



## 3 Billion tons less CO<sub>2</sub> with Photonics

**Photonics technologies can contribute to 3 billion tons less carbon dioxide by 2030.**

A [new study by SPECTARIS, the Fraunhofer Institute, TEMATYS and Messe Munchen](#) shows that photonics applications have the potential to contribute 3 billion tons less CO<sub>2</sub> output - the equivalent of 22.2 million diesel trucks all driving 100k miles per year<sup>i</sup> - by 2030.

According to the research, light technologies are already providing solutions for environmental sustainability and climate protection. Photonics – the technical deployment of light – is a chief enabler of efficient, environmentally-friendly resources, materials and processes and a key constituent of technologies used to limit temperature rises.

In 2019 alone, eight examples of photonics technologies resulted in an indirect contribution of 1.13 billion tons CO<sub>2</sub> equivalent – such as energy-efficient lighting, fibre optic network communications, optical detection of forest fires, photovoltaics, optical communication in data centres, energy-efficient displays, laser-supported metal recycling, and optical communication in 5G mobile networks - the report shows

Dr. Bernhard Ohnesorge, Managing Director Carl Zeiss Jena GmbH and Chairman of the Photonics Trade Association SPECTARIS e.V. said: "Photonics has made it possible to identify the hazards of climate change. It gives us the tools to protect our world. What matters now is that we make sure to use these opportunities wisely."

Prof. Dr. Reinhart Poprawe, former Director of the Fraunhofer Institute for Laser Technology ILT/RWTH Aachen University – Lecturer in Laser Technology LLT said: "Photonics makes it possible to constructively combine economy and environmental protection.

"This is achieved by both increasing the efficiency of manufacturing processes and producing optimised components for Germany's transition to renewable energy, particularly through precision work using ultra-short-pulse lasers or by using additive manufacturing processes. Components optimised according to economic and environmental criteria can be found in solar, battery and wind power technologies, for example."

The results come from the joint Messe Munchen and SPECTARIS study 'Light as the key to global environment SUSTAINABILITY - High-tech PHOTONICS solutions to protect the environment and preserve resources', in cooperation with Fraunhofer ILT, Fraunhofer Light & Surfaces, TEMATYS and the [Photonics21](#) group.

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**About Photonics21**

Photonics21 is the European Technology Platform (ETP) for photonics, a technology encompassing all of the products and processes around the emission, manipulation and detection of light. Photonics is integral to a wide range of industries that include the medical, healthcare, transport, manufacturing, and telecommunications sectors.

"Photonics21" was set up in December 2005 to bring the community of photonics researchers and industries together. The European Commission defined photonics as one of five European Key Enabling Technologies (KET's) in September 2009. Shortly after, the European Research & Innovation Program "Horizon 2020" invited Photonics21 to become a "Public-Private Partnership" (PPP). The "Photonics 21 Association", a legal entity under Belgium law, became the private contract partner in November 2013 in a Public-Private Partnership (PPP) in conjunction with the EU Commission.

Today Photonics21 represents more than 3000 personal members from across Europe and abroad. Our members are experts in the photonics industry, research organisations and universities who actively engage with us to develop a joint photonics strategy for future research and innovation in Europe.

With the global photonics market growing from €350 Billion in 2011 to €447 Billion in 2015, Photonics remains a strong industry. The European photonics industry, estimated to be worth €70 billion, has considerable global leadership positions and employs over 300,000 people directly.

With positive growth forecast, current industry trends like digitalisation, resource efficiency, individual and zero failure production will drive the photonics industry further.

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<sup>i</sup> Based on 100,000 miles annual distance at an average 9 mpg fuel consumption, producing [2.67 kg CO<sub>2</sub> from 1 litre](#) of diesel