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Pulse Current Monitoring for Fast Pulsed Magnets at BESSY II and MLS Light Sources

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The BESSY II and MLS storage rings are 3rd generation light sources. While the first one is usually operated in the top-up-injection mode, where injection efficiencies above 90% are required, the second one requires every 6 hours a dedicated injection procedure to refill for user operations.

To support the commissioning and operation of the both storage rings, modular pulse current monitoring systems have been developed. These are based on National Instruments PXI technology, and programmed with LabVIEW. The so retrieved data is processed, and then transferred by the help of an in-house made ‘CA-Lab’ client software into the EPICS based machine control system. The systems are retained in continuous 24/7 operation since they were introduced about 5 years ago.

The measurement of pulse currents on all pulsed deflection magnets is essential for the stable and uninterrupted operation of the accelerators. Strategies to unveil unwanted operational conditions of the pulsed elements, e.g. instabilities or misfiring, are also discussed.

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