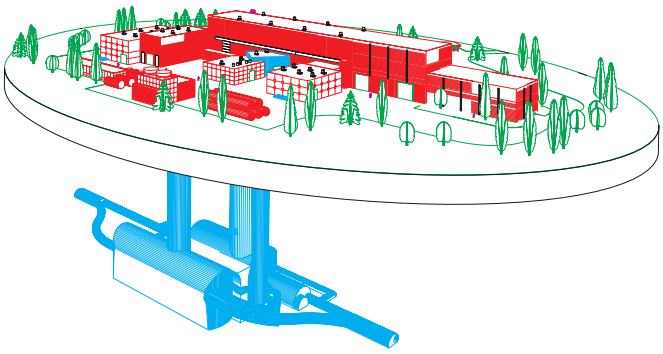
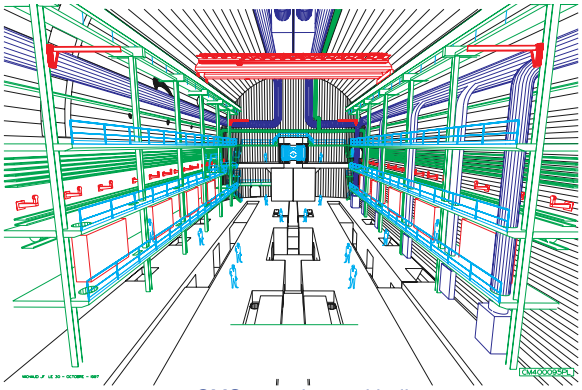
Installation

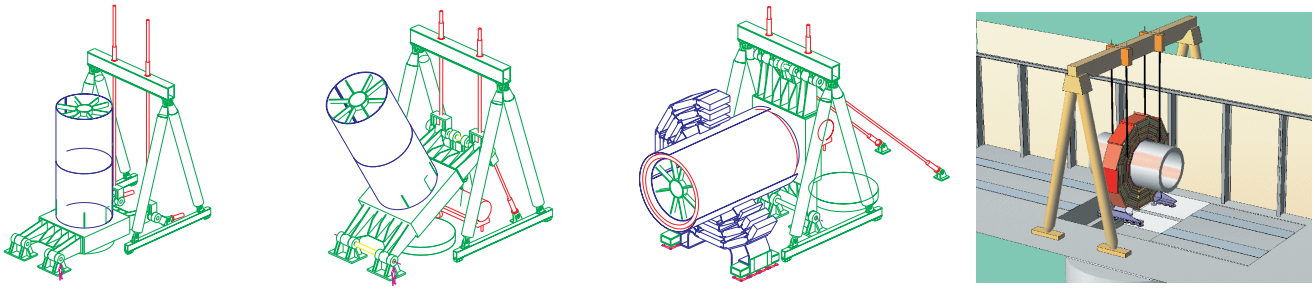


CMS experimental area overview



CMS experimental hall

The plan for the construction and installation of the CMS detector in the experimental hall minimizes any interference with the exploitation of LEP to reduce time and costs. To achieve this, the assembly and testing of the magnet will take place in a large surface hall before lowering it into the underground experimental cavern. This solution allows CMS to start by the end of 1999 while LEP is still in operation. The choice of using a surface hall rather than the underground area, allows the construction of the magnet and detectors in parallel with the civil engineering works. CMS will be located at Cessy (LHC point 5)



Rotation of the winded coil to horizontal position, sliding in the central yoke and lifting in the pit

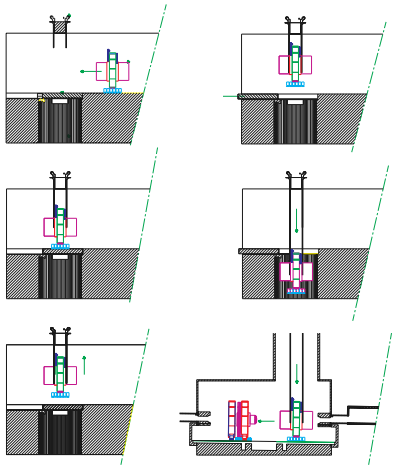
The surface building complex will be located at Cessy (point 5). During the construction phase the main assembly hall will have a length of 140 m, a width and height of 23.5 m. After the magnet has been tested, these dimensions will be reduced to a length of about 100 m and a height of 16 m, thus having no major impact on the environment. The surface assembly hall will also have two temporary alcoves which will be used as a garage for the HB when moving large sections of the experiment through the hall. A third alcove will be used for testing the external cryogenics and the power supply before the surface test.

A temporary addition to the assembly hall, SXL5, is built to allow the final on-site reinforcement of the coil superconductor. Other buildings to be used for gas, primary cryogenics, ventilation, etc. will be also built on the surface at point 5.

The underground areas include the experimental cavern UXC5, the auxiliary cavern USC5, the access pits, PX56 and PM54, and the LHC machine by-pass. They are separated from the surface hall by a mobile radiation shielding plug situated at the top of PX56. The magnet is used as the principal structural element to support all barrel detector components.

The central barrel ring of the yoke support the superconducting coil through the vacuum tank. The other four barrel rings and end cap disks slide on common rails, running in the beam direction, to allow insertion and maintenance of the muon stations.

CMS experimental rotation of the winded coil to horizontal position, sliding in the central yoke and lifting in the pit.



All the barrel sub-detectors, calorimeters (HB, EB) and tracker, are supported by the inner shell of the vacuum tank via a system of rails welded to it in the horizontal plane. The end cap detectors (ME, HE, EE) are supported by the end cap yokes. At each end of the inner tracker, a 1 m long cylindrical section of beam pipe is provided for in-situ cutting and welding. The central section of the beam pipe remains an integral part of the tracker and is consequently removed with it.

Opening of the inner tracker will be carried out only in a dedicated cooled clean area situated at the surface. To open the detector at one end, the corresponding HF must be removed. This must be done rapidly, with the HF fully cabled, to allow for optimum use of the shut-down period. For this reason, the HF is mounted on a stand supported by a structure composed of three sections, designed to support 400 tons. Mechanical jacks, sunk in the cavern floor, allow movement up or down in a three step operation.

A rotating shielding will provide, on both sides, the interface between the LHC machine and the CMS experiment at the level of the forward calorimeters.

The general planning of the experiment is :

- Surface building (SX5) first phase ready by 1/10/99,
- Reinforcement of conductor on site,
- Winding of the coil on site,
- Activities in SX5,
- Start up of the LHC Machine of 1/07/2005.