

YORKSHIRE INNOVATION FUND CASE STUDY:

# Cannon Electrical Services Ltd



**Founder:** Paul Cannon  
**Location:** Armley, Leeds  
**Website:** [www.cannon-electrical.co.uk](http://www.cannon-electrical.co.uk)

**Funded via:** Yorkshire Innovation Fund  
**Telephone:** 01274 236 673  
**Website:** [www.yorkshireinnovationfund.org](http://www.yorkshireinnovationfund.org)  
**Twitter:** @YorkshireIF

**Partner**  
**Website:** [www.bradford.ac.uk/rkts/ways-of-working-with-business/](http://www.bradford.ac.uk/rkts/ways-of-working-with-business/)  
**Twitter:** @BradfordUni

## The Business...

From humble beginnings in 1987, Paul Cannon has dedicated almost three decades to developing a thriving business specialising in industrial and commercial electrical installations and maintenance. Cannon Electrical's client base extends across the UK and includes industrial engineering and property maintenance companies, local authorities, car dealerships and vehicle repair shops.

## The Need for Innovation...

When an increasing number of clients expressed interest in **reducing their electricity costs**, Cannon set about exploring opportunities to develop technologies to monitor energy use.

Following a visit to China and a meeting with a Chinese supplier in 2010, Cannon won the sole rights to supply BlueStar smart meters within the UK. The information provided by the meters proved too technical for general users and Paul began work on making the technology more user friendly. Hence in 2013, Paul approached the Yorkshire Innovation Fund for support in taking his energy monitoring concept to the next level.

## The Role of the Yorkshire Innovation Fund...

Following a successful application for a Small Innovation Project (SIP), Cannon teamed up with the University of Bradford's School of Electrical Engineering and Computer Science. Under the leadership of Dr Mumtaz Kamala, a small team developed a system which analysed electricity consumption and conveyed the results via a simple traffic light system, alerting users via text or email whenever consumption reached levels likely to trip their circuit. The technology offered significant benefits to businesses including the potential to:

- flag up power-related risks to servers, thereby averting organisation-wide IT failures
- avoid damage to expensive tools and materials in the precision engineering sector
- prevent loss of production caused by breaks in power supply in manufacturing

The level of investment required to embrace the technology proved commercially unviable. Undeterred, **Paul sought opportunities to apply the same technology to other power sources**. The result was the Intenwatch non-intrusive monitoring system. Unlike other monitoring systems, Intenwatch uses a non-intrusive detection system which reduces the need for invasive repairs and avoids harmful emissions. The technology offered the potential for **smarter energy use, lower repair costs and reduced carbon emissions**.

When Cannon were awarded a Research & Development Project (RDP) – a more substantive and longer-term package of innovation support – Dr Kamala's team began work to develop a mathematical formula to prove the technology could be used to measure the flow of solids, liquids and gases through pipes.



"We're now in a position to install systems which reduce both energy costs and breakdown time in companies with serious power down issues."

**PAUL CANNON**



“Until the development of Intenwatch, to detect flow within a pipe you had to either cut the pipe and insert a measuring device – which was both expensive and inconvenient – or use expensive ultra-sonic devices”, explains Paul.

## The Impact...

Cannon have since developed the hardware and software necessary to transform their concept into a tangible product. Their non-intrusive monitoring technology is currently being tested at Metalcraft Engineering in Bradford where fine-tuning is enhancing its detection and reporting accuracy.

To support the ongoing development of Intenwatch, Cannon have also established their own research and development hub within the Re:centre at the University of Bradford.

## The Future...

While Cannon’s Intenwatch division have yet to reap the rewards of commercial success, the first live installation is imminent and Paul feels “tantalisingly close” to his first significant steps in revolutionary energy-monitoring.

“We’re ready to launch a fully independent monitoring system which is **capable of detecting changes in flow both underground and under water**. In future we hope to see our technology developed further and used by companies to prevent theft from gas and oil pipelines”, explains Paul.

“I believe The Yorkshire Innovation Fund gave me the courage and confidence to shoulder the massive investment and personal commitment required to develop this revolutionary energy saving product”.



## About The Yorkshire Innovation Fund...

**The Yorkshire Innovation Fund brings together ten of the region’s higher education institutions to help small and medium sized enterprises (SMEs) in the Yorkshire and Humber region to grow.**

Part-financed by the European Regional Development Fund (ERDF), the fund helps small businesses to develop ideas for new products, services or processes by funding collaborative projects with the region’s universities, drawing on their expertise, specialist equipment or facilities to develop ideas which result in business growth.

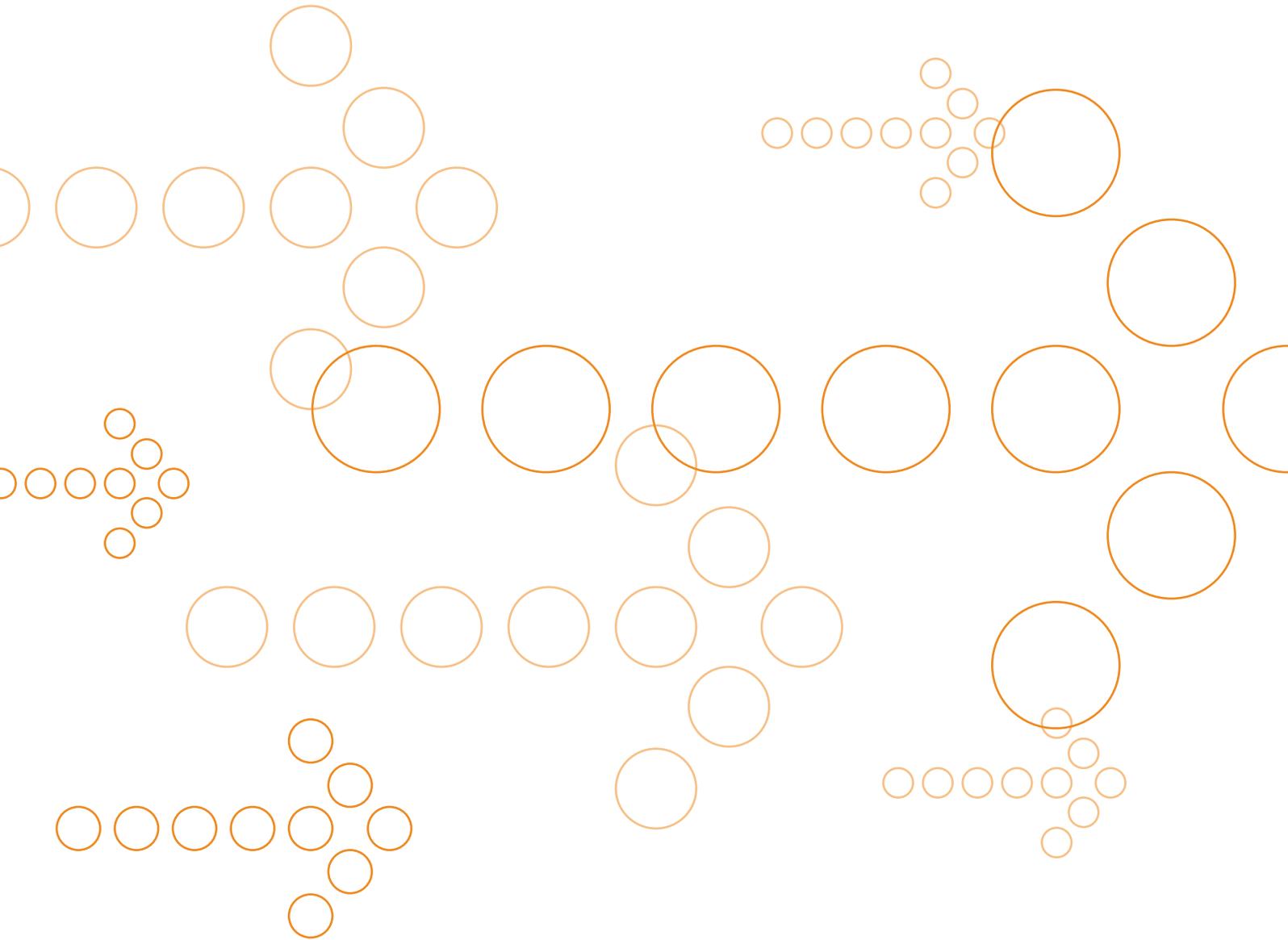
The project has attracted £3.06million of investment from the ERDF as part of Europe’s support for local economic development through the Yorkshire and Humber ERDF Programme 2007-13. Partner universities contributed a further £1.87m, bringing the total investment to £4.93m. The project team are based at the University of Bradford.

The delivery partners are: The University of Bradford, The University of Huddersfield, The University of Hull, The University of Leeds, Leeds Beckett University, Leeds College of Music, Leeds Trinity University, Sheffield Hallam University, The University of York, York St John University. The University of Sheffield is a strategic partner.

### **Yorkshire Innovation Fund**

**University of Bradford, Richmond Building, Bradford, BD7 1DP**

**T: 01274 236 673 E: [yif@bradford.ac.uk](mailto:yif@bradford.ac.uk) [www.yorkshireinnovationfund.org](http://www.yorkshireinnovationfund.org) Twitter: @YorkshireIF**



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Research and Innovation

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