

Testing Station for Simulation Assisted Automation Testing

Dynamic plant scale process simulation has been successfully applied in several industrial projects for functional testing of the automation system – virtual commissioning. The major benefits are the reduction of the commissioning time on the site, and the ability to test even the safety critical functions in a comprehensive manner.

Testing Station is a tool for the planning and execution of test runs and monitoring of the testing progress. By using the tool, the virtual commissioning can be planned ahead and performed in a systematic way. The tool has a number of features to support the visualization of the results and reporting and auditing of tests.

Simulation assisted automation testing

Process simulation can be used for closed loop testing of the automation before the installation and commissioning on the site. The tests are done using a virtual automation system which runs on a regular office computer.

The major benefits of the simulation assisted automation testing are

1. reduced commissioning time on the site
2. earlier detection of flaws
3. more comprehensive testing of safety critical functions
4. improved understanding of the system behaviour
5. pre-tuning of controllers
6. basis for an operator training simulator



Testing Station

Testing Station is a tool for the management of simulation assisted automation testing.

The functionality of the tool includes the following:

- simulation control, i.e. run/stop/load/save in both the virtual automation and the process model
- management of initial conditions
- configuration and execution of simulation sequences for automatic testing
- visualization and archiving of run results
- comparison of run results to reference runs, and reporting
- multi-parameter tuning
- monitoring and auditing of the testing

” Fortum has used Testing Station in the Loviisa Power Plant automation renewal project in the test field and factory acceptance tests. Dynamical tests of the nuclear water treatment plant automation were carried out. With the Testing Station software several errors in the new automation were detected. Without Testing Station these errors would not have been detected until the commissioning phase. Now the errors could be corrected safely in the test field which will save us a lot of time during the commissioning.”
Ulf Linden, Fortum Power and Heat