

MONITORING AND ARCHIVING OF NSLS-II BOOSTER SYNCHROTRON PARAMETERS

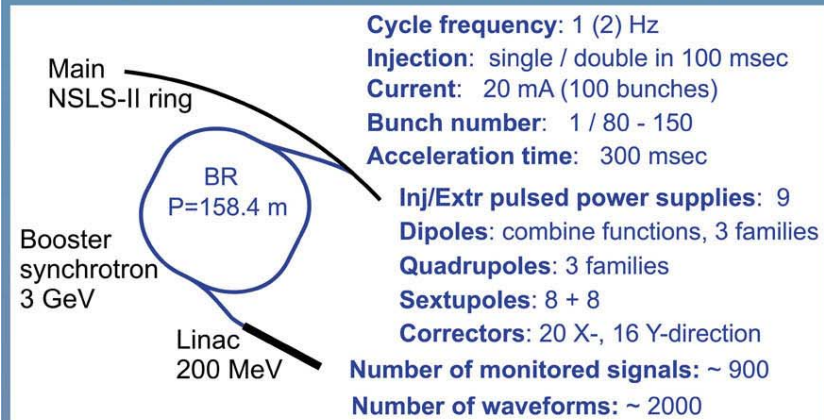


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BOOSTER PARAMETERS



BOOSTER CONTROL SPECIFICS

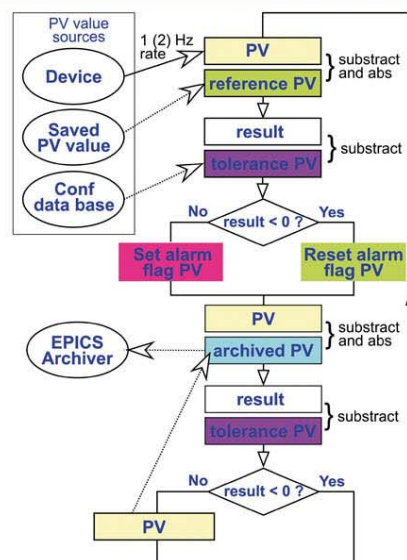
Control data:

- high data flow (plenty of 10k waveforms)
- cyclic nature of measurement process
- huge amount of data to archive
- data synchronization by locking to cycle timestamp

NOT supported in EPICS infrastructure:

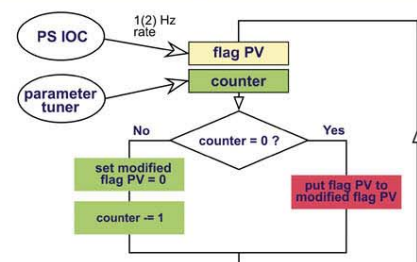
- point-to-point waveform comparison
- alarm handling for waveforms
- save/restore of consistent machine state
- advanced monitoring of machine state
- automatic parameters adjustment

MONITORING AND ARCHIVING SCHEME



- all values have aligned timestamps equal to the time when the booster cycle started
- alarm flag is set for a monitored parameter if the difference between live and reference values is out of the specific range (tolerance)
- two alarm severity levels allow distinguishing between minor and significant deviations
- reference value can be set either by the machine state restore application, or be equal to an appropriate value setting
- significant deviations are automatically archived; live value is compared to the last archived value so only significant changes are saved

ALARM FLAG ADJUSTMENT

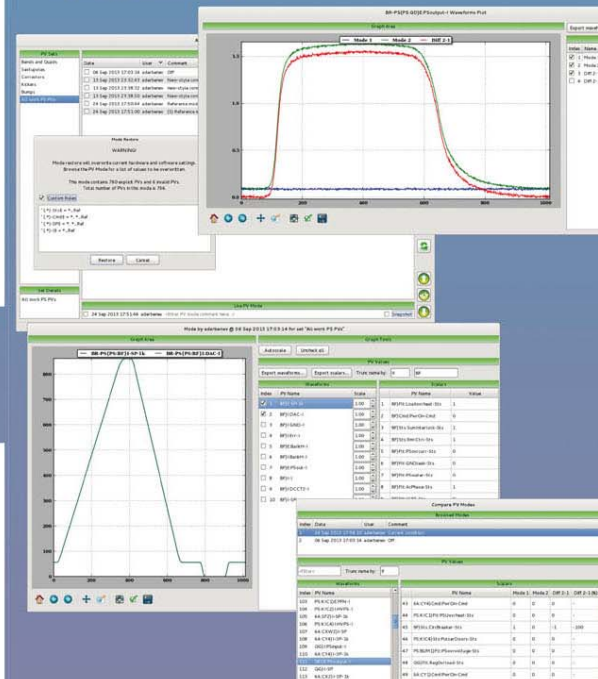


- when Parameter Tuner application adjusts parameter values, corresponding alarm flags should be ignored
- an additional set of modified flags is formed

OPERATOR SCREENS

Save/Restore:

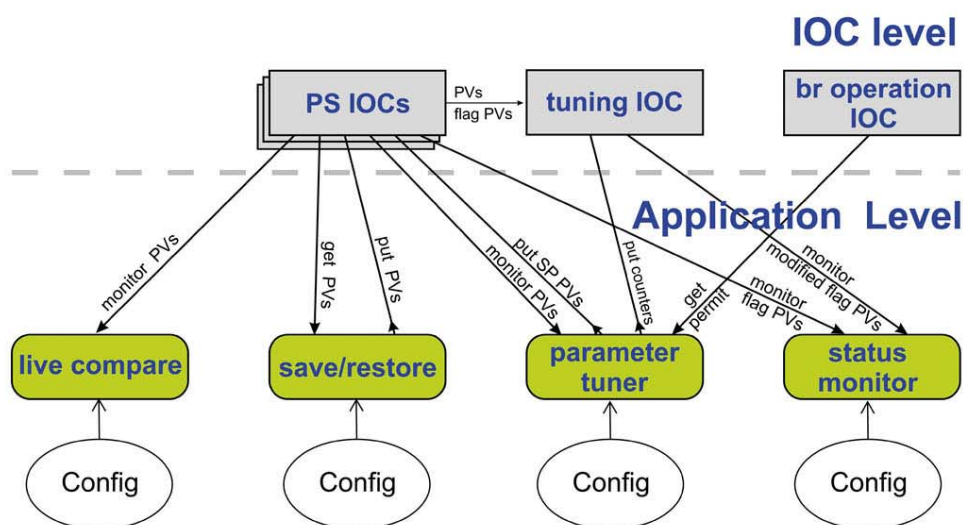
- consistent (relevant to one cycle) and snapshot (as-is) saving modes
- restoration to support reference values in monitoring scheme
- browsing of saved states and comparing them with each other or with a snapshot of live parameters
- data export and extended waveform comparison tools



Status Monitor:

- device status is determined from the state of relevant parameters in real time
- quick access to the detailed device status and diagnostics data is provided

SOFTWARE COMPOSITION



Live Compare:

live scalar and waveform data comparison and export

Save/Restore:

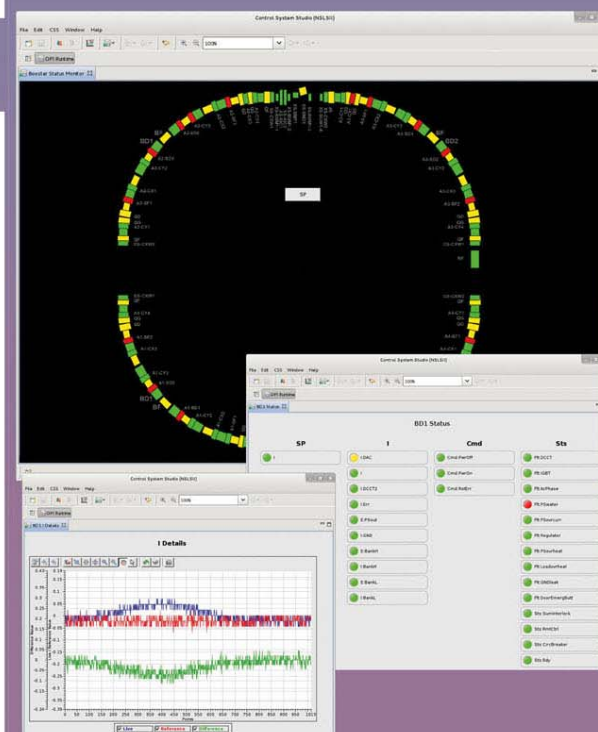
saving PV values at once in order to upload them later to restore booster settings

Parameter Tuner:

automatic compensation of slow deviations in various device parameters

Status Monitor:

colored status visualization of power supply system during the booster operation



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