



A Hepa Cap 75 filter which holds approximately 50 g of sample"



Microdrilling Rig

Microdrilling

The Challenge

Sampling and characterisation of materials such as buried wastes, concrete slabs and geological materials has long been undertaken using traditional large scale techniques such as excavation, drilling/coring and subsequent laboratory analysis of the samples. Such techniques are costly, time consuming and ultimately produce significant quantities of waste requiring disposal. The challenge faced by Nexia Solutions was to obtain the high quality sample analysis data required in a more cost effective, timely manner whilst minimising waste disposal requirements.

The Solution

Nexia Solutions has developed a methodology for sample acquisition using small scale vacuum drilling technology. The equipment is small, portable and suitable for use in a wide range of applications where shallow sampling is required. All material removed by the drilling process is collected as sample material and as a result, no secondary wastes are generated. The Micro-drill has been designed to sample miscellaneous building waste, trench fill material and natural geological materials. Samples collected are in a powdered form, ideal for immediate laboratory analysis. In addition, the system is being further developed to allow real time analysis of the sample stream for organic contaminants to be undertaken and targeted elemental breakdown of the stream is also under development.

The Benefits

Following development, the system has been used successfully as part of a slab characterisation project at a UK nuclear licensed site. The system demonstrated rapid, cost effective sampling of existing concrete slabs in over one hundred locations, collecting samples through concrete up to 970mm in thickness, at a rate up to three times quicker than traditional concrete coring techniques. In addition, no further pre-treatment/preparation of the samples obtained was necessary prior to laboratory analysis, and no secondary wastes were generated.

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