



Pure Bio Synergy product development

Delivery report for the sWASH & grow project. Coordinated by RISE and co-financed by VINNOVA, UDI program (step 3), Sep 2020 – Nov 2022.

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Deliverable(s):	Planned	Delivered
4.3 Validated Pure Bio Synergy disinfection of water and hands	Mar 2022	May 2022

1. Abstract/Executive summary

(about 1600 characters (incl. spaces) to fit into this page. More space can be added if you don't need all the rows above for authors, co-authors and deliverables)

According to the UN 5 billion people in the world will live in areas where there is a shortage of water by 2050. An increase with 110,000 people a day. Due to climate change and increasing numbers of natural disasters, extreme weather and other critical events we cannot always rely on large centralized treatment plants and water pipes for distribution of water. Neither is it a sustainable option to ship in bottled water. Here our product fits right in, which enables local water purification and disinfection from locally produced energy.

With the help from this VINNOVA UDI3 project we have been able to, in a shorter period of time and with more available resources, develop our (H)unit[®] into a now commercializable product.

It is a robust, offgrid adapted ozone generator, suitable for harsh and humid environments. Built to last with a chemical-resistant feed gas channel and reactor, and with only high quality industrial standard components, it has an expected life-span of 10+ years.

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(Please make sure to update the whole table of contents before saving and submitting the report. These are basic headings to which more can be added if necessary.)

2. Introduction and background

This report is a delivery within the project “sWASH & grow – scaling off-grid WASH innovations”. The project is coordinated by RISE with 40% co-finance from [VINNOVA](#) (the Swedish Innovation Agency).

The objective of sWASH & grow is *“to develop tools that improve the opportunities for innovators and aid organizations to bring more circular, inclusive and sustainable innovations to those in need”*.

The project involves 28 partners from Sweden, Bolivia, Lebanon and South Africa representing private-, public-, academic- and NGO-sectors. The goal is to improve the conditions for innovators (sellers) to be able to meet relief organizations’ (buyers) demands. Through the project, innovative solutions will be tested in real environments, upscaled and exported.

Implementation focuses on:

- Identifying success factors for off-grid solutions.
- Contextualizing methods for testing, demo and validation that respond to buyers’ requirements and meet the needs of the most vulnerable.
- Quality-assured tools for developing and scaling up innovations based on requirements, needs and price.
- Communicating results to stakeholders in the innovation system.

sWASH & grow brings together major global buyers, the innovation system's support functions and the innovation companies, together in a partnership aligned with Agenda 2030 and SDG 17. More specifically, the project contributes to SDG 6 and 9 on clean water and sanitation and will have an impact on SDGs 2, 3, 7, 12 and 13 on zero hunger, health, energy, production, and climate.

3. Purpose and background of this delivery

(specify the purpose/objective(s) and background of the delivery in relation to the project background)

Our (PBS’) part is to contribute with a purification and disinfection unit that could serve as a stand-alone product or be part of a bigger system, i.e. an essential component that greatly enhances the overall function and performance of the system and/or reduces energy and water consumption, maintenance and other costs.

Taken into consideration when developing the product is also operational reliability, simplicity of commissioning and use.

4. Description of this delivery

(what activities were carried out as part of the delivery)

Everything has been permeated by knowledge acquisition and communication.

- Lots of communication with our developers regarding how to best design our product, electrically and mechanically.
- Learning from “the field”, from other players on the market and also learning about the needs of the end user.

Some more concrete steps include:

- Product development
- Adding measuring and control equipment
- Testing out which ozone injection models were the most suitable/efficient for us
- Validation tests at laboratories (from field trials)
- Developing a customized offgrid power supply station
- Developing an IBC tank solution with customized lid

5. Results/Outputs of this delivery

(what are the direct results/outputs from the delivery)

Our product – the (H)unit® – has gone from an immature prototype to a now commercializable product soon entering pre-series manufacturing (during project period).

Some concrete technical steps include:

- Strengthened and improved transformer
- Improved electronics (PCB and circuit board design and components)
- More robust electrical design
- More robust mechanical design, incl. shock and vibration absorption
- New proprietary components that can withstand higher pressures
- Enhanced cooling (cooling coil, design, water pump etc.)
- Solved electrical/technical critical issue that dramatically shortened the life-span of our product
- Starting implementing IoT

General:

- New designed customized offgrid power supply station – enabling us to work “anywhere”
- A complete plug-and-play stand-alone field kit for water purification, including an IBC tank solution
- Getting to know our fellow project partners and companies a bit more
- More involved subcontractors, suppliers and manufacturers
- Prepared series production
- More knowledge about the regulatory requirements
- More knowledge about our place on the market, our niche and our USP’s.

Through the allocation of more financial resources we have also been able to focus more on IP, leading to approved patents in the US and India as well as trademark registration for “PBS” and “(H)unit”.

We as a company has also gotten more insight into this context, i.e. WASH innovations, as well as experience in being a part of public funding.

6. Conclusions and impact

The impact of this delivery is a ready to use, tested product.

Looking over the threshold to commercialization, thanks to this project. The sWASH and Grow project has given us more insight, new input and new perspectives. To have a “bench-mark” has helped us in our overall process.

The sWASH and Grow project has been of great help in financial terms, and also dissemination of knowledge and input/guidance. Moreover some ideas for future collaboration.

7. Appendices

(links, official reports, etc)

- Laboratory reports:
 - 1) tests with sewage water
 - 2) Keg/surface disinfection
- Please visit our homepage under 'News' to see official patent letters, videos, pictures, test results and more. [News \(pbsgeneration.com\)](https://pbsgeneration.com)