ORTEC® News

Issue 9

Welcome to the ORTEC Newsletter

As usual with our newsletter this first edition in 2012 includes articles covering a whole range of topics and applications.

Articles included range from software for modelling the efficiency response of HPGe detectors through to Alpha-Beta particle counting systems. Perhaps of a particular interest with the London Olympics fast approaching is the release of our Detective-200 ultra high sensitivity radioisotope identification system which is introduced in this edition.

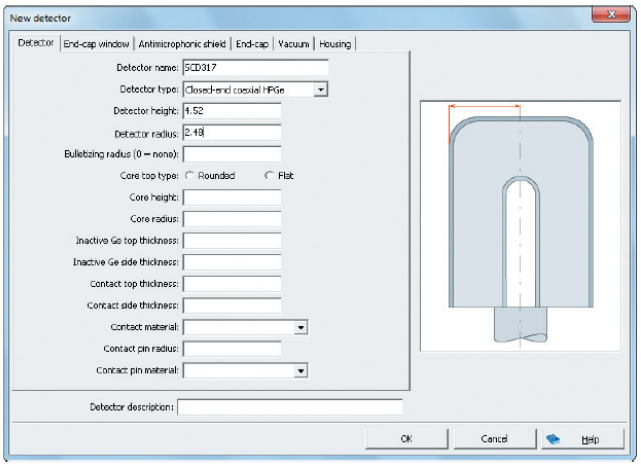
Please enjoy the read and let us know what you think, your feedback is always appreciated

Inside this issue:

If you would like your details removed from our database, please send an email to: ortec.uksales@ametek.co.uk.

All requests will be completed within 5 working days of receipt.

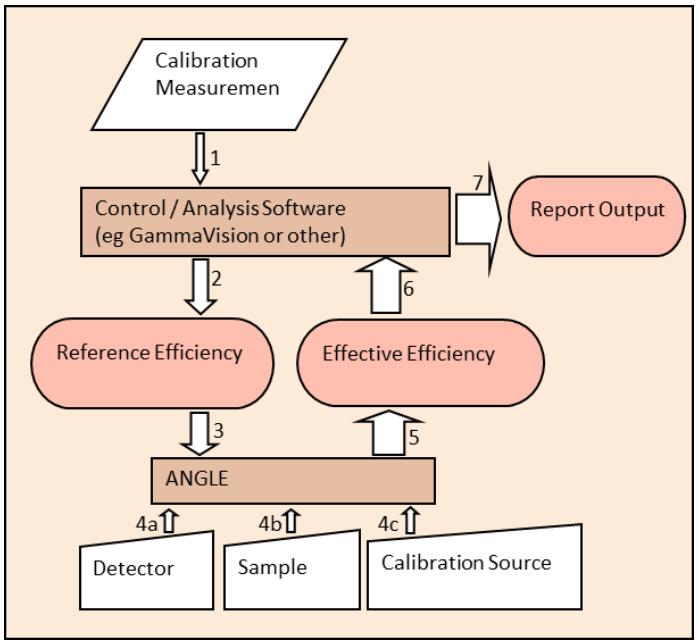
ANGLE Software and Calibration Service



HPGe gamma spectroscopy is a powerful technique used both for the identification of radioisotopes (requires detector energy calibration) and also for quantifying the activity of the isotope in a sample (requires detector energy and efficiency calibration). For energy calibration, simple multi-line sources are sufficient. For full efficiency calibration the traditional and most common method requires the geometry and matrix of your sample is replicated by the geometry and matrix of the calibration source. This method is referred to as 'relative' calibration. This potentially offers the most accurate method possible. However, the costs of purchasing, owning and disposing of various calibration sources with different geometries can be high both financially and indirectly in associated licensing and administration. Two alternatives to relative calibration range can be referred to as 'absolute' and 'semi empirical' methods. Absolute calibration is where the full system is mathematically modelled (i.e. Monte Carlo modelling). This is theoretically accurate but will generally suffer due to a lack of full and accurate data for all the system parameters. Semi empirical methods such as ANGLE involve a combination of traceable experimental reference data combined with a model of the system.

ANGLE Software and Calibration Service

The typical efficiency calibration process using ANGLE software would be as follows:



Step 1 A mixed nuclide source is used to efficiency calibrate the detector using GammaVision software in the usual way. A calibration curve is generated and this is called the reference efficiency.
Step 2 Dimensional and material data for the detector, sample container, source and geometry are entered in ANGLE.
Step 3 The reference efficiency is imported into ANGLE and the software uses the data previously given to quickly calculate a corrected efficiency, called the 'effective efficiency' for the new geometry.
Step 4 This new 'effective efficiency' calibration curve is exported to GammaVision and then the system is ready to start counting samples in the new geometry.

The ANGLE method, is highly accurate because it is based on experimentally determined reference geometry data. The calibration accuracy is limited by the accuracy to which the physical data for the sample and the detector are known, given the condition that a reliable source of accurately known activity is used for the reference. There are many factors that can affect the accuracy of the results. However, with the correct entry of the information about the detector, container, geometry and source, and with a reliable reference calibration source, routine applications can expect 3–4% accuracy.

What you need to carry out an accurate ANGLE corrected calibration..

- Geometrical and materials data for your detector, provided the data is available then detectors from any manufacturer can be calibrated.
- Geometrical and compositional data for the sample and the container to be measured.
- A suitable mixed gamma calibration source with which to measure the reference spectrum and to generate the reference efficiency file.
- A copy of ANGLE software and a suitable analysis package such as ORTEC GammaVision, however the data from the effective efficiency curve can be easily used by most other HPGe gamma analysis software packages also.

For the majority of ANGLE users this means that they can fully control the calibration process by owning all the component inputs for each calibration. If for example a regular QA check indicates a drift in the calibration then recalibration can be arranged quickly without any need to return the detector to the manufacturer for recalibration. For more information, please refer to :

http://www.ortec-online.com/download/ANGLE-Advanced-Efficiency-Calibration-Software.pdf

On site ORTEC Calibration Service

Now, either as an additional option to reduce customer costs, or to enable full efficiency calibration where it is not currently available, we are introducing a new on site ANGLE calibration service. For those customers who either temporarily or permanently prefer not to purchase or store their own calibration source we can now offer a service to visit your lab with a calibration source and carry out the calibration measurement for you. The customer can then use ANGLE to extrapolate the calibration measurement file and generate effective efficiency files as required. Once we have discussed the software, hardware and sample mix you are planning to use we can tailor the calibration proposal to best meet your expectations.

NEW!! Extended Range Detector

Radiochemistry laboratories are continually asked to improve MDA (minimum detectable activity) in routine samples. The requests come from regulatory authorities and also management, anxious to demonstrate reduced activity in waste products and effluents produced by their organisations. A new extended range detector from Ortec has now been developed to help with this quest.

MDA is related to the resolution (R), background (B) and efficiency of the detector (ε) at any given energy (E) as follows:

$$MDA(E) \sim \frac{\sqrt{R(E)B(E)}}{\varepsilon(E)}$$

MDA is inversely proportional to detector efficiency and the square root of resolution and background. So, to reduce MDA, the first priority is to select a detector as large as possible with the best geometric efficiency for the sample configuration. To maximise the efficiency of the detection system for a given geometry, ORTEC developed a range of application matched HPGe detectors, called Profile Series. The principal design concept of Profile series detectors is to maximise the amount of HPGe "visible" to the sample. Profile detectors have specified crystal dimensions and fall into two categories, Profile F type with larger diameter thinner HPGe crystals and Profile M type with smaller diameter longer crystals. Profile F detectors are optimised for larger extended sources such as bottles and filters and Profile M are optimised for Marinelli beakers.

For this reason the Ortec Profile M detector design has been the default choice for use with many samples measured in Marinelli beakers. Profile M detectors are available in various dimensions to fit commonly available beaker sizes, allowing the maximum possible efficiency for a given sample. Profile M has an extra advantage in that it is made from 'p' type germanium, which offers superior resolution, reducing MDA even further. However, the downside of 'p' type germanium is a thick contact or dead layer on the outside of the detector making it less sensitive to low energy gamma rays, with efficiency falling off below 100 keV. The traditional choice for Marinelli beaker measurements below this level has been the GMX detector, made from 'n' type germanium.

ORTEC has now added another new detector configuration to the Profile range called the Profile-MX. The new design offers all the advantages of the Profile-M type but with a proprietary thin front contact on the front face of the detector that we originally developed for our Profile-FX type detector. The thin contact improves low energy efficiency for gamma rays, extending the range of the new detector down to 10 keV. The table below summarises where the new detector sits in comparison to existing Profile designs:

Overall Guidelines on the Choice of PROFILE Series GEM					
Source Energy (keV)	Marinelli Beaker	Near Point Source	Far Point Source	Small Extended Source	Large Extended Source*
10 to 1500	PROFILE MX	PROFILE FX	PROFILE FX	PROFILE FX	PROFILE FX
10 to 3000	PROFILE MX	PROFILE MX	PROFILE MX	PROFILE MX	PROFILE MX
50 to 200	PROFILE M	PROFILE F	PROFILE F	PROFILE F	PROFILE F
200 to 1500	PROFILE M	PROFILE F	PROFILE F	PROFILE F	PROFILE F
1500 to 3000	PROFILE M	PROFILE M	PROFILE M	PROFILE M	PROFILE M
above 3000	PROFILE-M94100 PROFILE-MX94100 GEM	PROFILE-M94100 PROFILE-MX94100 GEM	PROFILE-M94100 PROFILE-MX94100 GEM	PROFILE-M94100 PROFILE-MX94100 GEM	PROFILE-M94100 PROFILE-MX94100 GEM

Profile MX detectors can be purchased in various sizes up to MX94100, which has a relative efficiency of 175%, the ultimate tool to reduce MDA! Endcap diameter for the MX94100 size is 108mm or 4.25"; Ortec can now supply a suitable Marinelli beaker for this size, manufactured by GA-MA & Associates. There is more information on the Profile range at:

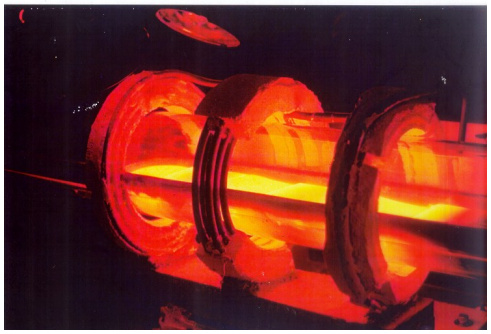
http://www.ortec-online.com/Solutions/view-by-type-and-alphabetically.aspx#P

Germanium Detector Manufacturing

Have you been watching the 'How to Build?' series on BBC2? If so you may be hoping that a future program will visit the ORTEC factory and reveal how your germanium detector was made. ORTEC was the first commercial company to develop this capability and while we wait for their call we can share a few secrets!

To achieve the accuracy and limit of detection levels now required in gamma spectrometry, high resolution germanium detectors need to be made from a single crystal of ultra pure material. The manufacturing process involves several steps, which are as follows.

ZONE REFINING

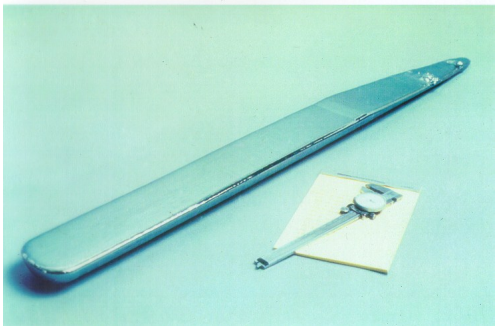


Zone Refining

The initial starting material, electronic grade polycrystalline germanium "metal" (because of its metallic appearance), is zone refined in a quartz "boat" having a pyrolytic graphite coating. A zone refiner uses the principle that most impurities concentrate in the liquid phase as the material begins to freeze. The RF heating coils of the zone refiner melt a small section of the germanium ingot or bar held in the quartz boat. The RF coils are slowly moved along the length of the ingot, causing the liquefied portion beneath the coils to move also.

Thus, the ingot is continuously melting at the advancing solid-liquid interface and freezing at the receding interface. The impurities tend to remain in the molten section and hence are "swept" to one end of the ingot by this process. This "sweeping" operation is repeated many times, until the impurities are concentrated at one end of the ingot. This end is then removed, leaving the remaining portion much purer than the original starting material. The improvement or reduction in impurity concentration actually realised is about a factor of 100 or more at the completion of this process.

ZONE REFINED BAR

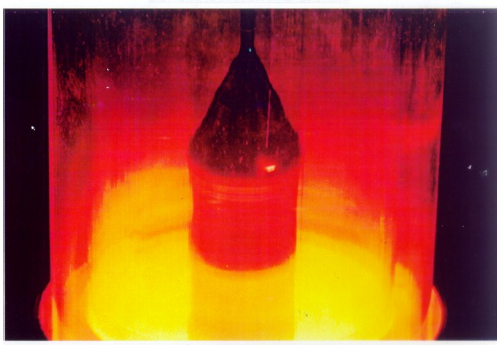


The figure opposite shows a zone-refined ingot. The tapered end contains the high concentration of impurities and is cut off. The impurity concentration of the remaining portion is then determined by a Hall Effect measurement, and the ingot is sliced into pieces suitable for loading into the crystal-growing equipment.

Crystal Fabrication

Large single crystals of germanium are grown using the Czochralski technique. A precisely cut seed crystal is dipped into the molten germanium and then withdrawn slowly, while maintaining the temperature of the melt just above the freezing point. The rate of crystal withdrawal and temperature of the melt are adjusted to control the growth of the crystal.

CRYSTAL GROWTH

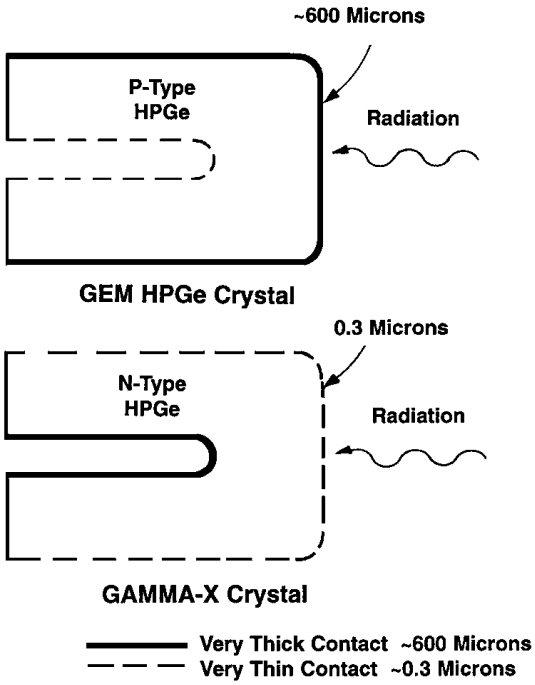


The figure on the left shows a crystal during the growth process. High -purity germanium crystals suitable for detector fabrication are almost always grown in a quartz crucible under a hydrogen atmosphere. Near the completion of the growth process, the crystal is tapered gradually at the tail to minimize thermal strain. It is imperative that the crystal be grown to the exhaustion of the melt, because germanium both wets quartz and expands on freezing. The valuable quartz crucible might be fractured if any germanium were left after completion of the crystal growth. After the crystal is grown and cooled, it is mounted in a Plaster-of-Paris cast for slicing.

The completed crystal is cut by an ORTEC-designed string saw that causes virtually no damage to the crystal. A slurry of water and silicon carbide is pulled along by a wire, resulting in a sawing action. Sections of the crystal from both top and bottom are checked by Hall Effect measurements to determine the impurity concentration and type (n or p). On the basis of the Hall Effect results, that part of the crystal which contains detector-grade material is selected. The rejected material is returned to the zone refining operation.

Germanium Detector Manufacturing

The Section of crystal which has both adequate purity and crystallographic perfection for coaxial detector fabrication is then ground perfectly cylindrical. The edge at one end is bevelled to a radius (‘bulletized’) to improve charge collection and timing performance . Afterwards, a hole is machined into the unbevelled end so that the central contact of the device may be made later. The detector subsequently is hand lapped all over to remove damage caused by the machining processes.

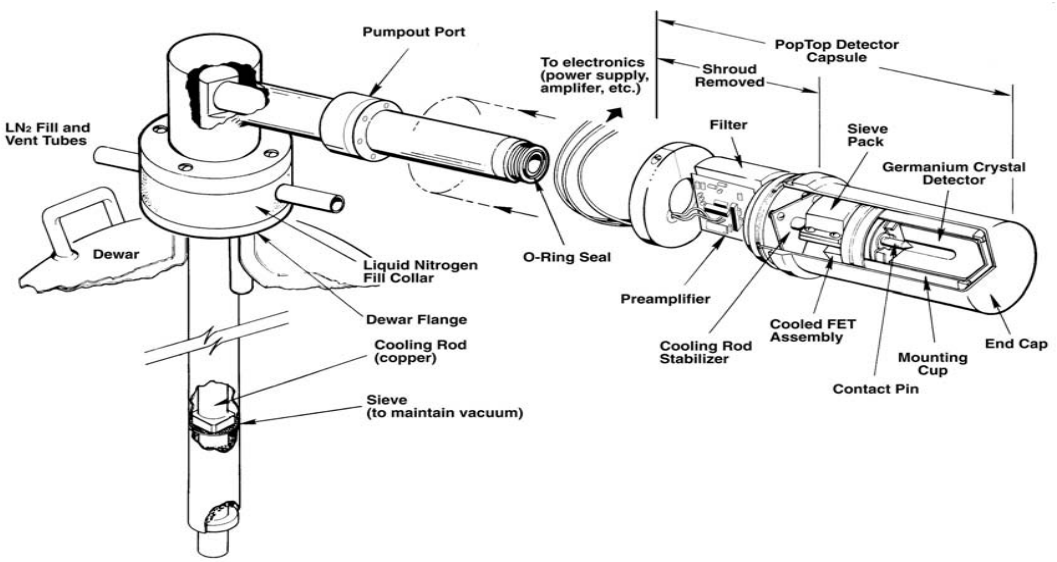


The Contacts

A lithium diffusion to form the n+ contact is then performed over the entire outer surface except the flat, unbevelled end for p-type coaxial detectors. This lithium-diffused layer is about 600-µm thick. After the lithium diffusion operation, the detector is lapped once more, chemically polished, and a surface protective coating applied. The coating is amorphous germanium hydride deposited by a sputtering process. Next, the p+ contact is formed by the ion implantation of boron ions. This last step completes the fabrication process for the coaxial detector element itself. The figure opposite shows schematically the structure of both p-type and n-type coaxial detectors.

And finally the Cryostat

At this point the detector is ready to be mounted in a cryostat. The basic function of a cryostat is to cool the germanium detector to its near-liquid-nitrogen operating temperature. For best performance the first stage of the preamplifier is also cooled to low temperature, the entire cold assembly being maintained by the cryostat under high vacuum for both thermal insulation and protection of the internal components from contamination. Cryosorption material (such as selected zeolite or activated charcoal) is used as a residual gas getter or pump to maintain the vacuum for long periods of time. After being loaded into the cryostat, the detector is tested for several parameters, including leakage current and energy resolution. If the device fails a test, it is returned to some previous stage of the process. Below we see a drawing of a detector configured in a conventional liquid nitrogen cooled cryostat. ORTEC has pioneered the development of mechanical cooling systems that remove the need for liquid nitrogen and a high proportion of our detectors are now supplied with this type of cooling system.



Software Training Courses

GammaVision Training Course

GammaVision, a Windows based Gamma-ray spectroscopy software package is the industry standard for laboratory based radioactivity measurements using HPGe detectors and enables users to analyse any spectrum format and provide precise reports for the region of the spectrum needed. For a number of years, ORTEC has offered a comprehensive training program which gives an overview and understanding of gamma spectroscopy in relation to GammaVision. All the features of GammaVision are reviewed and students will end the training confident and ready to use it for their gamma-ray spectroscopic measurements.

The GammaVision software training course provides an introduction to gamma-ray spectroscopy for those new to the subject, as well potential improvements to existing working practices to those already engaged in the field. It is primarily intended for analysts, technicians, and anyone else undertaking gamma-ray spectroscopy, although quality assurance officers and data reviewers who need an understanding of gamma-ray spectroscopic measurements will also benefit.

Taking place over 4 days, the course is designed to give students the knowledge required to correctly operate systems for the detection, monitoring, recording and analysis of radioactive materials. It is a mixture of lectures and hands-on laboratory-type exercises using representative spectra. The course is aimed at explaining why and how GammaVision produces gamma-ray spectroscopic results, and begins with an overview of the fundamental physical processes for basic radioactive decay and interaction of radiation with matter. It reviews how these processes impact the spectrum and explains spectral features along with how they are interpreted in the analysis. An overview of high purity germanium (HPGe) detectors, signal processing and techniques employed in gamma-ray spectroscopy follows, with special emphasis given to the advances in Digital Signal Processing (DSP). These topics will provide the fundamentals of gamma-ray spectroscopy while emphasising areas the operator needs to optimise system parameters as well as understand the effects of true coincidence summing, interference peaks, and source-detector geometry. The methods for energy and efficiency calibration are discussed, including the efficiency correction for True Coincidence Correction (TCC). Other corrections are explained, both their operation and when they should be used. The nuclear gamma-ray ‘fingerprints’ are used for identification and the making and editing of ‘libraries’ is discussed as is Laboratory QA, automation (JOB files), and good practices. Finally, the analysis results report is examined with emphasis on verifying the results.

The 2012 GammaVision course will be held at our offices in Wokingham from the 25th – 28th June 2012. You will have the opportunity to take a look at our facilities as well as have all your technical support questions answered by members of our staff. The fee for the course includes all your course materials, as well as lunch and refreshments on each day.

Isotopic Analysis Software Training at Sellafield

We recently provided a four day on-site training course to a group of physicists and technical support personnel at Sellafield on the two most popular Isotopic Analysis programs: MGA and FRAM.

Isotopic analysis is the determination of the weight fractions of plutonium, uranium, some other actinides, decay products, and other isotopes in a sample using gamma ray spectroscopy.

The subjects covered in the course included the fundamentals and calculations involved useful spectrum energies, gamma ray tables needed, efficiency determination, matrix absorption determination, program operation and operator inputs plus discussion of the output reports and hints on the identification of problems with the analysis. This was all combined with hands-on work with spectra and input tables.

Software Training Courses

Do you have any training requirements?

If you are interested in the GammaVision, MGA/FRAM training course or training covering other ORTEC software products please let us know. We can offer a range of course types tailored to specific requirements including short one-day introductory courses through to week long in-depth courses.
Courses can be held either at our office in Wokingham or alternatively at or local to your site. If you would like to discuss your training requirements please contact Trevor Hatt whose contact details are on the last page of this newsletter.
If you would like to register for the GammaVision course, please contact Shilpa Soni to reserve your place.

Marinelli Beakers

ORTEC is now able to supply Marinelli beakers to our customers in the UK provided by one of the leading manufacturers, GA-MA & Associates.

GA–MA manufactures a wide variety of Marinelli-type containers and associated hardware designed for gamma spectroscopy applications involving solid, liquid and gas samples. GA-MA manufactures Marinelli beakers for use with all the common Germanium detector end cap sizes as well as most common scintillation detector types. Beakers are available for different sample volumes ranging from 250ml to 4 litres.

The use of Marinelli beakers in gamma spectroscopy applications allows you to obtain greater geometric detection efficiencies by positioning greater amounts of sample volume as close to the active detector volume as possible. Historically, Marinelli beakers have been used sparingly for liquid and solid samples. This resulted from the fact that commercially available beakers were not cost-effective unless reused. Reuse required decontamination to the greatest extent possible between sample analyses and regardless of the time, money, chemicals or ingenuity expended in the decontamination process, residual radioactivity often still remained. Consequently this resulted in the critical need to determine background activity of the empty container prior to analysing a sample and to correct the results of the analysis accordingly.

GA-MA beakers are the highest quality Marinelli beakers sold on the market today. They are also the most economically priced beakers and are specifically designed for disposable use. Disposable beakers are available for solid, liquid, or gas sampling applications and with the pricing structure offered by GA-MA for their beakers it makes it cost-effective to use them in a disposable manner.

Cost effectiveness from disposable use results from the following:

- The gamma spectroscopy system's Marinelli counting load is typically reduced by at least 50% as a result of not having to perform background determinations prior to reuse.
- The cost of man-hours and chemicals expended in decontaminating Marinelli beakers prior to reuse is eliminated which also helps to reduce radioactive waste volumes.
- The gamma spectroscopy system's effectiveness is enhanced by the elimination of the need for background corrections for many sample analyses.
- Regulatory requirements for lower levels of detection (LLD) and their corresponding statistical reliability are more easily complied with.
- Delays in nuclear power station radioactive waste releases due to pre-release analysis requirements are minimised to the greatest extent possible

For more information on the range of Marinelli beakers available please email: ortec.uksales@ametek.co.uk.

Low Level Alpha Beta Counters

For a number of years ORTEC has provided Protean Instruments products for alpha/beta counting applications for the laboratory customer. These are leading ultra high performance counting systems for measuring alpha/beta activity down to very low environmental levels. The systems have been developed since 1989 by people who were the principal designers and manufacturers of the classic "dual-rail" alpha/beta and smear counting systems. Their design and manufacturing expertise is evident in the number of these classic systems still operating today. The Protean range currently offers a very complete line of instruments emphasising two uncompromising design factors that are focused on delivering the highest possible performance and the easiest maintenance in the industry.

A broad range of systems are available to choose from ranging from gross counting instruments through to the lowest background gas flow proportional alpha / beta counters available on the market today. Many of these instrument platforms are available either with gas flow proportional (window and windowless) or dual phosphor detectors as appropriate.

Automatic Systems are best used when a large number of samples are to be counted, and the counting times are relatively short. If unattended operation is desirable, an automatic system should be appropriate if counting time per sample is relatively short in duration, typically ranging from one to two minutes for smears and air filters and up to 30 to 60 minutes for environmental and radiochemistry samples.

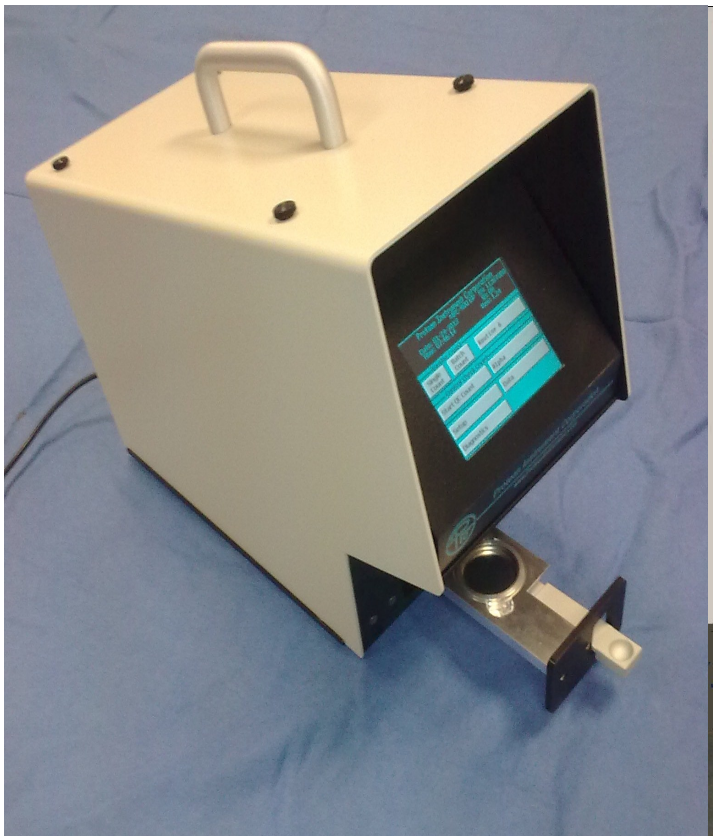
Manual alpha/beta counting systems are used for a wide range of applications. Two major uses for a manual system stand out: when the number of samples to be counted is extremely low (5–10 samples per week); or when counting times are very long (30–60 minutes or longer).

Multi-Detector Systems are best utilised for applications requiring high sample throughput and high sensitivity. The MDS series can be configured to accommodate anywhere from 4 to 48 detectors to facilitate the sample volume and throughput rate required.

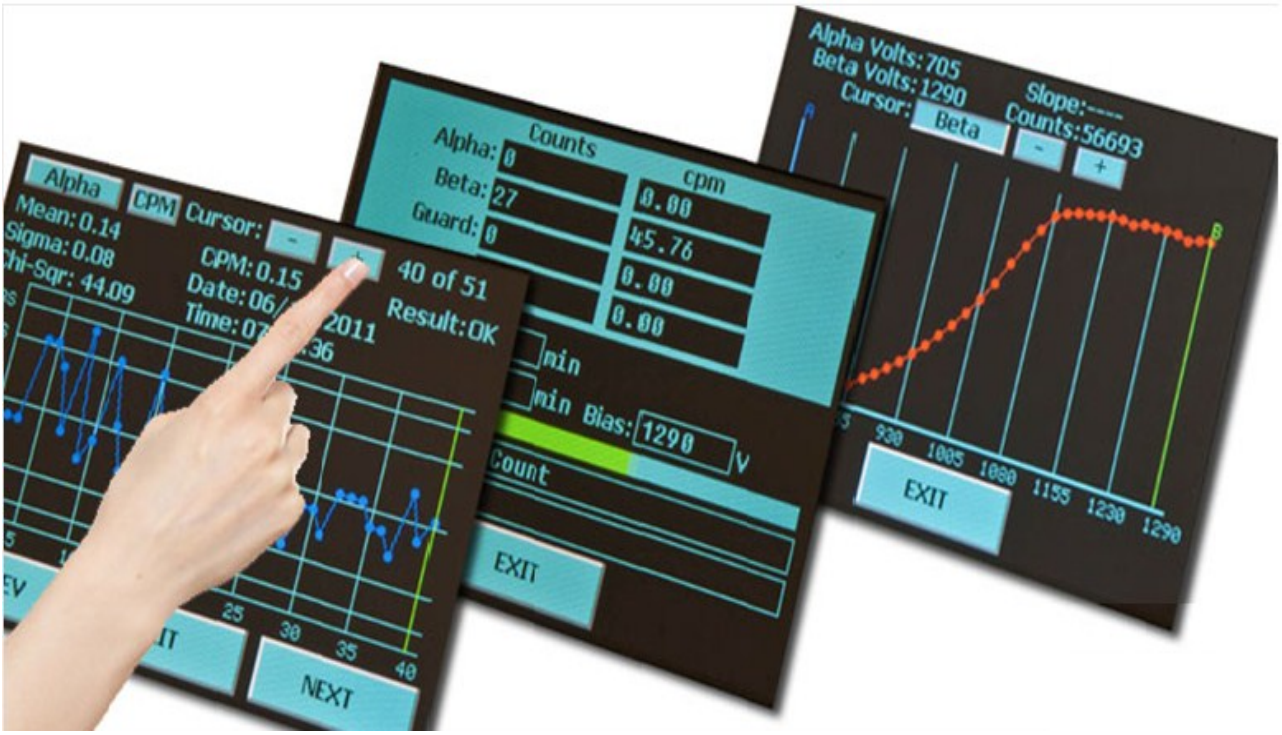
Low background systems provide the lowest backgrounds available benefitting from guard detectors and 4 inch thick lead shielding. Even with this amount of lead shielding detector window and electronics maintenance can be carried out without the need to remove any lead bricks and in general only requires the removal of one panel for any job. On multiple detector systems there is minimum shared electronics and each detector is electronically and mechanically independent of others. This means that a single detector unit can be isolated for maintenance while other detectors continue to count. This detector independence also means that each sample can be counted to an individual MDA and then the sample changed when the MDA preset is reached while other samples continue to count to their own individual presets thereby maximising the throughput of the instrument.

New user interfaces now incorporate touch screens. These are now present on MPC-100 Series, MPC-900 Series, ASC-950-DP, WPC-1050, and WPC-1150 models.

Low Level Alpha Beta Counters



The new touch screen technology facilitates operation, setup and maintaining these sample counting systems in an optimal manner. The screens are designed to take advantage of this technology and provide a more intuitive connection to users and administrators alike. Commonality between systems is a further enhancement for any who work with a mix of different Protean systems.



Low Level Alpha Beta Counters

Radon Compensation capability is also now available on all the above instruments. The method is based on short lived transitions in the Radon decay scheme. Advanced pulse processing electronics allow the counting of Pseudo Coincident Events (PCEs). PCEs are directly related to the radon activity during the measurement

There are two ways the user can make use of this capability.

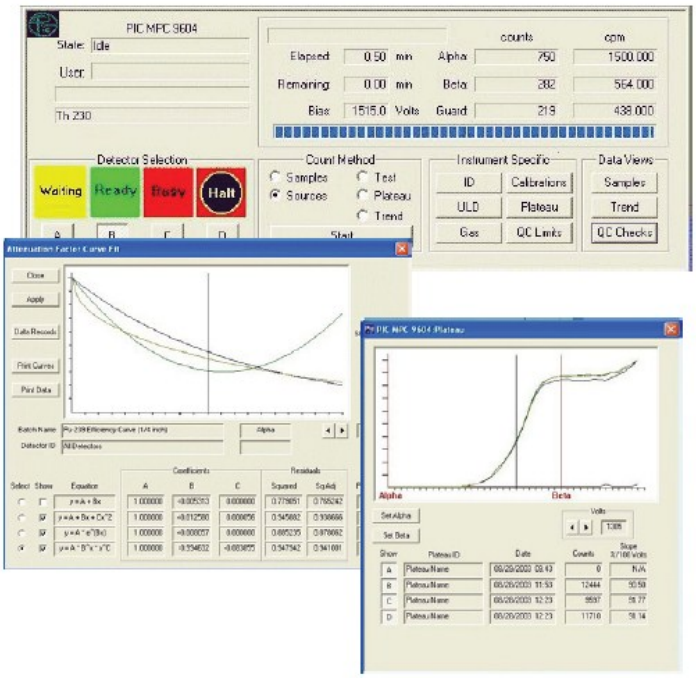
1. If the user chooses, they can have the reported results reflect a corrected value based on the measured PCE count.

2. The user can choose to observe the PCE display during a count without applying a correction factor. If the PCE value is very low then radon contribution can be assumed to be insignificant to the count results reported. Otherwise, a decision can be made to either allow the radon products to decay for a longer period and then recount, or to recount immediately and implement the correction. If the reported activity is below the action level then this is assured to provide a conservative basis for the decision take

Depending on the instrument and application either Vista 2000 or Vista FC software can be used to manage the data and control multiple instruments.

Vista 2000 is designed for radio chemistry laboratories. It includes a sophisticated set of analysis options, QC functions, and standard reports. Vista 2000 also controls multiple types of systems from a single PC. One PC with Vista 2000 can control up to 64 detectors in a mix of WPC-1150's, MDS, MPC-900-PC's, and MPC-1000-PC's at the same time. Data collected with Vista 2000 is stored in a very simple MDB file format for easy transfer to a LIMS or in-house analysis software. Custom reports allow users to print results in their own or client formats. QC definitions are simple to set up, and viewing the results requires a minimum of effort. Any or all of trend charts for example, can be displayed by clicking the appropriate buttons in the chart dialog. Standard reports are provided as well as the option of creating your own custom reports – without requiring database knowledge. The software includes a Mass Attenuation correction feature where multiple individual calibration curves for each count routine are stored.

Vista FC Health physics alpha / beta control software is designed from the start to provide easy, fast, and reliable control of Protean alpha/ beta counting systems. The features and operation are based on input from many health physicists and other radiation protection personnel. It delivers what health physicists want, without compromise, confusion, or complication.



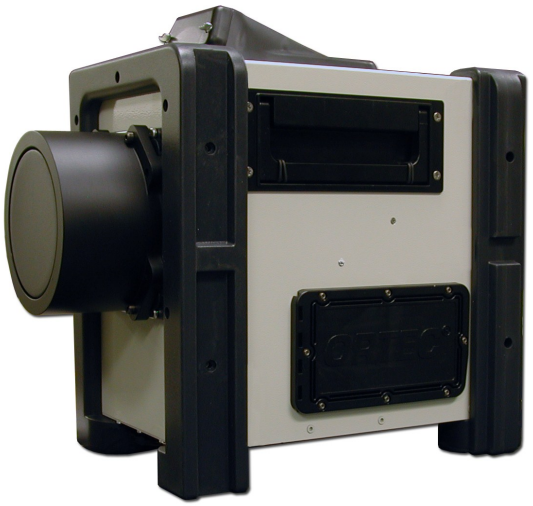
With Vista FC you have application software that is optimised specifically for health physics functions and not a complicated "do everything for everybody" package that attempts to accommodate researchers, radiochemists, and HP's. It is very easy to use and in most cases users can be completely trained on Vista FC in a half day.

Sample counting can be started with a single button push or mouse click. Count routines can be programmed with one or two clicks per parameter. It is also easy to retrieve data. Vista FC stores sample and calibration data in a very simple database. All data is contained in a single record in a single table. Whether you need to transfer data to a spreadsheet or a LIMS, you do not need to query multiple indexed tables in a large relational database.

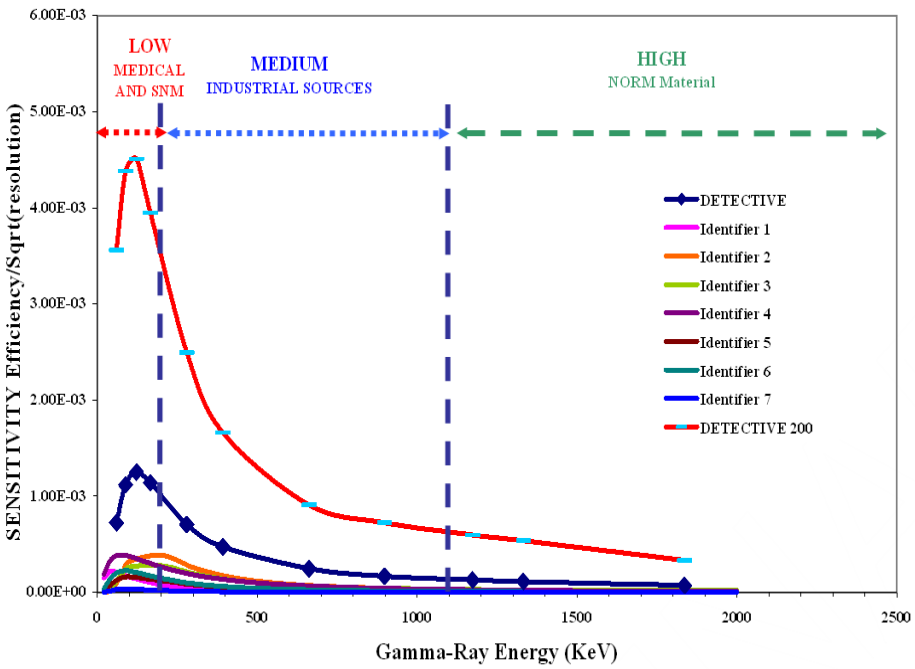
http://www.ortec-online.com/Solutions/alpha-beta-counters.aspx

New Ultra High Sensitivity Radioisotope Identifier

ORTEC recently announced the release of the Detective-200 as the latest addition to the Detective family of high performance radioisotope identifiers. The Detective family of products are unique in that they all incorporate a high resolution HPGe detector based data acquisition system plus sophisticated spectral analysis software in a portable battery powered system that can be used in all weathers and across a wide range of environmental conditions



The new Detective-200 incorporates the largest HPGe detector available in the Detective range with crystal dimensions of 85mm diameter by 30mm deep giving a "front" surface sensitive area of approximately 5675 mm^2, this is almost three times the sensitive area of the original Detective radioisotope identifier. This ultra large sensitive area gives the Detective-200 unmatched performance in applications ranging from incidence response, wide area search and public event monitoring.



SENSITIVITY FOR A SINGLE NUCLIDE COMPARED

The graph shown to the left compares the relative sensitivity for a number of commercial radioisotope identifiers where sensitivity is computed as:

$$\text{Sensitivity} = \frac{\text{Efficiency}}{\sqrt{\text{Resolution}}}$$

As you can see from this graph the Detective-200 shows a huge increase in sensitivity over the already outstanding Detective.

Key design parameters in the development of the Detective-200 were to develop a system with the highest possible sensitivity but also extremely rugged and portable. Rated to IP67 the Detective-200 is ideal for use in extreme conditions and is particularly suited to Marine based applications. Flexibility is also the key with the Detective-200, with its own internal radioisotope search and identification software plus the ability to use it with standard ORTEC software packages it extends the use of the system to applications such as: Wide Area Source Location and Identification, Mobile Radiation Portal Monitoring, Emergency Whole-Body Counting, Food Monitoring and Waste Characterisation and Assay

With the ability to be deployed very quickly the Detecive-200 offers this huge flexibility with the unmatched selectivity of HPGe based systems. This means the Detective-200 makes the correct identification of radioactive material in large public gatherings even in the presence of interfering radioactive signatures from the natural background and other artificial radioactive sources such as those present in individuals after certain medical procedures.

More information on the Detective-200 will be provided in the next issue of our newsletter and the product data sheet can be downloaded from the following address http://www.ortec-online.com/download/Detective-200.pdf

Extended Warranty—Protecting Your Investment

UK Service Centre, Wokingham

In these financially challenging times all organisations have to look closely at their expenditure. High technology instrumentation is a significant investment and more and more organisations are interested in not just the initial outlay of the equipment but also the servicing and lifetime costs.

To help our customers to protect themselves against the unexpected failure of equipment we have now introduced a range of extended warranty options which can be purchased with any new product. These warranties are offered on a return-to-factory basis whereby in the event of a fault, the instrument or product is returned to our UK Global Service Centre in Wokingham for repair. Most repairs are carried out in-house by our team of highly experienced engineers but in exceptional circumstances the product may need to be returned to our US Global Service Centre in Oak Ridge, Tennessee.

Extended warranty prices cover all parts and labour plus the return shipping costs for the instrument and as standard we offer extended warranties from 1 to 3 years. So if a 3 year warranty is purchased with a new product you would have no unexpected costs for at least 4 years. In addition to our standard extended warranties our Service Department can also offer on-site or return-to-factory service options for any ORTEC product regardless of age or warranty status giving you peace of mind that you are not going to be suddenly confronted with significant repair charge. Prices for our extended warranties are maintained as low as possible making them an affordable option that is really worth considering. For example our 3 year extended warranty price for a Digibase Digital Gamma Spectrometer is priced at £398.

For organisations that require on-site support we offer a full range of Field Service Contracts which can be purchased for a single or multiple years. Typically these contracts only cover on-site support in the event of a fault or failure but annual routine maintenance visits can also be added if required.

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