

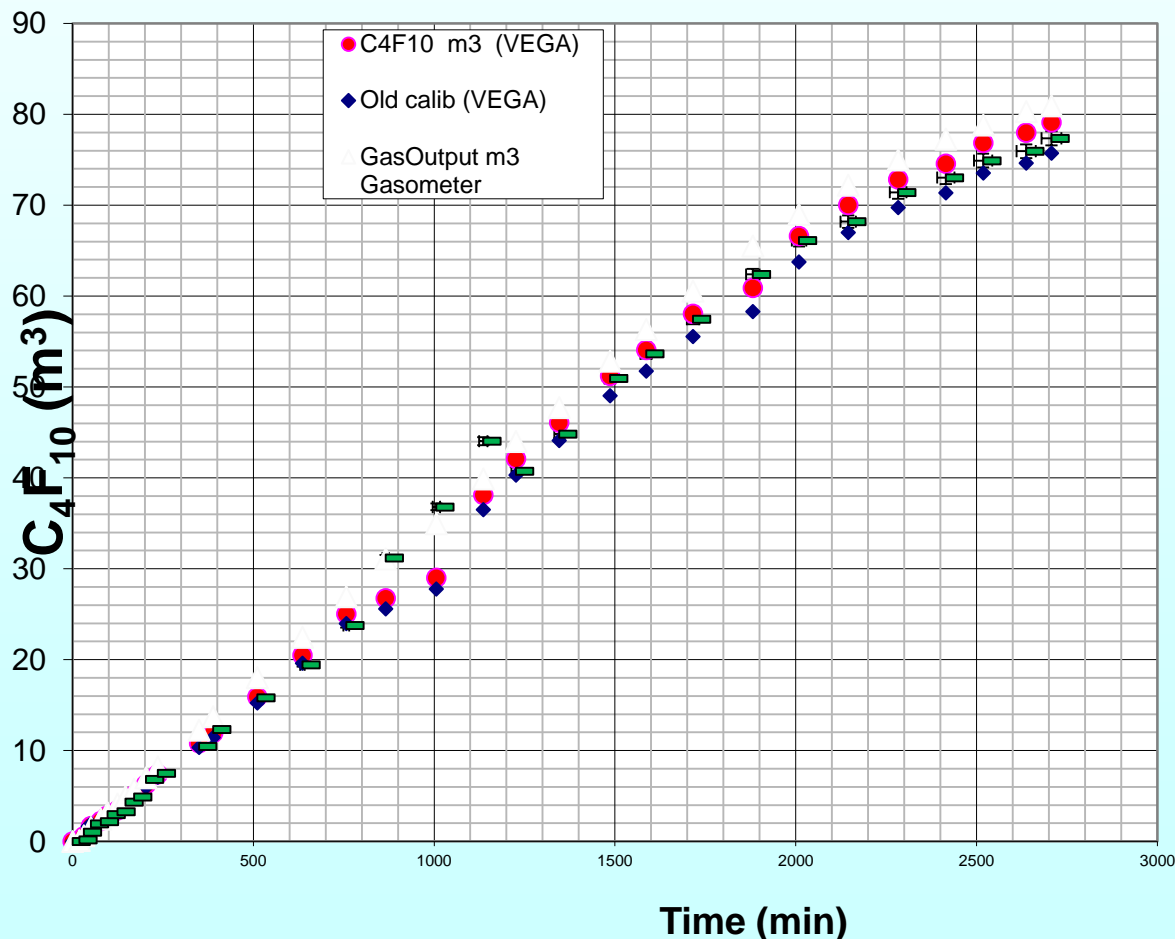


RICH radiator gas

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The filling was performed using the gas in the reservoir: we decided to stop it when 90% of C₄F₁₀ in the RICH was reached (instead of the 95 -97 %).

Having a bit of C₄F₁₀ in liquid form is essential for the RICH “breathing”

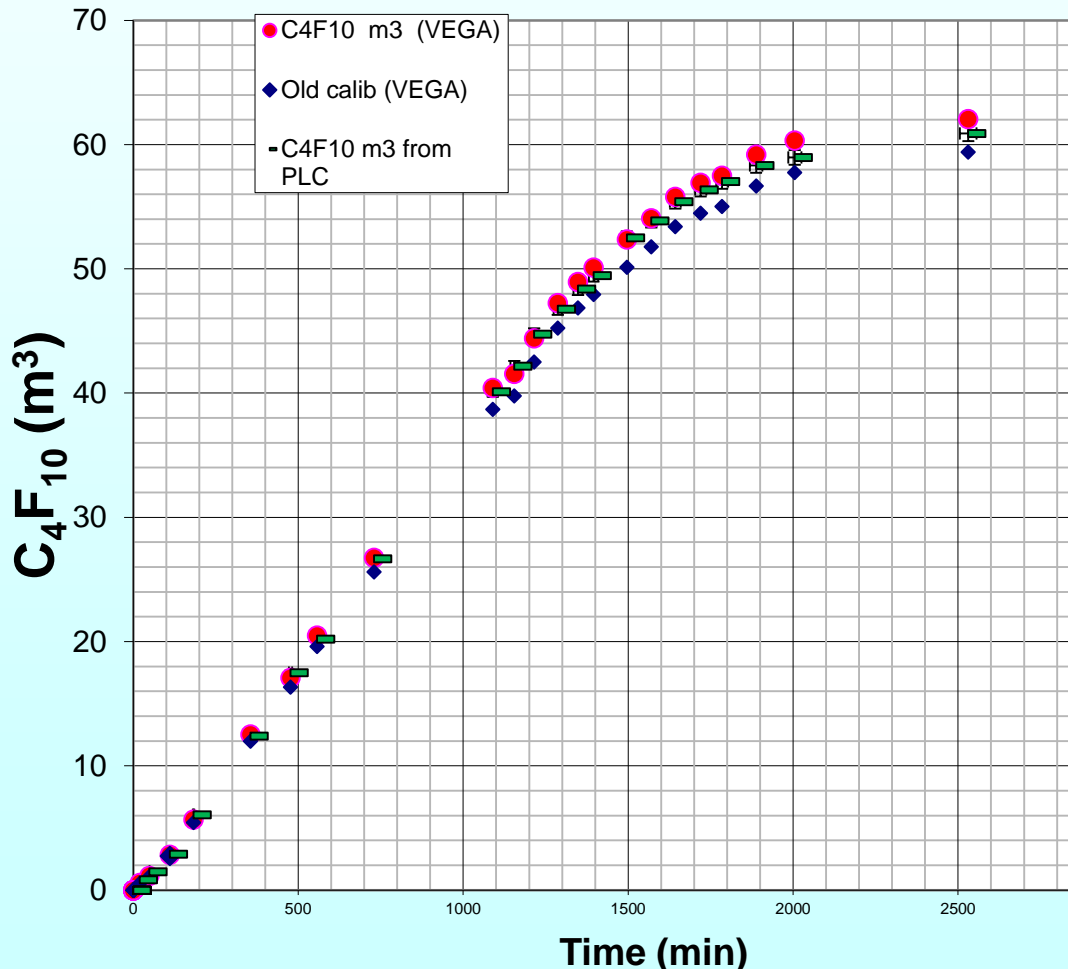


at the beginning of COMPASS physics data taking we secured the RICH operation by adding 2 m³ of N₂ in the vessel because there was no liquid any more in the reservoir. (2.5% decrease of C₄F₁₀ fraction)

With the present leak (~6 l/h) we will need extra gas (either C₄F₁₀ or N₂ within two weeks)

We will need further filling in the near future: the operation of MAPMTs is almost unaffected, not so the gas-based PDs

The recovery was performed at the end of the run: 62 m³ were recovered
 The density of C₄F₁₀ in gas phase is 11.21 g/l at stp, in liquid phase it is 1.594 kg/l
About 700 kg of “clean” C₄F₁₀ are presently in the COMPASS tank.



We need 1500 kg of C₄F₁₀ for 2021:

~ 1000 at the beginning

~ 400 kg consumption
 (~6l/h leak for 240 d, filters regeneration, measurements, ...)

~ 100 kg spare

→ 800 kg of clean C₄F₁₀ have to be provided.

LHCb agreement: exchange of ~400 kg of C₄F₁₀ from which 300 kg of clean C₄F₁₀ will be obtained

→ We need to purchase 500 kg



new C_4F_{10} radiator gas

Few producers in the world; 3M confirmed they do not have it.

Only one producer confirmed to be able to provide it in large quantities (F2 Chemicals). No one offered a quotation for C_4F_8O

**Quoted price: 110 £/kg .
Today exchange rate is ~1.32 CHF/£
If we order now 700 kg of C_4F_{10} it would cost 100 kCHF**

We continue to search for the best solution.

we plan to ask COMPASS to foresee a purchasing of C_4F_{10} for the 2021 run well in advance.