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MicroTCA.4 based laser pulse controller for the injector laser at FLASH and XFEL

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The user facility FLASH is a multi-beamline free electron laser (FEL) which means that, at FLASH, a common superconducting injector LINAC drives two separated undulator beamlines. A normal conducting laser driven RF-gun produces the electron bunches. In order not to limit the parameter ranges the tuning possibilities for both electron beams have to be the same. Therefore the electron bunches for the different undulator beamlines are being produced by two different injector lasers. A third laser system is available to produce ultra-short electron bunches. To fulfill these requirements and to drive the injector laser a new MicroTCA based laser pulse controller has been developed. This talk will explain how the laser controller works and which MicroTCA resources (hardware and software) have been used for the development. It will also give an overview about the communication handling between the laser system and peripheral MicroTCA systems. Since 2015 the same system controls the injector LASER at the European XFEL facility.

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