

Feedback on Deployed Technologies

1. Argentum Oligodynamic Online Drinking Water Disinfection Equipment - using Silver Ionization process – National WASH Expert Report

Deployment Details : MVS to Arakeri (8 villages) and MVS to Tolamatti(6 villages) in Bilagi Block, Bagalkot District, Karnataka

Design Capacity

1. MVS to Arakeri

- Capacity : 1,10,00 LPH
- Nos. of HHs catered : 6,669
- Daily requirement of drinking water : 1.15 MLD
- Deployment year: 2018
- Source: Surface water (Ghataprabha river)

2. MVS to Tolamatti

- Capacity : 1,10,00 LPH
- Nos. of HHs catered : 6,141
- Daily requirement of drinking water : 1.35 MLD
- Deployment year: 2018
- Source: Surface water (Krishna river)

Cost (Capex)

- 110 KLPH: Rs. 7.57 lakh

Annual O&M

- **Electrode cost/Year** : Rs. 4.42 lakh (For 3 electrode)
- **Power consumption/year** : 200 W
- **Power consumption cost/year** : Rs. 8,000 to Rs.20,000

Manpower required

- No manpower required for daily operation.
- Skilled manpower from the technology provider required for changing of electrode.

Land requirement

- No separate land required. Installed on ground within a minimum area of 1.5- 2 sqm. It can be mounted on wall also.

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- The amount of dosing of silver is 0.005 mg/l
- Contact time required for disinfection is zero.
- Silver ions work effectively for 52 hours from time of dosing (as certified by the NEERI)
- The efficiency for removing Bacterial contamination is 100%.
- Electrodes can be replaced within 2-4 days by the skilled manpower of technology provider. Other spare parts (motor, inlet/outlet pipes) can be repaired locally.

Feedback from the User/Community

- No change in colour and odour, tests good as there is no chlorine smell.
- The unit has been deployed in 2018. No outbreak of any water related diseases reported till date from past 4 years.
- No issues in cooking as there is no chlorine.
- Capital cost is higher as compared to conventional methods of disinfection, however the O&M is easy and effectiveness of the unit is good.

2. REDO Water Disinfection- National Wash Expert Report

Deployment Details : Sancheti Hospital , Pune

Brief Descriptions:

- Multi oxidant disinfectant liquid with 6 active disinfecting agents - active chlorine, chlorine dioxide, oxygen, ozone, hydrogen peroxide and sodium hydroxide.

Design Capacity

- Upto 7,00 litre of water is disinfected daily.
- It consist dosing pump, flow transmitter and HDPE tank for storing the REDO liquid disinfection.
- The dosing station is in operational since December 2019.
- Source of Water : Ground Water
- Total bacteria count in inlet water: 73×10^2 CFU/ml
- Total bacteria count in treated water: <1(nil)
- Amount of dosing(ppm): 1:1250 (1 ltr in 1250 ltr of water).

User Feedback

- No sludge is being generated.
- No change in colour and odour. Water tested better.
- Treated water is being used directly from the tap for drinking purpose.

Cost (Capex)

- For 7,000 ltrs : Rs. 0.55 lakh

Annual O&M

- **For Mobile water disinfection service** : 4 paisa /ltr
- **Power consumption/year** : 104 kw/year. Dosing unit can be powered with solar power

Manpower required

- 1 No of semi skilled manpower required on weekly basis.

Land requirement

- 0.5mX0.5m

3. IOT based AI/ML driven sensors for online water quality parameters (Tank365 & Water365) -Expert 365- National Wash Expert Report

Deployment Details : State Tamil Nadu, District Selam (5 Villages)

Brief Descriptions:

- Measurement of on-line health, physical and chemical parameters including on-line estimations of bacteria, e-Coli and faecal coliforms using AI-ML cloud.
- The online physical and chemical parameters displayed are: Ph, EC, Turbidity, Oxidation Reduction Potential. These solutions are powered by AI cloud, Apps and Web-interface maintenance.

Design

- The device were installed and working since 2019.
- The technology caters 1300 HHs in 5 villages of Selam district.
- Difference in water sample data reported through sensors and TWARD board report were noticed especially for heavy metals and fluoride.

Parameters

Physical/Chemical/Bacteriological: Ph, EC, ORP, TDS, Total Alkalinity, Temp, Turbidity, Total Hardness, Fluoride, Iron, Lead, Colour, E-Coli, Faecal Coli forms, Free Chlorine and Total Coli forms.

Capex:

Cost per Unit: Rs. 7.50 lakh (includes sensor, monitoring application and cloud charges)

Annual O&M

- Rs. 60,000/Year (includes Insurance, warranty, fortnightly maintenance)
- Power consumptions: 482 kwh/year (including pump, sensor, UV and data transmission)

3. IOT based AI/ML driven sensors for online water quality parameters (Tank365 & Water365) -Expert 365- National Wash Expert Report

- Twofold disinfection system using auto chlorination with sodium hypochlorite and UV disinfection.
- Cost of device on higher side as it requires to install at each tanks. Reduction in costing may be explored.
- Regular power supply is required. The device is not solar powered.
- Calibration of device should be done at regular interval as there are differences noticed in the test results done by the device with State lab test results especially for fluoride and heavy metals.

Feedback from User/Community

- The devices are installed in 2019 and in operational condition.
- It is good device for auto disinfection including chlorination and UV protection.

4. Photometric for analysis of chemical parameters (Photoflex turb) –Xylem- National Wash Expert Report

Deployment Details : Lakshmi Nagar, Masani – Mathura (Uttar Pradesh)

Brief Descriptions:

- Photoflex turb is a portable device for on-site wastewater quality analysis. It's a 3-in-1 device and can act as photometer (for measuring chemical parameters), pH meter and Turbidity meter

Design

- STP-16 MLD, 14.5 MLD and 20 MLD –Lakshmi Nagar
- STP-30 MLD STP- Masani
- Spectrophotometer is being used for analysis.

Parameters

The device can test more than 100 parameters, however at deployed location only 9 parameters (COD, Iron, Phosphates, Sulphates, Total Nitrogen, Total suspended solids, Chlorides, Alkalinity, Silica) are being tested.

- Overall accuracy is 99%

Capex:

Cost per Unit: Rs. 5-10 lakh (based on the model)

Cost of Reagent (For 100 test)

- Rs.0.73 lakh (For 9 parameters)

Manpower requirement

- Semi Skilled

5. Digitally- Enabled smart water supply measurement and Monitoring Systems(IOT Technology)-KarloT-National Wash Expert

Deployment Details : State Tamil Nadu, District Thotthukudi (12 Villages of Udangudi Block)

Brief Descriptions:

- Measurement of quality of quantity of water in rural area such flow, level, pH, TDS, Nitrate and Chlorine

Design

- The device were installed and operational since 2022.
- The technology installed in 13 villages of Thoothukudi district.
- Accuracy of flow meter and level sensor: +/-0.5%.
- No significant change found in residual chlorination results from mobile and Lab report.
- Time interval for updating the data is one minute.

Parameters

Chlorine, Tank level and Flow monitoring in Udangudi Block.

Capex:

Cost per Unit: Rs. 1.65 lakh (for flow and quality monitoring)

Annual O&M

- Rs. 2,400/Year (includes sim recharge and IoT and Software support)
- Power consumptions: 2-3 units/months. Flow meter is battery operated.
- The IoT device is solar powered.

User feedback

IoT installed and running since 2022. No issues have been observed in operation since last one year.

6. iNode WTP software – iNode- National Wash Expert

Deployment Details : Rural Water Supply and Sanitation Department, Bengaluru, Karnataka

Brief Descriptions:

- SAAS product for Hydraulic Design of Drinking Water Treatment Plants in line with the CPHEEO manual

1. Design

- Allows design and proof check of Water Treatment Plant (WTP); estimates WTP Size as well.
- **Benefits of the software:**
 - Easy to understand and correlated design as compared to excel sheet.
 - Design and reports can be generated within an hour.
 - Quick revision.
 - Proof checking/Vetting portal.
 - Tender validation report.

2. Cost of the Software

Subscription based model: Rs. 4.95 lakh /year.

3. The software is being upgraded with the feature of creating BoQ.

Thank You



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