15 May 2019

PRESS RELEASE

The installation of the new 1 kHz single cycle laser system SYLOS 2A of the laser research facility of Szeged has been completed

This morning ELI-HU Non-Profit Ltd. held a ceremonial inauguration event in Szeged in the framework of the implementation project of the ELI laser research facility to celebrate the handover of the SYLOS 2A laser system. Designed by the Lithuanian companies EKSPLA and Light Conversion and developed in collaboration with ELI-ALPS personnel in two phases, the laser system amounts in total of 4.9 million euros, that is almost one and a half billion forints.

A ceremonial inauguration event took place today in Szeged involving representatives of the Lithuanian EKSPLA UAB and Light Conversion UAB as well as the ELI-HU Non-Profit Ltd., as the SYLOS 2A laser system officially started its operation in the laser research facility.

The SYLOS laser system, emitting pulses with durations of a few femtosecond at 1 kHz repetition frequency, has been developed in two project phases to become one of the main laser sources of ELI-ALPS with the participation of a Lithuanian consortium and Hungarian scientists. The laser will drive four of the 12 beamlines of ELI-ALPS; namely two gas-based and one solid surface based plasma generation stations for coherent soft x-ray sources and associated detection stages, while an additional source for high peak intensity electron pulses. By driving these exceptional secondary sources, the state-of-the-art laser system opens the way for the investigations of nonlinear extreme ultraviolet and x-ray processes, four-dimensional imaging, as well as various industrial, biological and medical applications. Beyond fundamental research, this laser system will be utilized in the project aiming the reduction of the radioactive radiation of used nuclear fuel by a laser-related transmutation method, based on the idea and with the cooperation of the Nobel laureate Gerard Mourou and his coworkers.

As the first phase of the laser system (SYLOS 1) of 4.5 TW peak power, 6,5 fs pulse duration and 1 kHz repetition frequency with exceptional stability parameters was designed and implemented between December 2015 and July 2017 by the Lithuanian consortium as the winner of an open procurement procedure. The budget of the contract valued to 4 million euros, that is almost 1.25 billion forints. In the second phase of the development (SYLOS 2A), a joint research and development activity was initiated by the two Lithuanian companies (EKSPLA UAB and Light Conversion UAB) and the ELI-HU Nonprofit Ltd. resulting in the reduction of the pulse duration by over 30%, while maintaining the peak power, repetition rate and other parameters of stability and operation. The further development of the laser required redesigning and rebuilding of many of its subassemblies, which took until March 2019. The budget of the SYLOS 2A research and development contract is 875 000 euros, that is around 271 million forints. During the commissioning period between March and May 2019, a total of five employees of the two Lithuanian companies participated in the installation.

***

The main object of ELI-ALPS (Extreme Light Infrastructure Attosecond Light Pulse Source) project is creating a unique European research center, providing the international research community with laser pulses and further sources based on them. The Szeged facility will stand out from the institutes producing the highest intensity laser pulses in the world with its highest repetition rate and shortest pulses. This facility is expected to lead to reaching outstanding results not only in the field of ultrafast physical processes but also in biological, medical and materials sciences.

***

Follow us on Facebook, LinkedIn and Youtube:

http://www.facebook.com/EliAlpsLezerkozpontSzeged
http://www.linkedin.com/in/eli-alps-34854668
https://www.youtube.com/channel/UCbi8r90P3wHYFvrxcdVIQSg

Further information:
Gergely Márton, 30/637-0910, pr@eli-alps.hu

SZÉCHENYI 2020
HUNGARIAN GOVERNMENT
European Union
European Regional Development Fund
INVESTING IN YOUR FUTURE