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Improved software production for the LHC tunnel cryogenics control system

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The control system of the cryogenic in the LHC tunnel is based on an automatic approach for the control software production process due to its overall complexity. Consequently, an extensive use of various IT technologies - databases, repositories, commercial engineering software, CERN frameworks and dedicated tools are required. The software development is partially automatized, however, every single modification of the control software requires a sequence of consecutive and interdependent tasks to be executed manually by software developers.

A large number of control system consolidations performed during the first LHC run and long shutdown as well as a frequent evolution of used IT technologies lead to a review of the development environment and software production methodology. As a result, an open-source continuous integration server has been employed integrating all development task, tools and technologies in a predefined time and event triggers. All changes triggered are combined into the project and the resulting work is automatically built and tested.

This paper describes the software production chain, the main improvements that have been made to fully automate the process of software production for the cryogenics control system for the LHC tunnel.

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