**PRESS RELEASE**

**Sustainable and safer aviation sealant and adhesive: Filipino inventor Mark Kennedy Bantugon in top 10 innovators for the Young Inventors Prize 2025**

* **Filipino aeronautical engineer Mark Kennedy Bantugon has developed a sustainable aircraft sealant and adhesive made from agricultural waste of Pili tree resin**
* **Sealants and adhesives are commonly used in planes, but traditional solutions usually contain harmful chemical components**
* **Bantugon 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** – The aviation industry **depends on sealants to prevent fuel leaks**, but conventional options usually contain toxic chemicals that may pose health risks and must be treated as hazardous waste. **Filipino aeronautical engineer Mark Kennedy Bantugon (26) has developed Pili Seal®**, a bio-based alternative derived from the agricultural waste of Pili tree resin. The material, an aircraft sealant and adhesive, aims to **improve workplace safety in the aviation industry and reduce environmental impact** while offering a locally sourced, biodegradable option. Bantugon’s innovation has earned him 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.

**Using waste for a safer and cleaner world**

For over fifty years, polysulfide-based sealants have been the industry standard for preventing fuel leaks in aircraft. However, they may cause skin and respiratory irritation, and their disposal poses an environmental challenge, especially when heated or burned. The [European Chemicals Agency](https://echa.europa.eu/-/echa-adds-five-hazardous-chemicals-to-the-candidate-list) has identified substances commonly found in adhesives and sealants as hazardous, highlighting the need for careful handling and disposal.

**Pili Seal® offers a safer alternative to some toxic petrochemical derived sealants and adhesives,** using a by-product of the perfume industry. This two-part sealant and adhesive combines the agricultural waste Pili tree resin with a solvent and hardening agent, providing both sealing and adhesive properties. It withstands fuel exposure, heat and pressure, making it suitable for aircraft fuel tanks and other high-performance applications. The sealant has been thoroughly tested, with four formulations passing industry-standard flammability tests.

Beyond aviation, **this invention has the potential to be used in construction, automotive, marine and defence industries**, contributing to a circular economy by repurposing 155 million kilograms of agricultural Pili Tree resin waste generated annually in the Philippines, primarily from the perfume and food industries.

**Inspired by necessity, built for the future**

Bantugon’s early exposure to farm life in Batangas (Philippines) played a crucial role in his innovation journey. **As a child, he and his siblings patched leaky roofs using chewing gum, sparking his curiosity about adhesives** **and sealants**. This interest continued into his aeronautical engineering studies, where an internship at Lufthansa Technik Philippines **exposed him to the hazards of conventional sealants and adhesives.**

Determined to develop a safer and more sustainable alternative, Bantugon experimented with resins from six different trees before selecting Pili tree resin.  The **resin’s natural stickiness offers ideal adhesive properties, while its fragrant odour makes it easy to work with**, especially in confined spaces. Overcoming multiple challenges, he refined 84 different formulations before achieving the final composition. To commercialise his sealant, Bantugon founded Pili AdheSeal Inc. in 2024.

*"My mother, a public-school teacher, helped me understand the value of a strong and well-rounded education. My father, as a farmer, introduced me to the farm as a training ground—a place where I learned about different plants, animals, trees, and, most importantly, the potential in waste materials,"* Bantugon 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).** By transforming agricultural waste into a high-performance sealant, Mark Kennedy Bantugon is directly contributing to UN SDG 9 (Industry, Innovation & Infrastructure).

**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/mark-kennedy-bantugon?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.