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Engineering studies for the inner region of the CLIC detector concepts

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The strict requirements in terms of material budget for the inner region of the CLIC detector concepts require the use of a dry gas for the cooling of the respective sensors. This, in conjunction with the compactness of the inner volumes, poses several challenges for the design of a cooling system that is able to fulfil the required detector specifications. This presentation introduces a detector cooling strategy using dry air as a coolant and shows the results of computational fluid dynamics simulations and experimental measurements used to validate the proposed strategy. Furthermore, the progress on the development of lightweight detector support structures that fulfil both mass and stiffness requirements is also reported.

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