

Brits, Czechs claim world's most powerful 'super laser'

January 24 2017



Scientists work with a fully Diode Pumped Solid State Laser designed and constructed in the Rutherford Appleton Laboratory of the laser center HiLASE in Dolni Brezany, Prague, on January 23, 2017

A team of British and Czech scientists on Tuesday said they had successfully tested a "super laser" they claim is 10 times more powerful than any other of its kind on the planet.

The so-called "high peak power [laser](#)" has a 1,000-watt average power output, a benchmark of sustained, high-energy pulses.

It has revolutionary potential in engineering, for hardening metal surfaces, processing semiconductors and micro-machining material.

The device was developed by Britain's Central Laser Facility (CLF) and HiLASE (High average power pulsed laser), a Czech state research and development project.

"It is a world record which is important," CLF director John Collier told AFP.

"It is good for putting things on the map, but the more important point is that the underlying technology that has been developed here is going to transform the application of these high power, high energy lasers," Collier added.

Named "Bivoj" after a mythical Czech strongman, the laser is "10 times as powerful" as any other of its type currently in use, HiLASE physicist Martin Divoky told AFP at the testing facility in Dolni Brezany near Prague.

HiLASE director Tomas Mocek told AFP that Bivoj broke the "magical barrier" of 1,000 watts in output on December 16, setting a [world record](#) for lasers of its type.

"It's a huge step forward, like an Olympic victory," he added.

Weighing in at around 20 tonnes and costing 44 million euros (\$48 million), Bivoj will have applications in the aeronautics, automotive and power sectors, according to the CLF and HiLASE specialists.

Mocek told AFP that Bivoj was fundamentally different from so-called peak power lasers.

There are two behemoths of this kind—the one-petawatt Texas Petawatt Laser in Austin and the two-petawatt Laser for Fast Ignition Experiments (LFEX) in Osaka, Japan. One petawatt equals one million billion watts

Those lasers "have a very high peak power, but they can only reach it several times a day," Mocek said.

"They do not have so-called 'average power'. This is a combination of the repetition rate and the energy. Our laser has the highest average power, which is important. The repetition rate in Osaka and Austin is significantly lower."

Its creators say they hope to explore the laser's potential during tests planned at the Dolni Brezany facility later this month.

Mocek told AFP that there are also plans to commercialise the laser in the second half of the year.

© 2017 AFP

Citation: Brits, Czechs claim world's most powerful 'super laser' (2017, January 24) retrieved 27 April 2024 from <https://phys.org/news/2017-01-brits-czechs-world-powerful-super.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.