**PRESS RELEASE**

**Optimising semiconductor device manufacturing: Slovenian researcher Teja Potočnik in top 10 innovators for the Young Inventors Prize 2025**

* **Slovenian researcher Teja Potočnik has developed an automated software platform that enhances precision in nanomaterial-based semiconductor device manufacturing**
* **More efficient semiconductor technologies could cut data centre energy use by up to 48 TWh annually, reducing CO₂ emissions by 35 million tonnes**
* **Potočnik is one of ten innovators for the Young Inventors Prize, to be awarded by the European Patent Office (EPO) on 18 June 2025**

**Munich, 6 May 2025** – According to the [World Economic Forum](https://www.weforum.org/stories/2023/11/data-centres-power-semiconductor-technologies-decarbonization/), data centres worldwide consume approximately 460 terawatt-hours (TWh) of electricity annually, equivalent to the energy needs of 153 million households. As demand for computing power surges, global data centre energy consumption could contribute up to 3.2% of total carbon emissions by 2025. **Slovenian researcher Teja Potočnik (26) has developed a platform that increases the efficiency of advanced semiconductor device manufacturing**. Her breakthrough has earned her a place as **one of the ten global innovators in the Young Inventors Prize 2025, known as Tomorrow Shapers.** They were selected from 450 candidates by an independent jury.

**Addressing energy challenges through nanotechnology**

Tiny electronic components are used to amplify and switch electronic signals. They are fundamental building blocks in most electronic devices, including computers, smartphones, and other digital gadgets. As these components get smaller, it is harder to keep improving their performance. Nanomaterials such as graphene, carbon nanotubes and quantum dots could help, but it is difficult to integrate them in large-scale manufacturing. **LithoTag helps overcome this problem by embedding** unique markers **onto semiconductor substrates**. This automation software combines nanoscale positioning and computer, paving the way to faster, more energy-efficient devices.

Potočnik’s invention helps to bridge the gap between research breakthroughs and industrial applications. Advancing semiconductor technologies could enable faster, smaller and more energy-efficient products, such as advanced image sensors or quantum devices. In addition, according to [Deloitte](https://www2.deloitte.com/us/en/pages/technology/articles/global-semiconductor-talent-shortage.html), semiconductor production is expected to generate 100 000 new jobs globally by 2030, especially in technical roles that support automated and nanotechnology-driven industries.

**Bridging the gap from lab to industry**

Potočnik’s journey began at the University of Cambridge, where she completed a PhD in nanofabrication and founded Nanomation. With support from Cambridge Enterprise, Potočnik and her colleagues worked to file a patent application and secured funding to scale their solution. The company is now actively engaging semiconductor manufacturers to explore partnerships for industry adoption.

*"The industry cares about reliability, replicability, and integration into manufacturing processes. No matter how good a technology is, it holds little value if it can’t be scaled. That’s why we’re focusing not only on the performance, but also reliability and production”,* Teja Potočnik explained.

**The Young Inventors Prize celebrates worldwide innovators 30 and under using technology to address global challenges posed by the United Nations Sustainable Development Goals (SDGs).** Potočnik’s invention supports SDG 9 (Industry, Innovation and Infrastructure) by enabling more energy-efficient and scalable semiconductor device manufacturing.

**The prizes of the 2025 edition will be announced during a ceremony** [**livestreamed**](https://www.epo.org/en/news-events/young-inventors-prize/2025-event?mtm_camp=pressrelease&mtm_key=yip2025&mtm_med=press) **from Iceland on 18 June 2025.**

Find more information about the invention’s impact, the technology and the inventor’s story [here](https://www.epo.org/en/news-events/young-inventors-prize/teja-potocnik?mtm_camp=pressrelease&mtm_key=yip2025&mtm_med=press).

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**About the Young Inventors Prize**

Aimed at individuals 30 and under, the Young Inventors Prize showcases the transformative power of youth-driven solutions and recognises the remarkable young people paving the way to a more sustainable future. Established in 2022, trophies were first handed out during the European Inventor Award ceremony. From 2025 onwards, the Prize will move up a gear with its own dedicated event, held separately from the Award. Among the 10 Tomorrow Shapers selected for each edition, three will be awarded a special prize: World Builders, Community Healers, and Nature Guardians. In addition, a People’s Choice winner, voted by the public online, will be revealed. Each Tomorrow Shaper will receive EUR 5 000, the three special prize winners will each receive an extra EUR 15 000. The People’s Choice winner will be awarded an additional EUR 5 000. [Read more](https://www.epo.org/en/news-events/young-inventors-prize?mtm_camp=pressrelease&mtm_key=yip2025&mtm_med=press) on the Young Inventors Prize eligibility and selection criteria.

**About the EPO**

With 6,300 staff members, the[European Patent Office (EPO)](https://www.epo.org/?mtm_camp=pressrelease&mtm_key=yip2025&mtm_med=press) is one of the largest public service institutions in Europe. Headquartered in Munich with offices in Berlin, Brussels, The Hague and Vienna, the EPO was founded with the aim of strengthening co-operation on patents in Europe. Through the EPO's centralised patent granting procedure, inventors are able to obtain high-quality patent protection in up to 46 countries, covering a market of some 700 million people. The EPO is also the world's leading authority in patent information and patent searching.