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CH4rLiE: Turning Detector Tech into Climate Action

CERN has developed several strategies to reduce the use and release of greenhouse gases (GHG), including environmentally friendly gas mixtures and recovery systems for detector exhaust. Among these gases, CF_4 plays a significant role, contributing about 20% of CERN's direct GHG emissions. Building on this expertise, the CH_4 Livestock Emission (CH4rLiE) project—born as a spin-off of the CMS experiment—addresses methane emissions from livestock farming. Methane has a much higher global warming potential than CO_2 and represents a substantial fraction of human-induced climate impact. CH4rLiE focuses on capturing methane already released in barn environments using a dedicated recovery system inspired by CMS Cathode Strip Chambers CF_4 technologies. This poster presents the project outcomes, including simulations of gas diffusion, on-site methane monitoring in barns, and the development and testing of a prototype methane capture system aimed at mitigating livestock-related emissions.

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