

Cooling and ventilation plants

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Although several options are still open for the general layout of the FCC, a proposal for the future configuration of the cooling and ventilation plants can be made. Some of the specificities of the FCC such as the underground depth of the tunnel leads to additional constraints for the construction and design of the systems. The ventilation system has to comply with the technical and safety requirements but has also a not negligible impact on the definition of the civil engineering layout in the underground to solve issues such as for the helium release scenario, the smoke extraction, the presence of safe areas, etc. Similarly, the cooling network, given the length of the sectors, the flowrates concerned as well as the constraints imposed to allow accessibility to the pipework, has a major impact on the cross section of the tunnel. In most cases, the experience gained in the operation of the LHC has been driven the choice among different options in order to optimize the operability of the plants. The author shall present the overall proposed layout and configuration for the main cooling and ventilation systems for the underground premises and the reasons that led to this choice, including some simulations with a CFD tool to assess the solutions retained. Specificities with respect to standard solutions used at CERN will also be highlighted.

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