



GED University – Industry Partnership: Joint Research

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www.herts.ac.uk/research

The Guardian
University
Awards 2015



Winner

Sainsbury Review October 2007 – Case Study

A business-facing universitythe University of Hertfordshire

The University of Hertfordshire aims: “***to be recognised as a new model of a university through far-reaching engagement with business, community and international partners, shaping the future success of their graduates operating in the global environment, and advancing the prosperity of their region***”. The university encourages a constant interchange between business, academics and students. Many university staff members spend a proportion of their time working in industry, running their own businesses, keeping their knowledge up to date and helping to develop students’ business skills.

The university’s business-facing activities include:

- Business Link Merger
- Entrepreneurship
- Business experience for undergraduates
- World-class research facilities: BioPark Hertfordshire

Entrepreneurial University of the Year, 2010

the University of Hertfordshire

- Title awarded to the University of Hertfordshire in the Times Higher Education National Competition for 2010
- The previous Vice-Chancellor of the University of Hertfordshire, Professor Sir Tim Wilson undertook a **Review of Business-University Collaboration** for the UK Government “*The Wilson Review*” which was published in 2012

Our Vision for 2020

“Internationally renowned as the UK’s leading business-facing university”

What does business-facing mean?

For businesses

- Producing enterprising and employment-ready graduates
- Partnering with business
- Relevant research and consultancy

For students

- Achieve high levels of employment and highly employable students
- Entrepreneurial
- Imaginative curriculum for our students
- **Learning in a research-rich environment**

For Staff

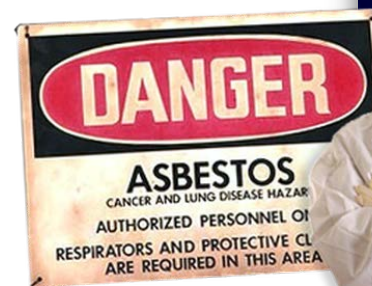
- **User-driven research**
- Supporting staff to be actively engaged with business and the professions

User-driven Joint Research

Particle Instruments Research Group (PIRG) – Case Study

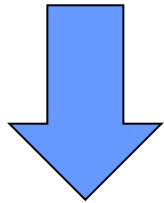
Key areas of industry collaboration and exploitation

- Atmospheric research - particle processes and climate change
- Hazardous particle detection
 - bioaerosol (bacteria, fungal spores, etc)
 - airborne asbestos fibres
 - volcanic ash particles
 - respirable crystalline silica
- Low-cost particle sensors and air quality monitors



Particle Characterisation Technologies

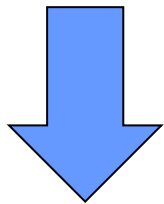
2004



Technology exploited in climate change research. UH has since designed, built and sold **>£2.5 million** of instruments specified by meteorological organisations in the USA, UK, Germany, Canada, and elsewhere



2005

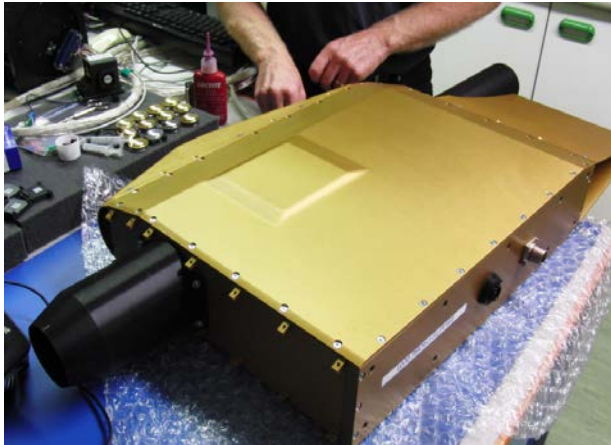


UH – **PCME Ltd**, European leader in stack emissions monitoring but existing products failed to meet stringent new USA and EU emission standards. PIRG collaborated with them using the Knowledge Transfer Partnerships (KTP) scheme to design a new optical sensor resulting in a **Queens Award for Innovation** to **PCME Ltd** in 2007



Atmospheric Instrumentation Research Innovation

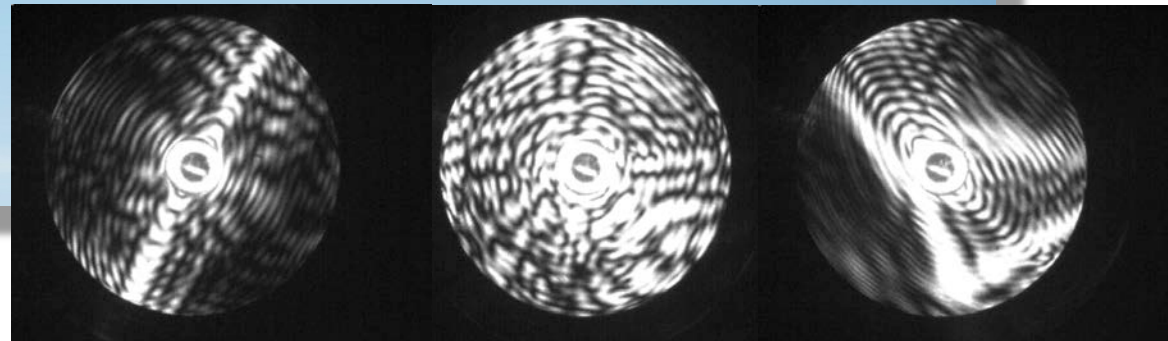
- Probes developed for cloud climate change research
- Latest instrument is **AIITS** - Aerosol Ice Interface Transition Spectrometer
 - Specified by and collaborated with **NASA** for their Global Hawk UAV (Drone)
 - Designed to detect and analyse atmospheric ice particles at the tropopause (65k ft) that profoundly affect global warming



AIITS First Test flight on 26 February 2015 – a 5000 km round trip from AFRC California over Western USA

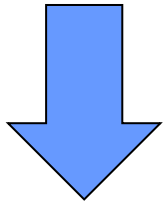


Unique AIITS data – laser light scattering patterns from single microscopic ice crystals – reveal ice structure and radiative transfer properties.



Asbestos Detection

2010

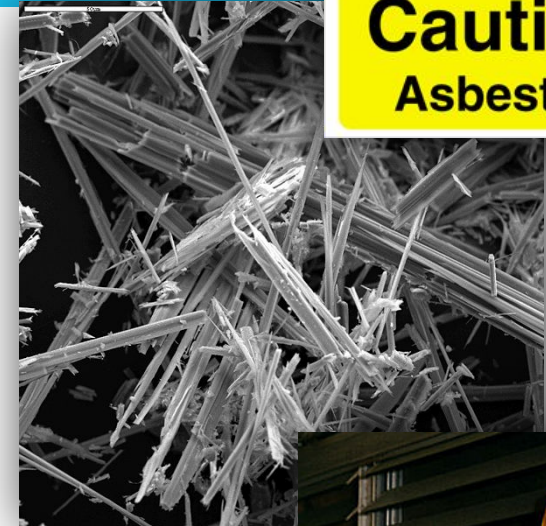


World Health Organisation (WHO) estimated 500,000 Europeans, mostly trades-people, will die from asbestos exposure by 2030

PIRG were awarded **€1.8 million** EU FP7 project partnering European Federation of Plumbers, other trade associations and **The Select Group Ltd** to develop a low-cost real-time asbestos detector

Market for personal monitors for trades-people estimated at 200,000 across Europe

World's first real-time asbestos detector now licenced to **The Select Group Ltd** and moving forward to production with a new start-up company, **Alert**



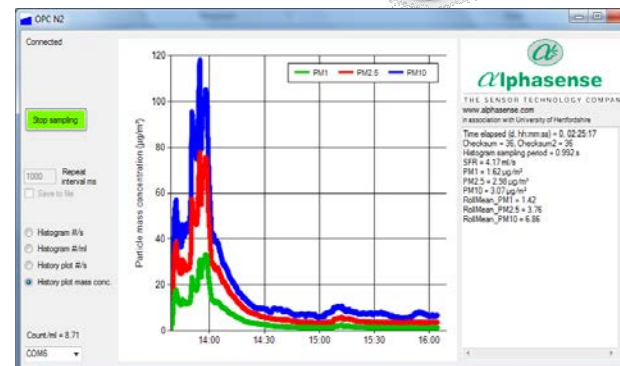
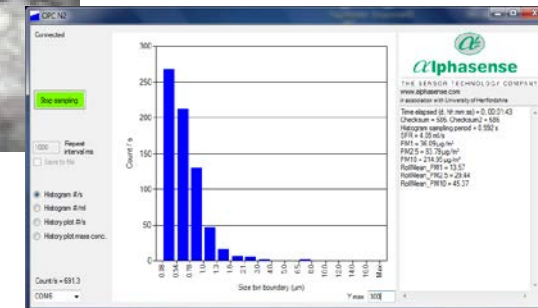
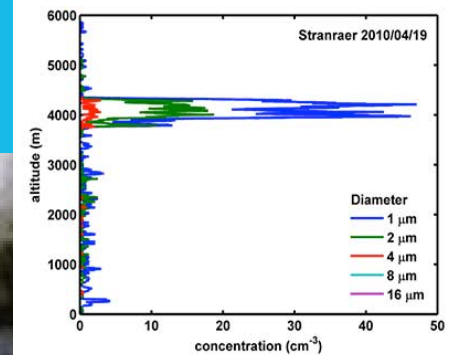
Low-cost Particle Monitoring

- Technology developed from the volcanic ash detection requirements in 2009-10 is now patented world-wide
- Provides high-quality particle monitoring (PM) at 10% of the price of comparable commercial units
- Sensors require no pumps or particulate filters
- Capable of surviving harsh environments
- Technology developed in collaboration with, and licenced to **Alphasense** and in full commercial production

Alphasense
THE SENSOR TECHNOLOGY COMPANY



Ash sounding
Profile of ash concentration during Eyjafjalla episode, West Freugh 19/4/2010



Lower-cost Particle Monitoring

- Following the success of their OPC-N2 Low-cost particle monitor, PIRG is now collaborating with **Alphasense** on a smaller and less expensive version called the '**Badge**'
- This device is a personal air quality monitor weighing only 45g
- It will record PM10, PM2.5 and PM1 levels of exposure over a period of several hours



Extreme Environment Particle Monitoring

- **Crossrail** is the largest infrastructure project in Europe.
- Conventional dust monitors could not cope with the extreme environment and became choked.
- PIRG collaborated with **Trolex** to adapt Alphasense low-cost particle monitor for use in Crossrail construction
- New **Trolex** product now launched for use in tunnelling and mines worldwide

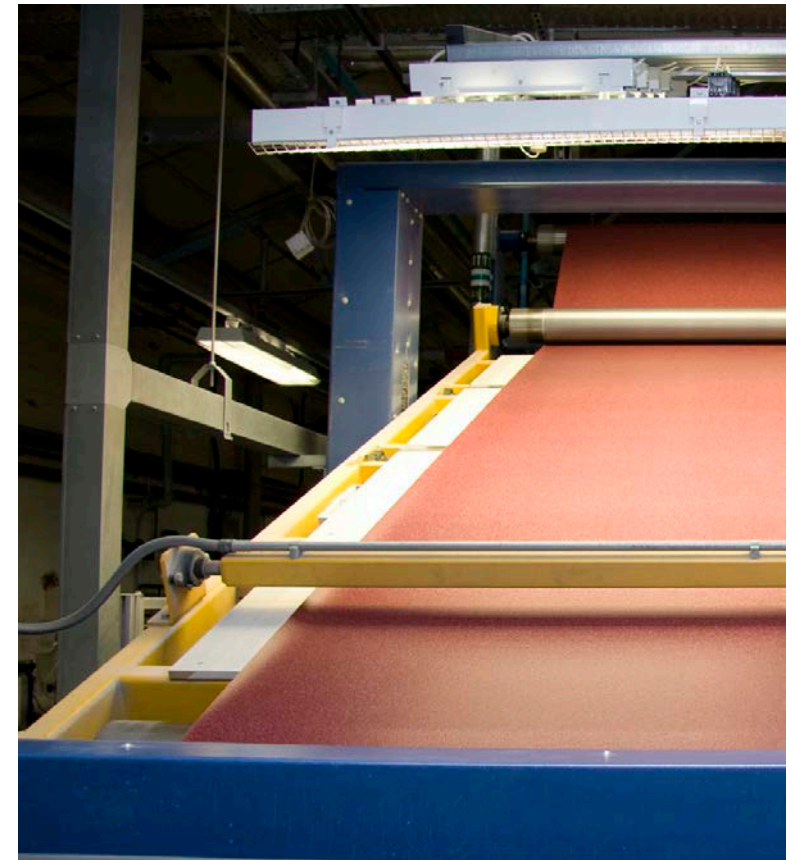


www.crossrail.co.uk



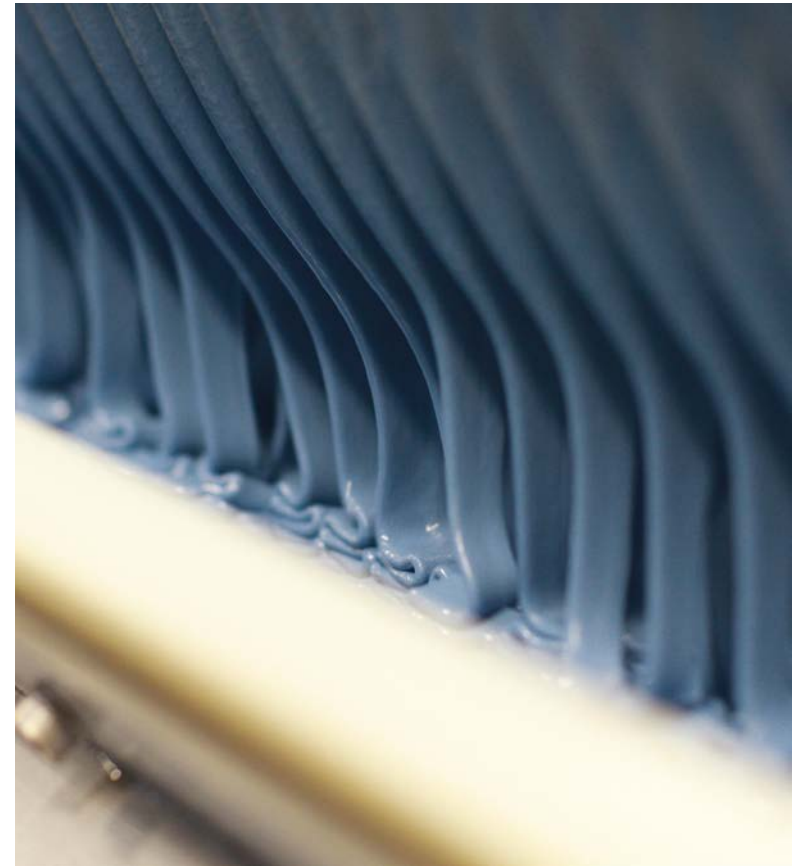
Case study: Joint Research and Growing Partnership with Altro Limited

- Partnership between School of Engineering and Technology and a local company **Altro Ltd**
- **Altro Ltd** are a third generation, family-owned UK manufacturer providing global premium flooring and wall cladding systems for the healthcare, hospitality, education and transport sectors. Employing 650 people world-wide
- Success is due to continual innovation – pioneering new technologies and products to match evolving needs for solutions that perform highly as well as look good

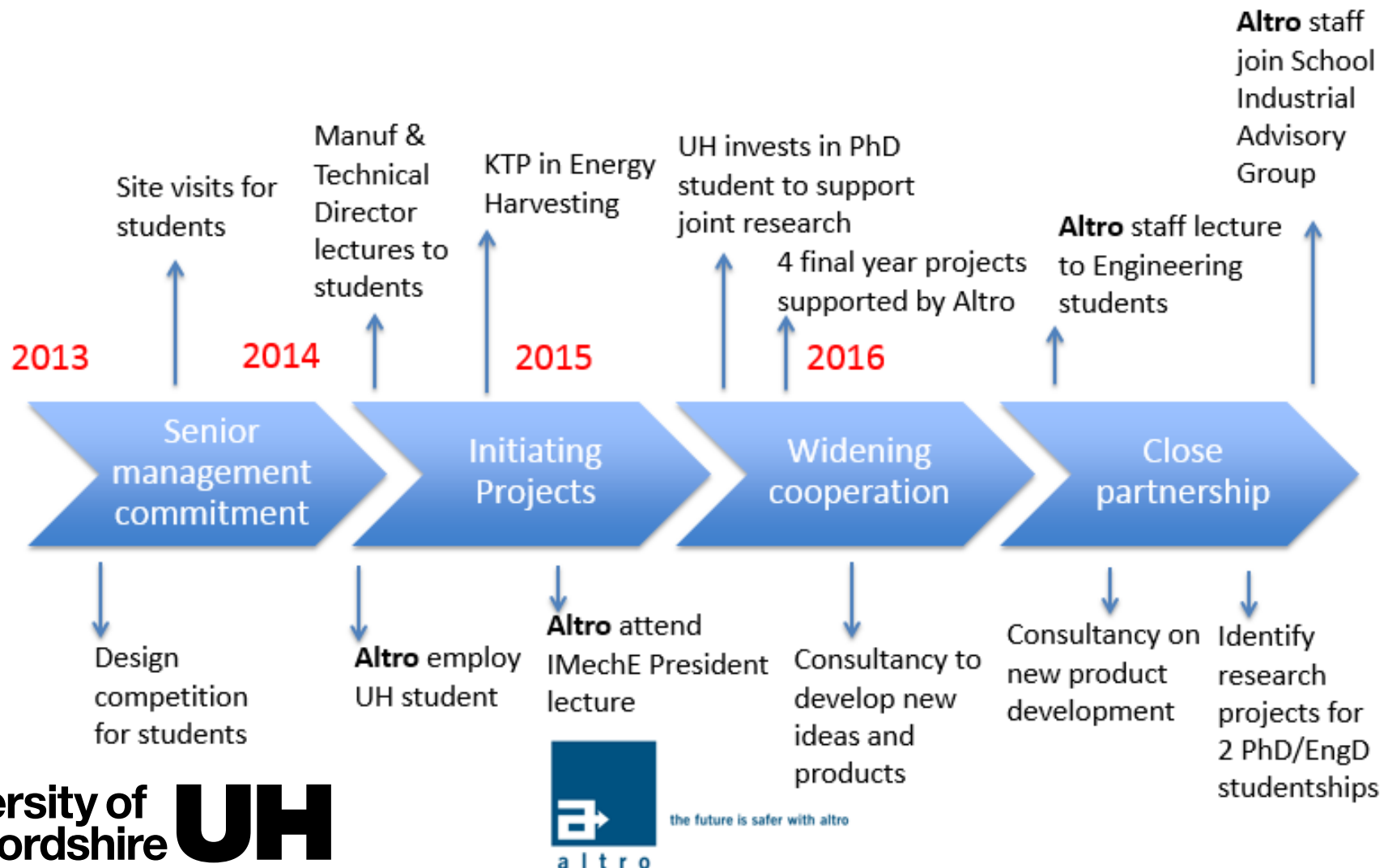


Case study: Joint Research with Altro Limited

- Started with senior management commitment and vision
- Built initially through small but tangible projects
- Large part UK Government funded (KTP) project concerned with Energy Harvesting worth £200K
- Deepening relationship with multiple other interactions in both directions



Co-operation and close working with Altro Limited across a number of activities



Critical Success Factors

- Support from senior executive staff in both organisations
- Specific project to kick off the relationship
- Other projects, large and small, to cement the relationship
- Focus on tangible deliverables to both organisations
- Single point of contact at both organisations to act as liaison, resolve problems and enhance communications
- Regular meetings
- Open, honest and frank conversations
- An understanding of the needs of, and benefits to, both organisations
- Rapport between staff



Range of Innovative Professional Doctorate Degrees

Programme Description		
1	Doctorate in Engineering	EngD
2	Doctorate in Clinical Psychology	DClinPsy
3	Doctorate in Management	DMan
4	Professional Doctorate in Business Administration	DBA
5	Doctorate in Health Research	DHRes
6	Doctorate in Education	EdD
7	Doctorate in Medicine	MD
8	Doctorate in Fine Art	DFA
9	Doctorate in Design	DDes
10	Doctorate in Psychotherapy	DPsych
11	Doctorate in Heritage	DHeritage
12	Doctorate in Project Management	DPM

Innovative Doctoral Training and Knowledge Exchange Programme

- Hertfordshire Local Enterprise Partnership (LEP) gave outline approval to the University for funding of **£2.5 million** to establish the **Hertfordshire Knowledge Innovation Centre for Science (HKICS)** in February 2015
- **HKICS** to deliver 28 four-year PhD studentship programmes over 8 years. Each studentship being an integrated knowledge exchange – PhD partnership with industry in the areas of drug delivery and toxicology or agri-technology sensing
- PhD students will undertake a pre-defined 12 month knowledge exchange project with the industrial partner under the supervision of the University academic team and industry scientist at the start of the programme

Innovative Doctoral Training and Knowledge Exchange Programme

- In particular, the **HKICS** will support the growth of small-to-medium enterprises (SMEs) whilst also providing postgraduate training with integral workplace learning to enhance PhD graduate employability
- A new PhD schedule has now been approved entitled “**PhD with Industry Training**” which will be effective from September 2016 when the programme will start
- It is envisaged that the programme will provide an innovation pipeline developing new intellectual property and knowledge exchange between the industrial partners and the University, together with highly competent PhD graduates

Any questions?