Royal Academy of Engineering | Leaders in Innovation Fellowships®

Innovator Showcase

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MAKING WASTEWATER TREATMENT ACCESSIBLE TO OFF-GRID BUILDINGS

SOLVillion

Jordan

Aia Abul-Haj

As an impact-driven startup, SOLVillion's decentralised wastewater treatment system consists of sedimentation tanks which filter both greywater (faeces-free wastewater generated from households and offices) and blackwater (wastewater from toilets containing faeces) to generate a runoff of clean, odourless water. This can then be reused for gardening and agriculture, all whilst ensuring that homes not connected to sewerage systems process wastewater in a hygienic and cost-effective manner.

The purification of wastewater aligns with the UN Sustainable Development Goal for clean water and sanitation, while SOLVillion's work in training members of the local community reflects the focus on local communities participating in water and sanitation management.

To date, SOLVillion has provided safe access to sanitation for over 40,000 people across Jordan. The company has trained more than 400 young people and hosted 30 internships, while a dozen people have been given full-time jobs. These figures are expected to increase significantly as the company expands across the MENA region, installing devices in residential homes, public buildings and commercial sites. Each device is tested quarterly by SOLVillion, providing quality control and feedback while ensuring ongoing compliance with Jordanian water and wastewater standards.

One UNICEF study revealed that 66 million people in the Middle East and North Africa (MENA) region lack basic sanitation, with many dwellings not connected to regional sewerage systems. To tackle the wastewater crisis in her home country, Jordanian engineer Aia Abul-Haj has developed, through her sedimentation tanks, a safe, accessible, and affordable sanitation solution, transforming wastewater into a treated product suitable for use in agriculture and gardening. The innovative device can be installed into buildings of any size, increasing access to the product, and thereby providing widespread benefit, such as reducing the spread of infectious diseases caused through poor sanitation.

Aia believes her "life-changing experience" in the LIF programme brought her product to market more quickly than would otherwise have been possible: "We wouldn't have jumped to a new level in research and development without the expertise and experience provided by the people and consultants we met through LIF." The programme has brought together Jordanian scientists, academics and engineers, who now collaborate on activities: "For any academic or contributor wanting to elevate their profile, I think LIF is the pinnacle. As engineers, we are always proud to have the Royal Academy of Engineering as a champion for our journey."

SOLVillion's future plans involve expanding into neighbouring Egypt and Lebanon, where similar sanitation challenges persist, while a product patent is expected within the next year. By offering tailor-made devices, the company is able to work with everyone from real estate developers and NGO's to private households, and there are ambitious plans to expand into the industrial sector in the coming years.

The Royal Academy of Engineering's Leaders in Innovation Fellowships (LIF) programme supports talented entrepreneurs from around the globe to turn their engineering innovations into impactful, sustainable businesses.

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