A GETTER BED SIMULATOR AND OPERATING SCENARIO GENERATOR FOR THE SPOVE

Kyu-Min Song[1], Soon Hwan Sohn[1], Daeseo Koo[2], Hongsuk Chung[2], Min Ho Chang[3], Hyun-Goo Kang[3], Sei-Hun Yun[3], Seungyon Cho[3], Ki Jung Jung[3]

[1] *Korea Electric Power Research Institute, 65 Munjiro, Yuseong, Daejon 305-760, Korea*
[2] *Korea Atomic Energy Reseatch Institute, 1045 Daedeokdaero, Yuseong, Daejon 305-353, Korea*
[3] *National Fusion Research Institute, 14 Sinsungro, Yuseong, Daejon 305-343, Korea*

Corresponding author: kmsong@kepri.re.kr

A getter bed simulator had been proposed to design and test the ITER SDS (Storage and Delivery System) process independently of the SDS bed development [1]. On this purpose, a prototype one has been manufactured and tested [2], and finally the getter bed simulator as a portable type is developed for the test of SPOVE (SDS unit PrOcess VErification system) in NFRI. The SPOVE has capabilities to test the performance of several SDS unit processes with this getter bed simulator instead of a real tritium storage bed. An operating scenario generator is also updated more compatibly for the application to the portable getter bed simulator. The operating scenario generator is a program to convert various operating conditions to the numerical format data compatible with the getter bed simulator. . The control program of the getter bed simulator is designed by LabVIEW to increase the control reliability. A mass flow controller and an electronic pressure controller are main components of the getter bed simulator. The mole ratio of the hydrogen isotopes to the getter material is simulated by the mass flow controller according to the loaded operating scenario. The pressure in the real bed depends on the vacuum pump characteristics but is limited below the equilibrium pressure at the given temperature and mole ratio by the electronic pressure controller and mass flow controller. After the tuning test, this getter bed simulator will be employed to the SPOVE and used to simulate various bed operation scenarios under normal and abnormal conditions.

Figure 1: Getter bed simulator for the SPOVE

[1] Seungyon Cho et al., IEEE Transactions on Plasma Science, Vol.38(3), 2010, p.425
[2] Kyu-Min Song et al., 25th Symposium On Fusion Technology, Rostock, Germany, Sep.15-19, 2008