

Hi John,

I have seen the use of specific “getters” for vacuum insulation for several applications as telescopes (LSST telescope), small cryostat and planetary instruments. The intention is to get pressure lower enough for year time to avoid thermal exchange by gas.

Active Charcoals (at cryogenic temperature) are fine but it will require some effort to find a solution, how to fix, the amount need and some tests for the brand of active charcoal (http://www.oir.caltech.edu/twiki_oir/pub/Palomar/PTF/MosaicLabIntegration/GetterTests.pdf). I indicate a link with a successful trial for that option.

Another suggestion a little more commercial and widely used, the zeolite

(<https://ui.adsabs.harvard.edu/abs/2018cosp...42E2639P/abstract>).

On this one the zeolite can handle the gas for many years.

In any solution, the use of a primary pump is a must for safety reasons. These getters, when used on the best process/performance, can pump from atmosphere(!) down to $1e-6$ mbar ($1e-4$ Pa) by cryogenics, and if you lose the low temperature they release the gas and you have a pressure device! That is the main reason we don't see it commercially... hard to handle after warming up. The getter process is due surface and trapping gas by very porous materials (it means, mechanical/thermal, no chemical).

Small devices and using a primary pump for atmosphere pump are acceptable solutions.

Best,
Marcelo