



S-AWG

Smart Atmospheric Water Generation system



Σ smart
advanced manufacturing

ORGANISATION PROFILE

NovNat Tech LTD is an early-stage technology company based in the UK. The company was founded in 2022 on the back of breakthrough water capturing sorbent materials that were developed. We are also developing and delivering efficient Atmospheric Water Generation (AWG) systems enabled by our proprietary metal-organic framework (MOF) materials, capable of generating water in the driest conditions on Earth.

The current focus is on developing a large-scale thermally-driven AWG system capable of being integrated into industrial processes to extract their low-grade waste heat to produce pure water. The system has already been developed on a small-scale, capturing moisture from the air in environments with

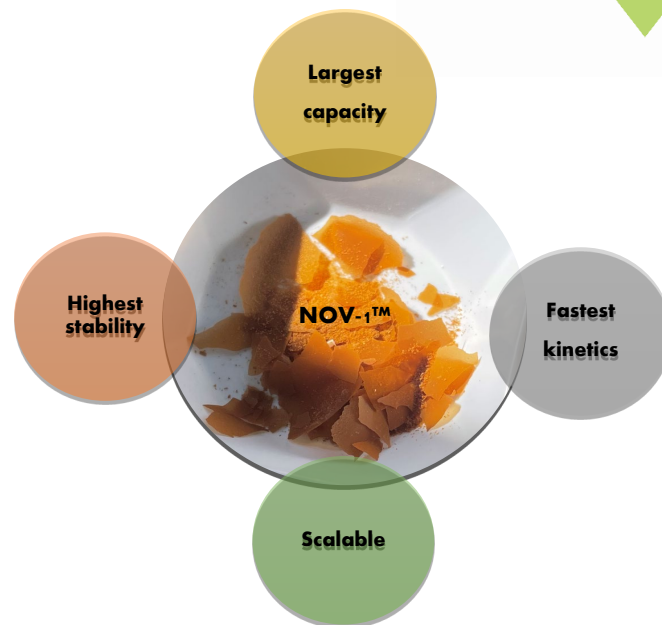
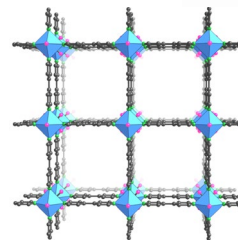
1. **Relative humidities as low as 13-20%,**
2. **Producing clean water at a rate of 15 L per kg of MOF material per day.**
3. **600g of water captured for every 1kg of NOV1**

Projects undertaken or in process:

1. **Innovate UK (Transformative Technologies): Vehicle-mounted AWG device with new MOF material**
2. **Eco-disruptive: AWG system for autonomous irrigation of green spaces**

Personnel: 5

Size: SME



PROPOSAL INTRODUCTION (I)

Vision:

The aim of this project is

1. to develop large-scale AWG systems utilizing our breakthrough MOF material
2. To convert waste-heat/solar energy into pure water
3. Apply the system directly within the process from which the heat was extracted or stored and traded with other users locally.
4. Heavy industrial users across various sectors including food & beverage, cement, paper & pulp, etc.,
5. to improve their water stewardship and enable them to become net water positive.

Motivation:

1. The water scarcity crisis has claimed the lives of many around the world and this number is expected to increase as the UN reports that half of the world's population could be living in water scarce areas by as early as 2025.
2. The air holds 6 times the amount of water found in rivers
3. Eliminate expensive filtration techniques making the systems more affordable.

Content:

1. The aim is to develop a smart AWG system that can be remotely monitored and controlled either by the user or NovNat Tech.
2. Manufacturers for heat exchangers and hydrophobic surfaces using the laser processing.



PROPOSAL INTRODUCTION (II)

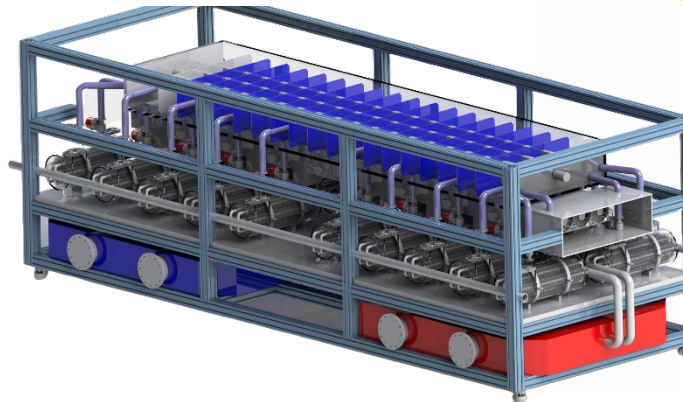
Expected outcome: Fully autonomous AWG system

- Large-scale AWG system (>1000L/day)
- Enhanced condenser design
- Enhanced material-system integration
- Energy recovery enabling 50% energy recovery within system

Impacts:

1. The project will enable NovNat Tech to enter the rapidly expanding AWG market and to revolutionize the AWG landscape that is currently dominated by cooling condensation technology.
2. The AWG market can be expanded to serve industrial clients with a large water footprint that current AWG technologies cannot address.
3. On the manufacturing side, it is expected that MOFs will play a significant role in the water scarcity issue and competitors are expected to emerge within the next couple of years and there will be a need for bespoke manufacturing companies to cater to these needs.

Schedule: The project is planned for 18 months with initial start date set for early Q1 2025.



Current status – 15L/ day to
65L/day (TRL6)

Planned system - 1000L/day
(TRL8) – 1.5m X 2.5m X 1.2m

Heat source – 50° from PVT –
(Water and power)

Enhanced Condenser design
+ Material-system Integration

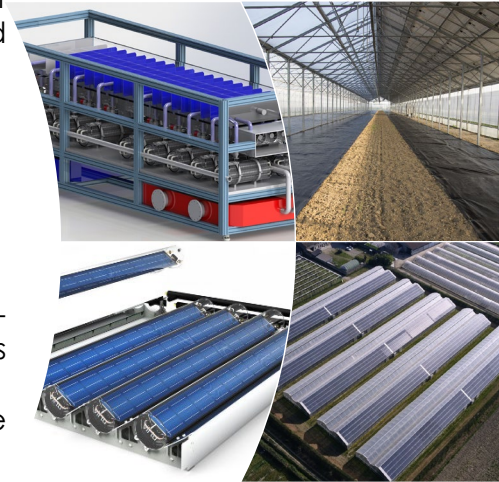
Any Relative Humidity > 13%

PARTNERS

Current Consortium: We have partner in agriculture area to develop a Resilient Agriculture and Power station through structuring a project in a controlled environment to produce food, power and water. We do not yet have any manufacturers onboard.

Partner search:

- Companies with expertise in applying coatings to metal surface or laser-processing to produce superhydrophobic surfaces. (Both R&D and mass production)
- Companies with expertise in different coating techniques, applying ink-like solutions to metal substrates.



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