6 - 5 Operation of HWRs for C-ADS Injector

Yue Weiming, Zhang Shenghu, Li Yongming, Chang Wei, Jiang Tiancai, Zhang Shengxue, Gao Zheng, Wang Ruoxue, Huang Shichun, Pan Feng, Chen Long, Li Chunlong, Song Yukun, Guo Hao, Xiong Pingran, Li Chunlong, Cong Zhang, Tan Teng, Wan Yuqin, Niu Xiaofei, Bai Feng, Hu Chuanfei, Zhang Peng, Liu Lubei, Huang Yulu, Zhao Yugang, Guo Xiaohong, You Zhiming, Zhang Junhui, Huang Guirong and He Yuan

There are two types of HWR cavities have been developed in IMP for C-ADS Injector. HWR010s have been used to accelerate proton from 2.1 MeV to 10 MeV. There are 12 HWR010s assembled in two CMs. The taper type HWR015s have been used to accelerate proton from 10MeV to 18.5 MeV. There are 5 HWRs assembled in the third CM.

Proton beam has been accelerated to 26 MeV by HWR010, HWR015 and Spoke021 in June 2017. The beam has been accelerated to 18.5 MeV by HWR010 and HWR015. The CMs in the tunnel are shown in Fig. 1.

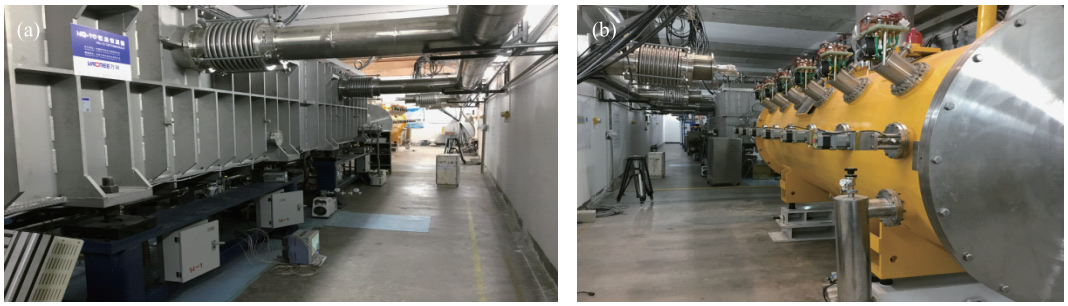

Fig. 1 (color online) (a) CMs front side view, (b) CMs back side view.

The HWRs have run 186 h in close loop mode for the beam test this time. The HWRs E_p are shown in Fig. 2.

Fig. 2 (color online) HWRs E_p for 18.5 MeV test.

The average E_p of HWRs is 27.5 MV/M. The E_p of CM1 which was assembled and tested in 2016 is 23.5 MV/m. The E_p of CM2 is 31 MV/m. The main reason for E_p increase in CM2 is that the assembly process was improved and local cleaning room was built for beam pipe connection. The beam test confirms the HWR and accessory equipment design, fabrication, procedure of processing, assembling and conditioning research of the stability is the major works in the future.