Main Organiser

Outreach Partners

Problem Statement Call
Next Generation Sustainable Water Technologies (Phase 1)
Launch Date: 24 January 2024

Problem Statement 1 : Optimization of Water Efficiency for Laboratory Instruments
Statement Owner : Private

Background of Current Process & Challenge Statement
Sample-testing laboratories are integral facilities in many of the technical and business processes across industries, including

- Oil & Gas: To support oil exploration, production, refining, failure analysis, corrosion evaluation
- Healthcare: To diagnose, plan treatment and monitor patients
- Semiconductor: To comply with industrial quality standards, support development lifecycle
- Food production: To support nutritional labelling, food safety evaluations, trace analysis
- Environment: To assess quality of soil, water, air, etc. and the impact on life and environment
- Agriculture: To analyze soil, water, toxins, genomic markers, etc. that affect growth of crops

Deployed across these laboratories are thousands of test instruments, many of which need highly purified water (e.g. Reverse Osmosis water) or tap water for chemical reactions, cooling of systems, washing of test tubes, plates, etc.

As at present, water efficiency is not a prioritized feature of the test instruments. For instance, water may be piped in for cooling of an instrument following which the used water is simply discharged into the sewage system. This occurs even if the water is not tainted and remains relatively clean. Few instruments, if any, perform process water recycling where wastewater is collected, treated and reused.

There is a need for simple-to-deploy close-loop systems that can improve water efficiency of the test instruments. Given the large number of instruments that are utilized across different industries, it may also be feasible to attain economy-of-scale and to offer cost effective systems to the users.

Desired Outcomes
It will be important to offer solutions / products that can do any of the following:

- Process and recycle the water used by instruments. Such close-loop implementation can be especially relevant for water that are used for cooling of instruments and in which there is no chemicals introduced to the water.
- Sufficiently process the water for safe discharge into the drains. This is relevant for water which are used for washing or for chemical reactions, in which chemicals are introduced into the water.
- Extract the heat that is absorbed by water which was used for cooling. To find new use cases for applications in the laboratories.
- Reduce the cost and improve the sustainability of water purification systems in the laboratories.

Requirements

- Cost effective (capital, maintenance)
- Sustainable (low energy or energy generating)
- Meet regulatory requirements if processed water is to be discharged to sea
- Space saving (laboratory space is limited)
- Integrate with different makes of instruments

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Pilot scope

This challenge statement is posted by a leading agritech enterprise. The enterprise has been operating a mid-size genomics test laboratory in Singapore. The laboratory serves users across 19 Asian countries and performs hundreds of tests daily. In the course of operations, the enterprise realizes that water usage can be more efficient and wishes to align with the Singapore government call to enhance water efficiency.

The enterprise is ready to allocate manpower resources, equipment and space for selected provider(s) to pilot and demonstrate technological and business viability. Upon successful piloting, the enterprise will be pleased to engage provider(s) and work out technology adoption arrangement.

Timeline

R2Wi first Water Challenge Call (Closed Door)	NOV 6 13 20 27	DEC 3 10 17 24 31	JAN 7 14 21 28	FEB 4 11 18 25	MAR 3 10 17 24 31	APR 7 14 21 28	MAY 5 12 19 26	JUN 2 9 16 23 30
Preparation for launch of call - Confirmation of statements by users - Sourcing of sponsors - Partner listing - Technology sourcing - emailing of contacts	PREPARATION							
Launch - Online + OnPremise **Submission** - 2.5 months for receipt of proposals **Selection Committee** - Recruit committee members - Announcement of award to be in SIWW			LAUNCH / SUBMISSION					
Selection of technology providers - Joint selection sessions - Negotiation between PS owners and Tech providers					SELECTION			
Award - press release send to SIWW social media - press release send w R2Wi Social media								AWARD