

Main Organiser



Outreach Partners



Nanyang Environment and Water Research Institute



Problem Statement Call

Next Generation Sustainable Water Technologies (Phase 1)

Launch Date: 24 January 2024

Problem Statement 6 : Testing of Groundwater for Oil and Other Contaminants

Statement Owner : Private

Background of Current Process & Challenge Statement

Oil processing facilities regularly need to test groundwater and make sure that it is free from oil and other contents. This is important as quality of groundwater can affect population health, property values, image of community, economic development and overall quality of life¹.

We are now seeking innovations that can perform testing of groundwater automatically. Innovations are to assist in the identification of polluting sources (if any), type of pollutants and alert of potential contamination risks.

Desired Outcomes

It will be important to offer solutions / products that can

- Automatically sample ground water without human intervention.
- Automatically test water samples for oil and other possible contaminants.
- Detect and identify contamination risks early.

Requirements

1. The system is to be capable of groundwater sampling at depth of up to 30m below ground.
2. The system should be cost effective.
3. The system is to be energy efficient.
4. The system should be deployable outdoors.
5. The system is to be explosion-proof.
6. The system should send timely alerts, so as to allow timely intervention.
7. Solution should be at Technology Readiness Level of 6 or higher, that is, the solution has already been tested and verified in a relevant operational environment.
8. Solution proposal to include
 - Process design, technologies and technology providers
 - Detailed scientific principles of the proposed technologies, including detailed comparison with current global state-of-the-art and a brief technology review
 - Technical details on the methodology and technological development of the proposal, including P&ID, layout drawings of the equipment retrofit at D-IVP, equipment specification, etc.
 - Energy consumption projection.
 - Detailed techno-economic analysis.
 - Project team member's expertise, previous related work and experience.
 - Timeline for the project, showing intermediate milestones to be achieved.
 - Expected piloting outcomes, and proposed KPIs.
 - Detailed budget required for the project (broken down into individual categories of manpower, equipment, consumables, travel, consultancy services, others)

¹ <https://www.gwpc.org/topics/hydraulic-fracturing/groundwater-quality-testing/>

