CENSIS

Case Study: Sensing the opportunities in sports medicine

University of the West of Scotland working with Gas Sensing Solutions Ltd.

Project Funding

Funding, consultation and research support to the value of £15,000 for initial feasibility study

Industry/Application

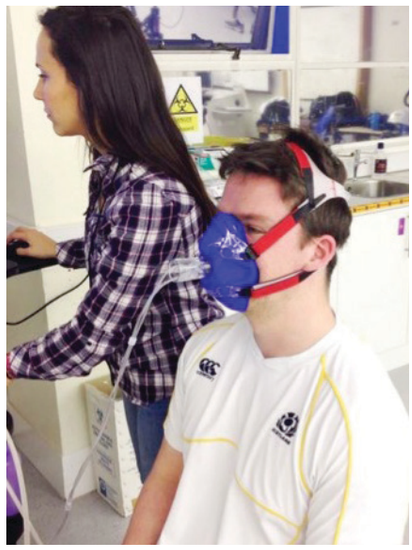
Sports medicine & recreational sports

Potential value of market

£60m per annum

‘We knew the SprintIR device was just as accurate in measuring CO_2 production as existing immobile and expensive lab-based equipment. However, we needed scientific tests to prove that this would be the case. Our partnership with CENSIS and the University of the West of Scotland has helped produce the hard evidence required, paving the way for a device that could change the market and open up significant commercial opportunities for GSS in a multi-million pound industry’.

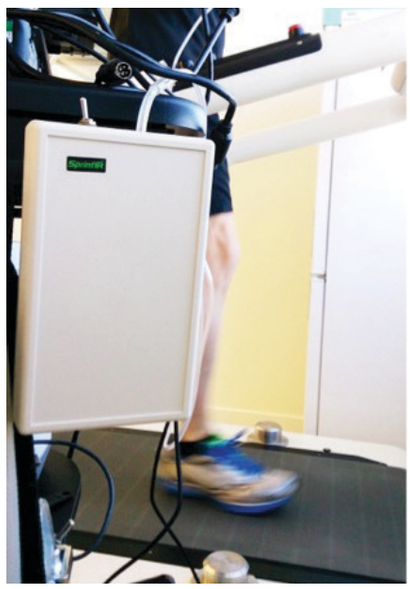
Dr Des Gibson,CEO
Gas Sensing Solutions Ltd.



The challenge

Gas Sensing Solutions Ltd (GSS) produces market-leading carbon dioxide sensors for a wide range of applications in the horticultural, building control and diving sectors. Its SprintIR™ device is a high speed CO_2 sensor, ideally suited for applications which require capture of rapidly changing CO_2 concentrations, such as exercise.

There is currently no low cost, accurate and lightweight device that measures expired breath in exercising humans. If GSS can validate its SprintIR technology as able to achieve the same accuracy as current industry standard tests it would open up large commercial potential to the company, while solving this problem for the sports medicine recreational market.



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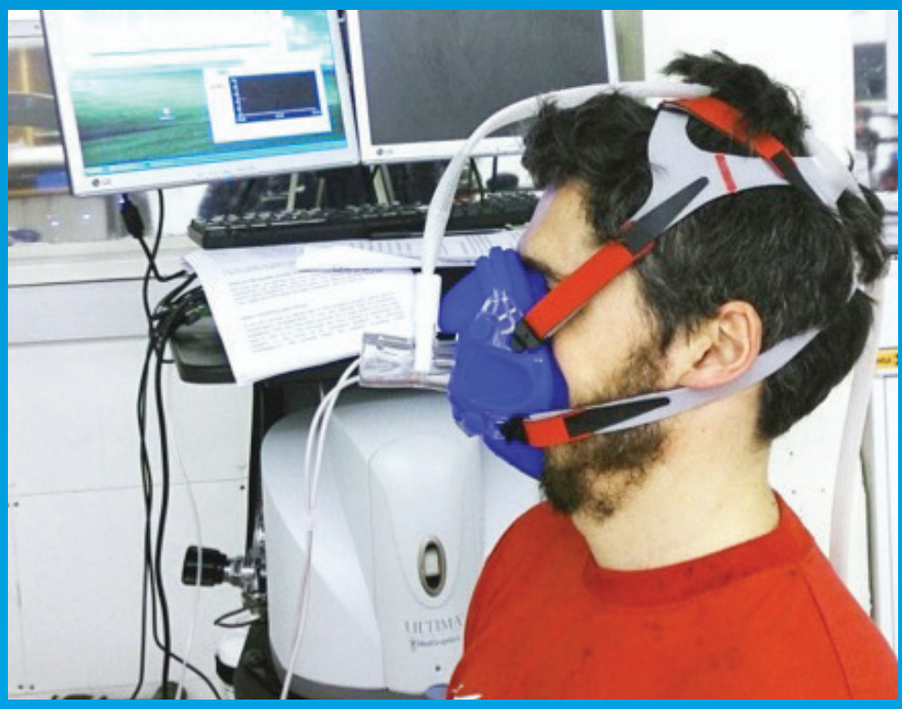

The opportunities

Expired breath analysis is an established and popular analytical technique used in clinics and research globally. It is accepted as the most accurate way to measure cardiopulmonary function, metabolic activity, and overall physical fitness.

The standard for determining physical fitness is measuring the maximum rate of oxygen consumption during exercise. Currently the most accurate test for this involves connecting a subject to a large machine which tracks levels of CO_2 in expired breath via an oxygen mask, while the subject is exercising on a treadmill or stationary bike. If GSS can prove its device offers the same functionality and accuracy more cost effectively and with increased mobility, it could make in-depth fitness testing accessible to millions of users worldwide.

The University of the West of Scotland (UWS) is a leading research institute in the area of sport and exercise science, providing sport governing bodies, researchers and students with high-quality equipment and expert analysis in all measures of performance. By working with GSS on this feasibility study, it would be able to inform the future of sports medicine on a global scale, while developing useful relationships with an industry partner.

If the tests demonstrated that SprintIR provided readings as accurate as the existing bulky and expensive hardware, it could open a market worth an estimated £60 million to GSS.

The partnership

To gauge the suitability of the SprintIR device, tests were conducted on ten subjects. Each was fitted with a respiratory mask and connected to both the GSS device and a gold standard IR laboratory instrument which took readings concurrently. The subjects exercised on a treadmill for a total duration of 23 minutes at various speeds, with a total of 27,000 simultaneous measurements produced for evaluation.

The tests demonstrated the accuracy of the GSS SPRINTIR device. Measurements recorded by both devices correlated very strongly, in fact almost perfectly, proving its suitability for quantifying CO_2 production.

The trials will now be taken to a new stage where improvements will be made to ensure even higher accuracy in the SPRINTIR hardware, with the potential for further development of the product.

CENSIS intervention

CENSIS supplied funding, consultation and research support to the value of £15,000 for an initial feasibility study of the GSS device. The innovation centre will also provide ongoing advice and mentorship as the project progresses to the research and development phase and beyond.