

ELI IN THE CZECH REPUBLIC



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2015 coincides with many anniversaries in the history of the science of light: the works on optics by Ibn Al-Haytham (1015), Fresnel's notion of light as a wave (1815), Maxwell's electromagnetic theory of light propagation (1865), Einstein's photoelectric effect theory (1905) and general relativity (1915), and Kao's invention of fibre optics (1965). Thanks to the UK Science and Innovation Network, UK researchers are, in 2015, at the forefront of world leading discoveries in laser technologies together with their colleagues in the Czech Republic and in other parts of Emerging Europe.

In 2014, the Czech Republic spent more on science than ever before and the 1.91% of GDP it spent on R&D is a higher percentage spend than that of the UK. Czechs invested over £2bn of EU Structural funds in R&D, with a focus on top science opportunities.

The Extreme Light Infrastructure (ELI) project, is one such exciting opportunity. ELI is based in three locations of Emerging Europe (in the Czech

£15.5m contracts for UK companies, another reason to celebrate 2015 – the International Year of Light

Republic, Hungary and Romania) with an overall budget of €920m paid from EU structural funds and national resources. It is the largest science project in new EU member states. The aim is to build a new generation of the latest laser equipment, 10 times more intense than the best currently available. ELI will provide ultra-short laser pulses of a few femtoseconds duration and give performance up to 10 PWs. It will enable the development of new techniques for medical image-display and diagnostics, radiotherapy, tools for new materials developing

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and testing, novel approaches in X-ray optics, and other industrial applications.

Since the project's inception in 2009, the UK Science and Innovation Network in the Czech Republic has built strong relationships both locally and in Hungary and Romania. It has maintained contact with UK stakeholders about the potential both for research collaboration and specialised R&D procurement. British commitment was underlined by the Prime Minister's visit to the ELI Beamlines facility in Prague in June 2011 with his Czech counterpart, a nuclear physicist. The PM was impressed by a renewed installation of the British Tokamak Compass D in Prague and with the UK participation on ELI laser project.

In 2012, British company Gleeds won a contract for building supervision, and the UK architects Bogle won a competition to design the ELI site. The Science and Innovation Network, working with UKTI, followed up with targeted inward and outward specialist missions. In 2014, ELI Beamlines management announced that UK companies had gained a total £15.5 million in procurement contracts. The largest contract was to the Science & Technology Facilities Council's Central Laser Facility, for the development and delivery of two diode-pumped

lasers. A further nine UK companies won smaller tenders to supply this cutting edge project.

In January 2015, the UK STFC Central Laser Facility (CLF) was awarded €250k in a successful Stage One Teaming call from the

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EU Horizon 2020. The HiLASE laser facility, an adjacent project to ELI, will team up with CLF, in the development of the "next generation" laser technology based on diode pumping with significant future commercial opportunities for the UK. Professor John Collier, Director of CLF, said "Selection of our Stage One proposal is excellent news. CLF and the Institute of Physics in Prague have a long and highly productive history of

collaboration and partnership in many areas of laser development and our user communities have conducted many successful experiments together."

International collaboration plays a crucial role in the development of science and technology in the UK. It provides UK researchers opportunities to work with the best in the world, to use the best facilities in the world and to ensure science and innovation supports UK growth through international outreach. This is just one example of how the Science and Innovation Network has contributed to the success of UK science and supported UK growth. Further examples and background information on the Science and Innovation Network can be found in the recently published SIN Report (<https://www.gov.uk/government/publications/science-and-innovation-network-report>).

References

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