From Mars, to volcanoes, ash clouds and chimneystacks: UK spin-out brings space technology to Earth

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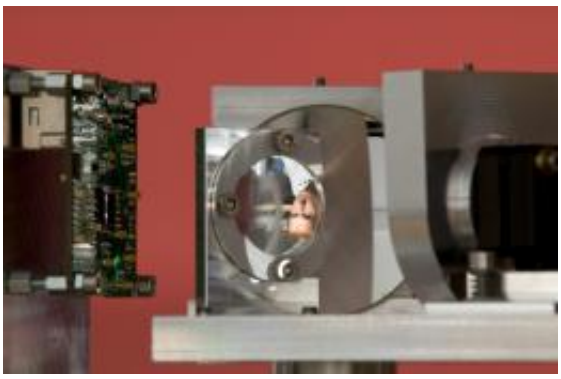

KEIT Spectrometer.

Technology designed to measure water vapour on Mars is poised for use in a whole host of everyday applications here on Earth from monitoring food production or industrial gas emissions, to surveying volcanic ash clouds and even giving a farmer a health check on their crops.

KEIT Ltd is a new spin out company from the Science and Technology Facilities Council (STFC) which grew from the need for an extremely compact but highly accurate spectrometer to measure gases in planetary atmospheres, that was also robust enough to withstand the harsh conditions in space.

Dr Hugh Mortimer, a research scientist at STFC's RAL Space, and inventor of the technology said: "Mass is a real commodity on board space satellites, so we developed a very high performance spectrometer which was also extremely stable and compact. We quickly realised that there were also some very real non-space application opportunities for this, ranging from R&D, to food production, environmental monitoring and agriculture, just to name a few. It's the unique simplicity and stability of the spectrometer that we've developed here at STFC that makes it so versatile and powerful. This technology could transform how spectrometers are used, where they can be used and who uses them."

Unlike conventional spectrometers that are bulky and rely on a complex system of moving mirrors, this new generation of spectrometer is compact, lightweight, and has no moving parts, making it not only unique, but also extremely stable.

The versatility, stability and simplicity of a KEIT spectrometer means that it could sit on any food or pharmaceutical production line to check, for example, the fat content of milk, or the origin and quality of whisky. Environmentally, the spectrometers could play a key role in monitoring gaseous emissions from industrial chimney stacks, helping industries adhere to environmental regulations. A KEIT spectrometer could also provide an invaluable analytical tool for any industrial or academic laboratory-based R&D facility.

KEIT spectrometers are so lightweight and compact they are especially suited for use on Unmanned Aerial Vehicles (UAVs), that can image and map the geology of the ground below and monitor the atmospheric gases surrounding large areas that might be inaccessible to man, such as ash clouds, volcanic eruptions or chemical spills. In agriculture, the KEIT spectrometer can monitor the colour variation within a farmer's crop, to assess the health of the crop and so enable a more targeted and cost-effective use of resources such as pesticides and fertilisers.

Kate Ronayne, Head of Innovation at STFC said: "KEIT is a perfect example of how innovation derived from our most cutting edge technology programmes in Space can create growth and economic benefit through enterprise. I'm really excited about working with KEIT, as it grows its product portfolio to transform the way we measure and monitor materials across multiple industry sectors, ultimately improving our lives by increasing the yield of our land or by allowing us to affordably monitor environmental emissions."

Longwall Ventures and the Rainbow Seed Fund have invested in the spin-out which will now take its patented technology forward towards full commercialisation. KEIT has also been awarded a prestigious place within the European Space Agency's Business Incubation centre (ESA BIC Harwell). The incubation centre provides the ideal environment for such innovative, fledgling companies to translate space technologies and applications into viable businesses in non-space industries.

As a tenant at the ESA BIC, KEIT will benefit from an impressive support package, which includes more than £40,000 towards further technology development; easy access to both STFC and ESA technical expertise, and a dedicated business champion from STFC to help with business planning and guidance.

Provided by Science and Technology Facilities Council