

Automatic Testing of PLC Code Huisman Equipment

Company

Huisman is a privately owned company operating globally with extensive experience in the design and manufacturing of heavy construction equipment for world's leading on and offshore companies. The headquarters is located in Schiedam, the Netherlands.

Some of the products that Huisman supplies are cranes, pipe lay systems and drilling systems. The equipment delivered by Huisman is often the critical main equipment onboard and its reliability is of utmost importance to their clients. Delivering high quality products has therefore been a key company value since the establishment of the company.

Control Engineering

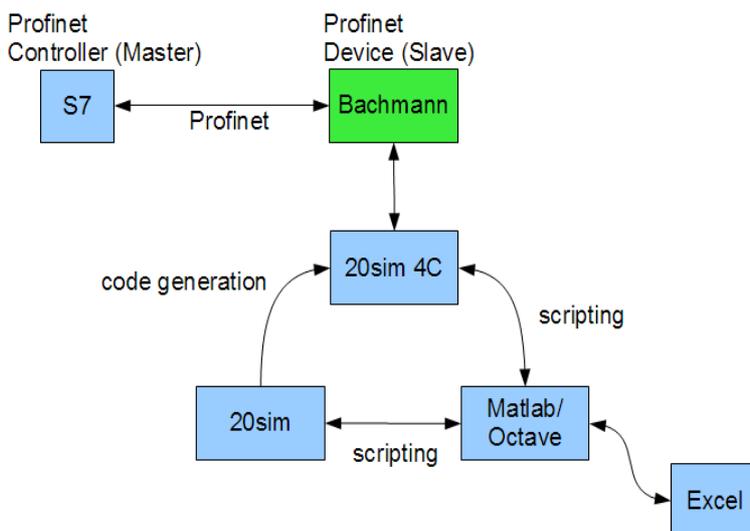
Many of the products that Huisman supplies are highly dynamical and complex. The control system engineers therefore face the difficult task to develop controllers that can cover the complexity of the equipment while maintaining the highest safety and quality levels.



Huisman's headquarters in Schiedam, the Netherlands.

HIL-Testing

Hardware -in-the-Loop (HIL) testing is a method to test controllers by attaching a computer generated machine instead of the real equipment. This method of testing is very useful because it allows control system engineers to test their controllers without the risk of people getting injured. Moreover it allows engineers to find errors in an early stage and thus reduce commissioning time when the real equipment is available.



The setup for the pilot study.

In cooperation with Huisman, Controllab has developed a model based design chain for HIL-testing and carried out field tests. The goal of these test was to find out if fully automated tests could be generated out of the specification and carried out using a HIL simulator.

The setup consisted of a Bachmann M1 PLC running the virtual equipment, connected to a Siemens S7 PLC running the controllers. Equipment models were generated by 20-sim and deployed on the Bachmann with 20-sim 4C. Scripting in Matlab was used to automate the HIL-testing.