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Data Analyst - A Device for Continuous Repeating Real-Time Assay of HPGe, CZT, or Scintillation Gamma Spectra - 18574

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ABSTRACT

There are many situations where a continuous repeating series of quantitative gamma spectral assays is desirable. These include measurements of fluid going through a pipe, of items on a conveyor passing under a detector, a detector aimed at the ground on a moving platform, or a detector in free air as a plume of radioactivity drifts by. While Canberra and many others have built and deployed many of these devices, they have all been custom built for that particular application, and rather expensive. The Data Analyst [DA] is a general purpose device that is designed to fulfill many of these applications without modification, but can be fairly-easily modified if needed. The DA is a small [12x18x5cm], low-power [3W] box that accepts the input from external MCAs, controls the acquisition cycle, analyzes the results, and transmits them to the outside world when needed. The detector-MCAs supported are HPGe with Lynx MCA, NaI or CeBr or LaBr with Osprey MCA, and CZT or CsI with internal MCAs. The DA internal software used for analysis is the full standard Genie analysis software, which is very widely used and well accepted in the industry. This allows exported spectral files to be reviewed and confirmed by Experts, and reanalyzed if needed. The DA hardware is totally autonomous. As soon as power is applied, it starts the pre-programmed sequences of acquisition and analysis. Multiple analysis sequences [called Workflows] can be in operation simultaneously, e.g. with different count times and different nuclide libraries. Only the detector with MCA, and the DA are required in the field. A PC can be connected to the DA locally or remotely via WiFi, USB, or Ethernet. The PC is needed to setup the DA, and to readout the results. The DA also supports [with application-specific programming] external Inputs/Outputs either for recording with the analysis results or for use in the computation of the result, e.g. temperature, flow rate, pressure, ...]. The DA also has an internal GPS receiver with external antenna. Applications of the DA that are discussed include stack gas effluent activity where a portion of the effluent stream was extracted to flow through a shield with a HPGe detector and Lynx MCA, and measurement of reactor coolant activity where a shielded CZT detector and MCA were aimed at various sections of reactor primary coolant during a maintenance outage. Potential other applications are also described.

*** If you are interested in the full paper, please contact to the Marketing specialist, MTKK; Yoko YASUI (Tel +81 6 4806 5662, E-mail jp-sales@mirion.com)**