

The gas processing system of SAUNA CUBE

A new concept in radionuclide detection, based on the deployment of smaller and less complex systems compared to the ones presently used in IMS, is being developed at FOI. The new radionuclide systems, named SAUNA CUBE, will be deployed in an array configuration consisting of 4-5 units. A first prototype of the CUBE gas processing system has been constructed in the laboratory and its performance has been tested and evaluated. The xenon yield was determined using a thermal conductivity detector, showing a fairly stable result of about 80%. The removal of carbon dioxide and water from xenon was analysed using a mass spectrometer and the peaks were found to be clearly separated, indicating an effective separation process. The gas system has been operated in continuous mode for about 40 days in order to investigate system stability. The retention time and the peak widths showed small variations. In addition, the radon removal capability was studied.

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