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Progress towards the design of Phase-2 CO₂ cooling systems

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In the Phase-2 upgrade of CMS and ATLAS, the scope of CO₂ detector cooling systems will expand greatly. The systems will be larger, colder, and will see an order-of-magnitude increase in cooling power. The DEMO CO₂ cooling system is a full sized prototype of the cooling systems for Phase 2. We have been operating DEMO for most of 2022 and 2023. In this two-part talk, we first address DEMO results, system performance, and describe the lessons learned (both in terms of thermofluids and controls). In the second part, we cover the conceptual Design of new 2PACL systems, challenges encountered and solutions implemented in the mechanical design of both the Plant and Accumulator.

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