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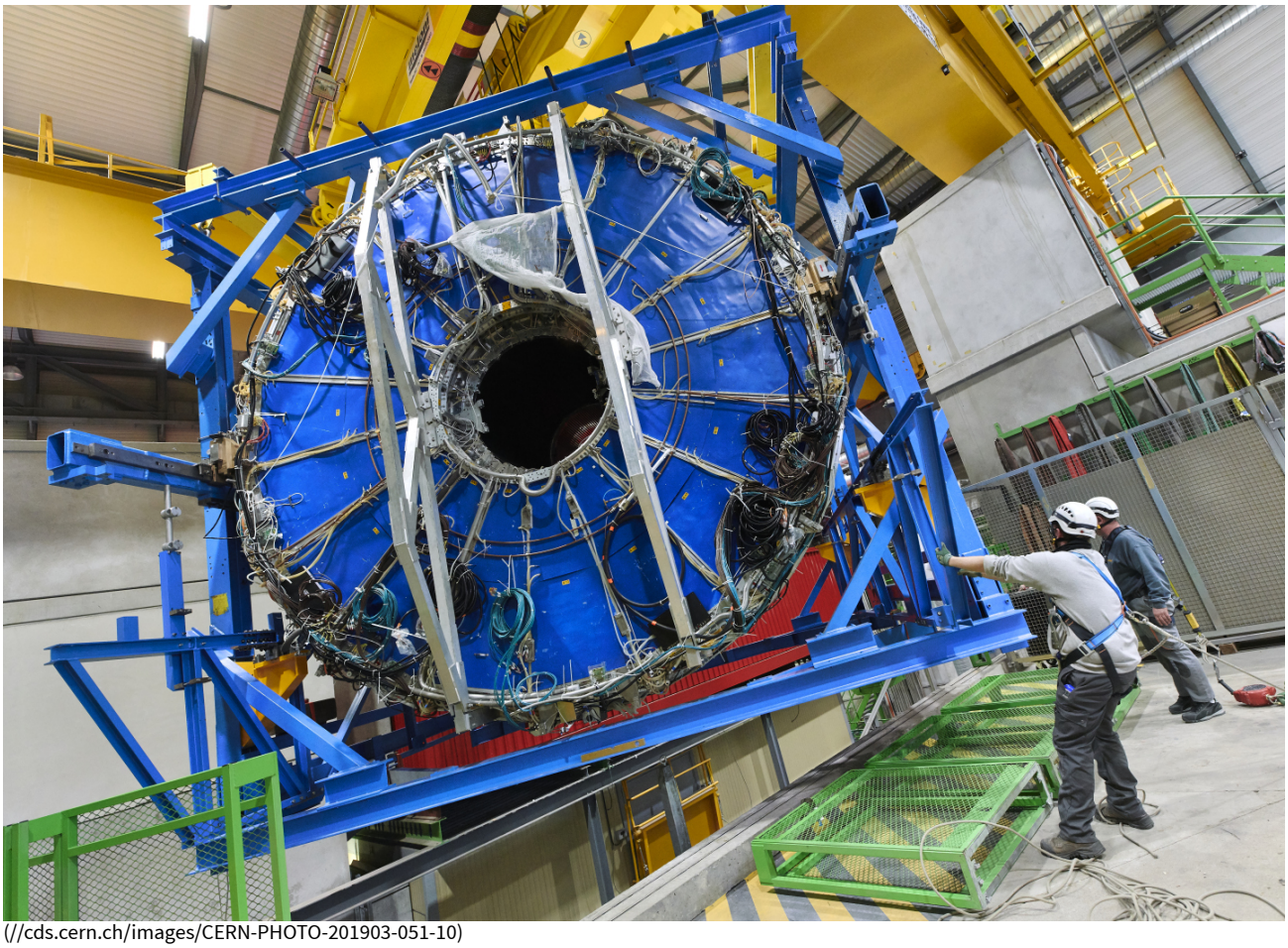
Greening gaseous detectors

Physicists seek to replace harmful chlorofluorocarbons with novel “eco-gases”

8 JUNE, 2021 | By Mark Rayner (/authors/mark-rayner)



(//cds.cern.ch/images/CERN-PHOTO-201903-051-10)

ALICE’s TPC has been upgraded to recirculate almost 100% of greenhouse gases. (Image: CERN)

When charged high-energy particles crash past noble-gas molecules, they leave a trail of ionisation in their wake. These tiny signals can be amplified using electric fields, and read out by electronics, revealing particle tracks with beautiful precision. This is the time-honoured concept behind the LHC’s gaseous detectors – an indispensable concept, thanks to its ability to instrument large volumes of a detector in an affordable way.

Unfortunately, environmentally harmful chlorofluorocarbons known as freons also play an essential role, dampening runaway effects to make sure that the amplified signals aren’t swallowed up by electronics noise. Physicists at the LHC are working on consolidating strategies for eliminating the current risks, and are studying novel “eco-gases” for the next generation of detectors. These were the topics of the workshop (https://indico.cern.ch/event/1022051/) recently hosted online by CERN. To read more, check out the full report (https://cerncourier.com/a/greening-gaseous-detectors/) in the *CERN Courier* magazine (https://cerncourier.com/).

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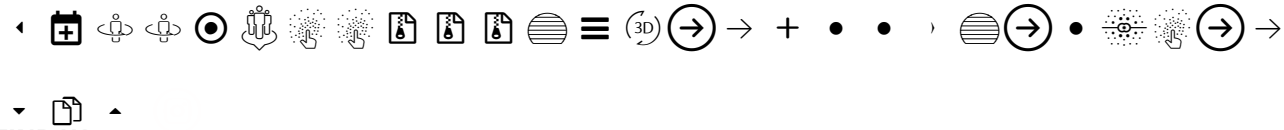

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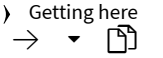

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