

First experience with the W7-X Fast Interlock System

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The safety related PLC in the central safety system (cSS) of W7-X with its corresponding periphery ensures occupational safety and the basic protection of investment. Because its reaction time in the range of some 100 ms is not sufficient to protect components in the plasma vessel from overloading by plasma heating (up to 14 MW), the fast interlock system (FIS) was installed. It can respond to the signals of any diagnostics in 1 ms.

The very first practical experiences with the FIS have been gained during the operation phase 1.2b in summer 2018. Next to the proof of a satisfactory reaction, scalability and operability, the focus also was on the assessment of the reaction times of the various safety-relevant plasma diagnostics.

The paper describes the basic system components and the behavior of the FIS during several experimental situations in the operation campaign 1.2b. A couple of planned measures to improve and extend the FIS, will be presented.

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