

System test with DC-DC converters for the upgrade of the CMS silicon strip tracker

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Due to the increase in granularity and higher complexity of the front end electronics needed at the SLHC, an upgrade of the CMS silicon strip tracker is expected to require even more power than the current CMS strip tracker. However, the space available for cables will remain the same as today. In addition, a further increase of the material budget due to cables and cooling is not acceptable from the physics point of view. Novel powering schemes such as serial powering or usage of DC-DC converters have been proposed to solve the problem.

Since custom DC-DC converters that satisfy the requirements of radiation hardness and magnetic field tolerance are not available yet, we have operated substructures of the current CMS strip tracker with off-the-shelf DC-DC converters. These devices have been integrated into the CMS tracker hardware and the system performance, in particular the noise behaviour, has been studied. The results of this first operation of CMS strip modules with DC-DC converters will be presented and discussed.

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