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CMS RPC activities during Long Shutdown 2

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The second LHC long shutdown period (LS2) is an important opportunity for CMS Resistive Plate Chambers (RPC) to realize their consolidation and upgrade projects. The consolidation includes detector maintenance in terms of gas tightness, HV, LV and slow control operation. All services for the RPC Phase-II upgrade, namely RE3/1 and RE4/1, were anticipated for installation to LS2. The upgrade of the gas system comprises big pipework from the service through the experimental cavern and up to the CMS detector as well as significant modification of some of the existing gas racks. The cooling system for the RE4/1 detector is branched off from the existing YE3 mini manifolds while the RE3/1 chambers will be connected in series with the existing RE3 cooling loops. Thousands of kilometres of HV, LV cables and optical fibres are to be installed for servicing the new detectors and reading their signals. For optical fibres it is foreseen to carry out quality control tests before and after installation (in situ) using an optical time-domain reflectometer (ODTR). The hardware including racks, crates, power distribution boxes, service and communication lines for the upgrade power system should be prepared during LS2. HV and LV power board upgrade is planned for LS2 in view of replacing already obsolete or to-become-obsolete components and be ready for a post-LS2 production.

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