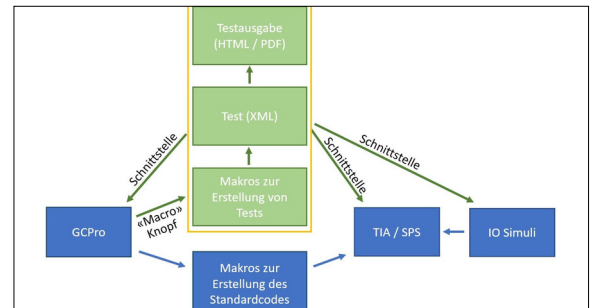
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Introduction: Bühler AG is an international company which, among other things, manufactures mills for the food industry. The required PLC software is written and tested by the company itself. So far, the testing of this software has been done completely manually.

Definition of Task: In this work, semi-automatic tests for various process functions were implemented. With the help of the macro language developed by Buhler, the configuration of the plant is captured. Then, an XML test file containing the existing processes is automatically created for each processline. This contains commands and the testresults, which are necessary for the individual tests. Three different interfaces are available to run the tests. GCPPro, which contains the configuration of the plant, the programming tool TIA from Siemens for reading and writing online values of the PLC as well as IO Simuli, a bühler internal simulation software.

Result: The execution of the tests is directly embedded in GCPPro. The tester can start the tests via a user interface and view the test details as well as the results directly in the tool. A few interactions cannot yet be technically automated and have to be performed manually. The test results are stored in an XML file and can be converted to HTML using XSLT. In the resulting table, the tests are colored red, green or white depending on their teststatus. This file can be displayed in the browser and saved as a PDF. The semi-automatic tests significantly accelerate the testing of the software and generate a uniform test basis. The generated test logs are standardized and can be used as documentation and progress control.

Overview of the workflow of a project
Own presentation



XML View of an executed test case
Own presentation

```
<Item xsi:type="Action">
  <Brakepoint>false</Brakepoint>
  <ObjectName>=M-2085-MXZ01</ObjectName>
  <Command>"G067F".M_2085_MXZ01.EL.ParStoppingTime:=5000</Command>
  <Description>Set short StoppingTime</Description>
  <Memo />
  <StatusValue>1</StatusValue>
  <StateText>Success</StateText>
  <ExecuteDate>24.05.2023 15:13:12</ExecuteDate>
  <User>U27642</User>
  <Duration>356</Duration>
  <StartValue>5000</StartValue>
  <ActualValue>5000</ActualValue>
</Item>
```

Result of an executed Test shown in a HTML table
Own presentation

Job	ObjectName	StateText	ExecuteDate	User	Duration
BUHLER <input checked="" type="checkbox"/> Show only steps MIL1: Test Section / Job commands					
					Total Steps: 11
					Successfull Steps: 7 (Percentage: 63.64%)
					Error Steps: 2 (Percentage: 18.18%)
Job	ObjectName	StateText	ExecuteDate	User	Duration
Test	MIL1S001	Success	13.06.2023 11:15:39		0
StoppingTime	MIL1S001	Success	13.06.2023 11:15:39	U27642	914
StoppingTime	MIL1S001				0
Test	MIL1S002	Error	13.06.2023 11:15:44		1186033
StoppingTime	MIL1S002	Success	13.06.2023 11:15:44	U27642	61
Flour	MIL1S002	Error	13.06.2023 11:17:16	U27642	1126990
Flour depot	G101F	Error	13.06.2023 11:17:16	U27642	1126990
Flour delayed switch ON	=A-4030-MXZ01	Success	13.06.2023 11:17:16	U27642	912437
Flour Behaviour	=A-4030-BLL09	Error	13.06.2023 11:31:04	U27642	214553
Jobchange	MIL1S002				0
Stopping procedures	MIL1S002	Success	13.06.2023 11:35:49		58399
Job with emptying B1 Depot	MIL1S002	Success	13.06.2023 11:35:49		10105
Job with emptying Mill	MIL1S002	Success	13.06.2023 11:34:41		47941
Job with emptying B1 Depot & Mill	MIL1S002	Success	13.06.2023 11:35:37		353
StoppingTime	MIL1S002	Success	13.06.2023 11:36:11	U27642	583
Test	MIL1S003	Success			0

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Subject Area
Computer Science

