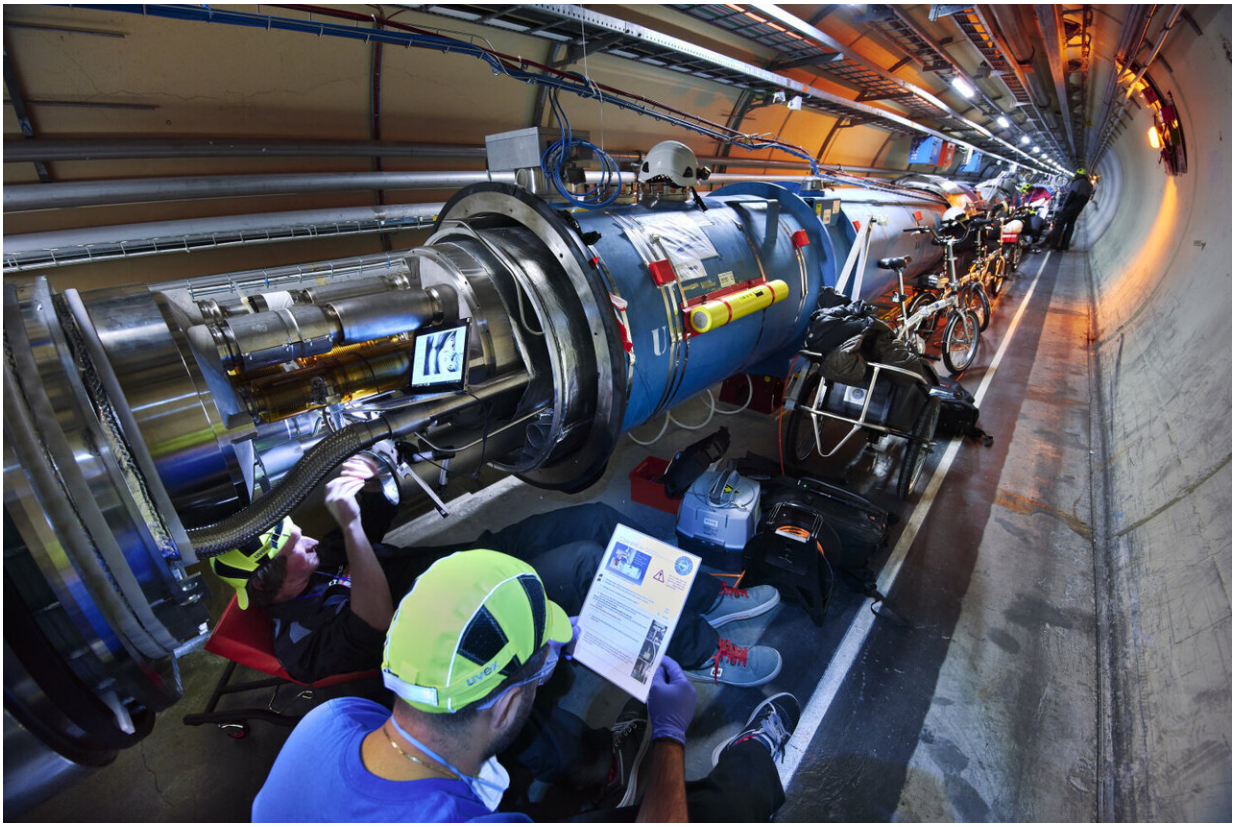
Halfway toward LHC consolidation

October 22 2019, by Corinne Pralavorio



Two members of the LHC consolidation team inspect and clean a diode enclosure of the dipole magnets before improving the electrical isolation. Credit: Maximilien Brice and Julien Ordan/CERN

The Large Hadron Collider is such a huge and sophisticated machine that the slightest alteration requires an enormous amount of work. During the second long shutdown (LS2), teams are hard at work

reinforcing the electrical insulation of the accelerator's superconducting dipole diodes. The LHC contains not one, not two, but 1232 superconducting dipole magnets, each with a diode system to upgrade. That's why no fewer than 150 people are needed to carry out the 70 000 tasks involved in this work.

The project is now halfway to completion. One of the machine's eight sectors, containing 154 magnets, is now closed and the final leak tests are under way. Work is ongoing in the seven other sectors and the teams are working at a rate of ten interconnections consolidated per day.

The work is part of a broader project called DISMAC ("Diodes Insulation and Superconducting Magnets Consolidation"), which also includes the replacement of magnets and maintenance operations on the current leads, the devices that supply the LHC with electricity. Twenty-two magnets have already been replaced and two others have been removed from the machine in order to replace their beam screens, which are components located in the vacuum chamber.

A plethora of upgrade and maintenance work is also being carried out in the tunnel on all the equipment, from the cryogenics system to the vacuum, beam instrumentation and technical infrastructures.

Replacement of one of the LHC superconducting dipole magnets during the accelerator consolidation campaign. Credit: Maximilien Brice and Julien Ordan/CERN

Provided by CERN