

The **Industrial Doctorate Centre in Optics and Photonics Technologies** is a collaboration between Heriot-Watt, Glasgow, St Andrews and Strathclyde Universities. With 350 members we are the largest academic body of optics and photonics researchers in the UK. Working closely with our industrial partners we provide commercially-focused, EngD training across a wide range of technologies in optics and photonics, including: laser sources, sensors, biophotonics, signal and image processing, laser materials processing, metrology and imaging.



# Industrial Doctorate Centre in Optics and Photonics Technologies

## Case Study:

### Mathieu Rayer Research Engineer



#### The Research Engineer's perspective

I am currently developing a new inspection method for ultra precision surface measurement. My Engineering Doctorate gives me the opportunity to be a part of the full product life cycle; from the inception to the final product with designs directly driven by customer needs. This challenging approach is extremely rewarding, especially when one sees the concrete applications of your own research. It is here where the EngD program provides some key underpinning tools to both provide understanding and practical application and thus be a proactive contributor into today's photonics industry.

Mathieu Rayer, Research Engineer,  
Taylor Hobson Ltd

Taylor Hobson is an ultra-precision technology company operating at the highest levels of accuracy within the field of surface and form metrology.



#### The Company's perspective

The EngD program is a great way for Taylor Hobson to see prospective high potential employees in action. It provides the necessary time and access to knowledge to address firstly those medium to long term projects that always seem to be on the fringes and secondly R&D programmes that need to satisfy today's shorter term requirement for a return on investment. What is required is a commitment to an applied research programme coupled with talent management for 4 years. How else is British industry going to keep competitive?

Daniel Mansfield, Research Manager,  
Taylor Hobson Ltd



#### The IDC's perspective

There's nothing more satisfying than seeing the results of the work carried out by our Research Engineers making a real difference to the capabilities and competitive position of our industrial partners. Through the taught courses provided by the Optics and Photonics Technologies IDC – and of course by his own hard work - Mathieu has acquired an intimate knowledge of Taylor Hobson's technology, and has made a success of developing this to the point where it will be brought to market in the very near future.

Professor Derryck Reid, Director IDC Optics and Photonics Technologies



Engineering and Physical Sciences  
Research Council

#### Industrial Partners

BAE Systems  
BCF Designs  
British Energy  
Cascade Technologies

Edinburgh Instruments  
Gooch and Housego  
Holoxia  
Inside Secure  
MEMSSTAR  
MESL

M-Solv  
Microvisk  
National Physical Laboratory  
NCR  
NHS Greater Glasgow & Clyde  
Optos plc

OptoSci  
Powerlase Photonics  
Power Photonics  
Renishaw  
Rofin-Sinar  
Roke Manor

Rolls-Royce  
Rutherford Appleton Laboratory  
SeeByte  
Selex Galileo  
ST Microelectronics  
Taylor Hobson Ltd

TES Electronic Solutions  
Texas Instruments  
Thales Optronics  
Trumpf  
TMVSE  
UKATC

"The Research Engineer's work has introduced a new technology into the company. With further work it is expected this will develop into a portfolio of products which will be used to broaden the technology and market space of the company."



"The Research Engineer's work is of direct commercial benefit to the company. We will commercialise by building and selling machines to implement the processes developed. We can see a significant market opportunity arising from this."



"The Research Engineer has already developed enough novel and interesting technology for the submission of a patent."



"The research done by the Research Engineer provides the UK ATC with new novel mechanisms and products to use in our instrument designs. It will reduce the size and mass of our instruments a lot."



Science & Technology  
Facilities Council

"The results of the Research Engineer's research [have been] introduced as standard production processes."



"The Research Engineer's work is an important part of the development of new technologies for the maintenance and support of the platforms produced by BAE Systems."



"The Research Engineer's work has been pivotal in improving the efficiencies of current targeting laser development programs towards establishing two new products at SELEX that depend on the technology that he has helped introduce. His attitude and flexibility have remained key to exploiting this technology in a timely manner, and we expect at least one of these products to be in full production within the next year or so."



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[www.engd.hw.ac.uk](http://www.engd.hw.ac.uk)

#### Prof Derryck Reid

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