Industry Partners

PMD to Commercialise New Respiratory Device

2015 was a stellar year for long-time Tyndall partner, Cork-based PMD Solutions, who secured over €4m in funding from the EU Horizon 2020 SME Instrument. PMD Solutions was one of only three innovative SMEs from across Europe selected in the health sector of the SME Instrument. The funding will be used to commercialise its new respiratory monitoring device ‘RespiraSense’. Heart rate, temperature, blood pressure, pulse oximetry and respiratory rate, all need to be monitored to provide an overall picture of a patient’s health.

Up to now, respiratory rate has been known as the ‘Lost Vital’ due to the lack of a comprehensive monitoring apparatus. However, PMD’s ‘RespiraSense’ solves that problem and in doing so, is set to become the industry standard in respiratory rate monitoring, a market valued at over €2.2bn. ‘RespiraSense’ is a discreet wireless sensor, placed on the patient’s chest at admission and worn continuously until discharge.

It measures the chest and gut movement during breathing to deliver highly accurate measurements. Myles Murray, PMD Solutions’ founder, explained that ‘RespiraSense’ is explicitly designed to support nurses and enhance routine vital sign observations. “Respiratory rate is a key indicator of a patient’s general well-being, so changes in this vital sign can be indications of respiratory compromise, increasing severity of sepsis, worsening pneumonia, and oncoming heart attacks”.

PMD Solutions has enjoyed a close, symbiotic relationship with Tyndall since its inception, and Tyndall has had crucial input into the development of ‘RespiraSense’. Murray is fulsome in his praise, saying, “An institution like Tyndall is an essential asset for start-ups such as ours. They fill the knowledge gap that we, as a start-up, simply can’t afford. Tyndall provided expert input in areas such as electronics and miniaturisation, and they gave us the benefit of their state-of-the-art know how”.

"But that’s just one part of the relationship, as PMD Solutions started to mature, Tyndall engaged with us on how to structure and develop the company around a core product, in our case around our wireless ‘RespiraSense’ invention”.

Philips and Tyndall Partner in InForMed

Dutch electronics giant Philips and Tyndall have worked together for almost three decades in a partnership that has
evolved over the years. Today, the focus of that relationship is firmly on MedTech and ICT industries. The thrust of Philip’s focus on research and development in medical devices is carried out as part of the EU-driven InForMed project, funded by the ECSEL program.

As Ronald Dekker, Principal Scientist, Philips Research outlined, “There are a lot of potential inventions brewing in the MedTech space, but to bring them to production you need an environment that is specifically targeted and equipped to bridge the gap between concept creation and full-scale production”.

"Philips hosts a pilot line facility for medical devices that provides exactly that environment”. 39 Partners from 10 countries participate in the InforMed project, including Tyndall.

The aim of the project is to form manufacturing networks and an eco-system where new medical devices can be seeded and nurtured to grow into new business opportunities for Europe, at a time when there is a paradigm shift from large expensive diagnostic equipment towards small, disposable, minimal invasive and un-obtrusive diagnostic and therapeutic instruments and tools.

Dekker said, “We have had intense co-operation with Tyndall over the past four to five years on a number of projects. We enjoy working with Tyndall because they have an interesting health programme, but importantly, they also have a real feel for what companies need”.

From a Tyndall perspective, its capabilities, technology platforms and health strategy are aligned with those of Philips, but the Institute sees as key its ability to provide a gateway for Philips to SMEs and MNCs in the Irish MedTech and ICT Industry. Dekker acknowledged that Tyndall is a gateway to the extensive MedTech industry in Ireland and also to the US parents of many of those companies, which he sees as an important advantage.

Through Tyndall, Philips is already engaging with three Irish companies and all three projects involve highly innovative smart MedTech solutions to healthcare challenges.

Irish SME Transforming to Global Innovator

In existence for over 25 years, Fleming Medical has historically been a distributor of wound care products and had not previously interacted with a third level institute on R&D, and never collaborated with one to develop advanced device technologies. But, suitably intrigued after receiving an invitation from Tyndall to discuss research into next-generation wearable sensors with the potential to make a significant impact on his business, company CEO Mark Fleming responded immediately.

After initial interactions with the Tyndall team, a third partner, the Holst Centre/TNO (Eindhoven, Netherlands) was introduced and together, they are developing the world’s first commercially-available “smart dressing”, provisionally branded as ‘DermaTrax’ and intended to
form part of a wider suite of healthcare products that interact with the patient and clinician in real
time, providing valuable information that will result in improved patient wellbeing and reduced
healthcare costs.

Just three years later, Fleming Medical is globally recognised as a cutting edge R&D business
thanks to ‘DermaTrax’ and the collaborations that made it possible. Dr Paul Galvin, Head of ICT for
Health at Tyndall, said, “DermaTrax is not only a significant addition to Fleming Medical’s product
portfolio – it will also help increase Ireland’s standing as an international hub for medical device
research and development. The success of this and other innovative products underpins the ongoing
expansion of health-related technology projects here at Tyndall, projected to be worth over €10m by
2018”.

Mark Fleming said, “DermaTrax” contains sensors that monitor the condition of a patient's wound,
and of the dressing itself, relaying information to clinical personnel or a nurses’ station via a
wireless link. Medical staff can be alerted to the possible presence of infection and other healing
issues without the need to remove the dressing, which can disturb the patient and disrupt the
conditions needed for optimal healing. “Manual removal of patient dressings to visually inspect
chronic wounds is an invasive and costly healthcare issue, particularly in countries with ageing
populations, and that’s part of the reason why "DermaTrax" is such an exciting invention”.

He added, "DermaTrax has opened a whole new space for Fleming Medical but the invention
process also opened us to new ideas and technologies and collaborations that we would not have
thought possible. Our association with Tyndall gives us credibility, but the Tyndall team also
connected us to people and helped plug us into funding, specifically by introducing us to Philips
(Netherlands) who lead the ‘InForMed’ European Horizon 2020 project through which the
research is coordinated. This activity is co-funded by Enterprise Ireland, which recognises and
encourages the value added by institute-industry collaborations”.

The outward looking engagement facilitated by Tyndall will help to further build the export business
of Fleming Medical, which now stands at 30 percent. Current export markets include the UK,
Middle East, Africa, the Caribbean and India.

Würth Elektronik Partner with Tyndall on Wafer-Level
Magnetics

Würth Elektronik eiSos GmbH & Co. is a manufacturer of
electronic and electromechanical components for the electronics
industry and is part of the Würth Group, the global market leader
in fastener technology. The company employs 6,100 people and
generated sales of €475m in 2015.

The Würth Elektronik eiSos product range covers EMC
components, capacitors, inductors, RF inductors and LTCC components, transformers, components
for circuit protection, power modules, LEDs, connectors, switches, power elements in press-fit
technology and assembly technique.

The team at Würth Elektronik eiSos was aware of Tyndall, having attended the International
Workshop on Power Supply on Chip, hosted by Tyndall in Cork in 2010. However, it wasn’t until
2014 that Würth Elektronik first collaborated with Tyndall with the commencement of a joint
research project in the area of wafer-level magnetics. As Martin Haug, Division Manager MagI³C
R&D said, “In recent years Würth Elektronik eiSos has started to investigate wafer level magnetics. Through co-operation with Tyndall we intend to accelerate and extend our program”.

Tyndall makes devices, based on its proprietary technology, for Würth Elektronik to evaluate in a number of future Würth products. These are fully packaged devices, in line with Tyndall’s ability to act as a one-stop-shop in terms of modelling, designing, fabricating, testing/characterising and finally packaging the devices.

Martin Haug reported, “Our joint project is still in progress and we are excited by the prospect of receiving our first samples soon. We have had very interesting and fruitful discussions during project meetings and reviews which helped us to enhance our designs. Tyndall’s long history in the field of wafer-level magnetics and world class facilities at their labs in Cork were the key factors that attracted Würth Elektronik, but the experience of working with Tyndall has highlighted how connected the people at Tyndall are with the industry and research communities worldwide. On top of their excellent research capabilities, the team at Tyndall bring a good understanding of the latest technology and market trends”, said Martin Haug.

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