

# B&D

PROCESS  
OPTIMIZATION  
TECHNOLOGY



## MEASURING $^3\text{H}$ AND $^{14}\text{C}$ EASILY, SAFELY AND RELIABLY

In the exhaust air from nuclear power plants, nuclear research facilities, reprocessing plants, disposal sites and isotope laboratories, the content of tritium ( $^3\text{H}$  or  $\text{T}$ ) and radioactive carbon ( $^{14}\text{C}$ ) must be measured. During the dismantling of such plants, the air monitoring is required by law.

Our H3/C14 collector provides a simple, safe and procedurally approved method for monitoring the air on the radioactive isotopes  $^3\text{H}$  and  $^{14}\text{C}$ .

### THE COLLECTION PHASE

In the collection phase, the metering system directs a precisely defined quantity of exhaust air as measurement air through the adsorber cartridge of the H3/C14 collector. Inside the cartridge, the measurement air is passed through a zeolite molecular sieve which adsorbs radioactive steam (HTO) and radioactive carbon dioxide ( $^{14}\text{CO}_2$ ) and binds it permanently to the zeolite molecular sieve.

If, in addition, radioactive inorganic hydrogen (HT) and radioactive organic hydrocarbon compounds of the isotopes  $^3\text{H}$  and  $^{14}\text{C}$  shall be collected, the measurement air is, in a further process step, directed over a heated catalyst. Thus, the two compounds are oxidized and converted to HTO or  $^{14}\text{CO}_2$ , which will be collected in a second adsorber cartridge.

### THE CARTRIDGE CHANGE

The change of the adsorber cartridge is easy, safe and fast. Only the two union nuts at the ends of the cartridge must be loosened. Then the cartridge can be removed without further security measures as it contains no hazardous substances or liquids. The used cartridge is closed and the new cartridge can be installed quickly and easily.

### THE EVALUATION

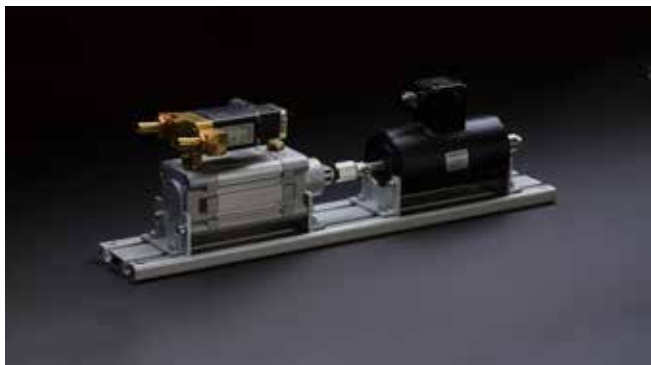
The adsorber cartridge contains no hazardous materials and shields the radioactive isotopes inside the metal shell. It can be delivered to an external laboratory without any safety measures. A storage of the cartridge for later evaluation is also possible. The laboratory performs the preparation and quantitative analysis of the collected isotopes.

### H3/C14 COLLECTOR IN YOUR PLANT

Since 1982, more than 200 nuclear power plants rely on our H3/C14 collectors for the exhaust measurement. Feel free to contact us! We will be glad to demonstrate how easy, safe and reliable air monitoring can be performed with our H3/C14 collector.

### THE SYSTEM BENEFITS AT A GLANCE

- Closed adsorber cartridge
- No hazardous materials or liquids in the collection system
- No risk of running dry
- Easy cartridge exchange
- Safe handling
- Easy transportation of the adsorber cartridge
- Acknowledged accuracy



H3/C14 collector, pump



H3/C14 collector, cartridge



H3/C14 collector, customer-specific application, exterior view



H3/C14 collector, customer-specific application, interior view

## CONTACT

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