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SPALAX-New Generation: Deployment, Operation and Performances

CEA developed for many years systems that enable to detect radioactive noble gas from civilian and military nuclear activities. It leads to the patent (1999) and the industrialization (beginning of 2000's) of the « Système de Prélèvement d'Air et de détection en Ligne Automatique des radioXénons atmosphériques » (SPALAX). After several intermediate improvements especially regarding ovens, software and plc, CEA launch in 2013 the SPALAX-New Generation project which consists especially in the use of a new adsorbent material and a new β-γ spectrometer (Si-PIN coupled with a HPGe). The evolution leads to a huge increase of the xenon production (~ factor 4) and overall sensitivity (~ factor 4 to 40 depending the isotopes). These new performances enable to increase the sampling frequency from 24h to 8h by keeping very low detection limits: < 0.3 mBq.m-3 for all the four relevant isotopes. Moreover, the high resolution of the new spectrometer enables to easily separate the contribution of each isotope without corrections. The industrialization of the system is achieved by Cegelec Defense and the first prototype will be released in 2017. This presentation aims at given an overview on deployment, operation and performances of the SPALAX-NG system.

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