

Economic Impact

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Introduction

This article highlights some of the key economic impact activities of the Central Laser Facility over the year 2016-17.

Enhancing and Demonstrating Capability

A major aspect of our work this year was in the establishment of a contract with DSTL for a full and detailed Technical Design Review for the PULSAR project. This involved significant negotiation and planning. The PULSAR TDR was successfully completed and delivered during this reporting year.

Funding for the construction and commissioning of a new Laser Peening Laboratory based on CALTA's DiPOLE laser technology was secured, and a materials scientist recruited into post for the two years of the project. This enabled the project to proceed at pace and a portfolio of academic and industrial collaborators has been built over the year. Laser peening allows the fatigue strength and lifetime of materials to be significantly increased (>3x) via the inducement of significant sub-surface compressive residual stress. Proving the use of our DiPOLE technology in this critical area for sectors such as high value manufacturing, aerospace and automotive is an important step forward in building the commercial case for DiPOLE.

Work on developing Laser Driven Sources for industrial applications has progressed, and the CLF was awarded a grant through the STFC IPS scheme to work alongside Bristol University and Sellafield in developing laser driven x-rays and neutrons for inspection of nuclear waste containers. Again this is a very exciting step forward in realising some key industrial applications of high power lasers.

Industry Engagement

We continued to build on and strengthen our relationships with Johnson Matthey, Innovate UK and the High Value Manufacturing Catapult Centres. This year saw approximately £350k of income derived through contracts for facility access. In total five different contracts were established for access to Ultra, Octopus and Gemini. Importantly we have identified three new areas for engagement with Rolls Royce; laser peening, laser driven sources for Non Destructive Evaluation and fluid inspection within large and complex gear box and engine systems. These will be investigated and taken forward over the coming year.

A number of new companies from the aerospace and solar energy sectors have been engaged, with the aim of establishing new contracts for facility access in the future.

International Engagement

We submitted a phase 2 proposal to the EC under the H2020 Widespread and Teaming initiative with HiLASE in the Czech Republic. This proposal was successful and allows CALTA to develop DiPOLE technology to higher energy and higher repetition rates. We also lead on the Innovation work package and have formed an innovation task force for the project to support the industrial take up and exploitation of high power lasers and their applications. This is a circa €50M programme funded jointly by the EC and the Czech Ministry with approximately 20% of the funds allocated directly to CLF.

Our projects funded through the Newton programme with India, China and South Africa continue and have started to bear fruit this year with a number of successful collaborations and scientific publications.

Intellectual Property and Technology Transfer

This year two new patents were filed and two patents have now been granted.

Conclusions

Overall this has been a very successful year for the CLF in terms of economic impact, industry engagement and development of CLF's capabilities. We will continue to build on this in the coming years.

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