**PRESS RELEASE**

**Next-gen energy storage for offshore wind farms: Maltese engineers selected as finalists for the European Inventor Award 2024**

* **Tonio Sant, Daniel Buhagiar and their team have developed a mechanical energy storage system that could make offshore wind power more reliable and predictable**
* **Their invention uses the ocean as a heat sink allowing them to simplify the mechanics and drive-up efficiency of the storage and release of energy**
* **The Maltese team will compete for the ‘Research’ category award against a German team and a French one. The winners will be announced on 9 July in Malta**
* **Voting for the** [**Popular Prize**](https://a.cstmapp.com/login/973466/?vote=144556_707562019&lc=eng)**, awarded by the public, is open as of today**

**Munich, 16 May 2024** – According to the [European Environment Agency (EEA)](https://www.eea.europa.eu/publications/european-climate-risk-assessment), Extreme weather events caused by climate change, such as storms, heatwaves and flooding accounted for 85,000 to 145,000 human fatalities across Europe, over the past 40 years. In addition, Europe’s economic losses from the effects of fossil-fuel-driven climate change could exceed 1 trillion euros per year in the near future from heat waves and coastal floods alone. To reduce dependence on fossil fuels, renewable energy sources such as wind and solar have risen to the forefront, with the challenges posed by their intermittent and variable supply. The ability to effectively store this power to make it coincide with demand is critical**.** Two engineers from Malta have stepped up to create **a mechanical offshore energy storage system, FLASC, that is capable of storing wind energy and redistributing as needed**. For this achievement, Tonio Sant, Daniel Buhagiar and their team were selected from 550 candidates and are now finalists in the ‘Research’ category of the European Inventor Award 2024.For this achievement, Tonio Sant, Daniel Buhagiar and their team were selected from 550 candidates and are now finalists in the ‘Research’ category of the European Inventor Award 2024.

**Using the ocean to drive efficiency**

The FLASC system can store significant amounts of energy in a safe and sustainable manner. Most components are deployed subsea, at the site of the wind farm. Using a liquid-piston mechanism, it transforms surplus wind-generated power into stored energy through the compression of air, with the pressurised seawater acting as a liquid piston within high-pressure tanks. The system uses the ocean itself as a heatsink, immediately taking care of one of the largest problems in storage devices of this nature. *“During air compression in the tanks, the surrounding seawater absorbs the heat generated, effectively dissipating it without experiencing a measurable increase in temperature. When we expand the gas and generate electricity, the sea stabilises the temperature of our air to help it expand smoothly and generate electricity to meet the energy demand”*,explained Sant. *“This helps us to simplify the technology. Current compressed air energy storage systems use additional hardware to store the heat that is generated and avoid energy losses. We don't need this additional heat store, we have the sea”,* he added.

During periods of low wind, this process can be reversed, releasing the hydraulic energy stored in the pressurised air to drive a turbine and generate electricity. According to the inventors, **its efficiency allows 93% of all work done on the gas to be recovered, resulting in a high overall efficiency.**

**More than a simple challenge**

The system was developed during Buhagiar’s PhD at the University of Malta under the supervision of Professor Tonio Sant of the Mechanical Engineering Department.It began as an academic challenge but grew much larger when the University's Knowledge Transfer Office (KTO) suggested the idea was good enough to be patented. *“The sea is always on our mind as a resource, since we are a small island. So the idea was simple: What if we could have an energy storage system that is co-located within the offshore wind farm using the same footprint?”,* said Buhagiar on their inspiration. *“When we made the prototype, we had no idea it was a step towards commercialisation. It was more of an academic exercise to validate the models”*,he further explained.

The University of Malta together with the FLASC team created the spin-off FLASC B.V. with the purpose of scaling up. They are one of three finalists in the ‘Research’ category of the 2024 European Inventor Award. The other finalists recognised for outstanding work in this field are the German Cordelia Schmid, for her AI solutions that enable advanced machine perception that closely mimics human visual interpretation and the French team led by David Devos and Caroline Moreau for their innovative treatments for Parkinson’s disease. The EPO will announce the winners during a ceremony livestreamed [here](https://www.epo.org/en/news-events/european-inventor-award/streaming?mtm_campaign=EIA2024&mtm_keyword=pressrelease&mtm_medium=press) from Sant and Buhagiar’s home country of Malta on 9 July 2024. In addition to each category, the EPO will reveal the Popular Prize winner, chosen by online public vote. Voting will remain open until the day of the ceremony.

Find more information about the invention’s impact, the technology and the inventors’ stories [here](https://www.epo.org/en/news-events/european-inventor-award/meet-the-finalists/tonio-sant-daniel-buhagiar-and-team?mtm_campaign=EIA2024&mtm_keyword=pressrelease&mtm_medium=press).

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**About the European Inventor Award**

The European Inventor Award is one of Europe's most prestigious innovation prizes. Launched by the EPO in 2006, the award honours individuals and teams, who have come up with solutions to some of the biggest challenges of our time. The European Inventor Award jury consists of inventors who are all former finalists. To judge proposals, the independent panel draws on their wealth of technical, business, and intellectual property expertise. In 2024, the jury is chaired by Wolfgang M. Heckl. All inventors must have been granted a European patent for their invention. Read more [here](https://www.epo.org/en/news-events/european-inventor-award?mtm_campaign=EIA2024&mtm_keyword=pressrelease&mtm_medium=press) on the various categories, prizes, selection criteria and livestream ceremony to be held on 9 July in Malta.

**About the EPO**

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