



EVERYTHING ABOUT WATER

India's First Water eMagazine: www.eawater.com/eMagazine

Follow us on:

SEAWATER DESALINATION

INDUSTRY FOCUS - LEATHER & TANNERIES



UB STEELS IS ONE OF THE LEADING MANUFACTURERS OF BOLTED STEEL TANKS AND GRAIN STORAGE SILOS

LIQUID STORAGE TANKS :
All types of liquid / Water can be stored
GRAIN STORAGE SILOS :
For all types of Grains

Quick Assembly/Installation **1**

Low Transportation Cost **2**

Easy to relocate **3**

0% Maintenance Cost **4**

Contact US: UB STEELS

Add: Khasra No. 913/834/338/1/12, Under Railway Line Flyover, Basai, Gurgaon, Haryana - 12200

Call: +91-9999105486, 9999416094

Email: watertanks@ubsteels.com

Website: www.ubsteels.com

IN THIS EDITION



REGULARS

- 04 Editorial Stream
- 06 Global Water News
- 43 Subscription Card – Everythingaboutwater
- 62 Advertisers' Index
- 56 Tender News
- 58 Event Calendar
- 60 Bay Watch
- 52 The Ozone Page – Column
- 54 Unwind

INDEPTH:

- 14 **REDUCING WATER WOES THROUGH DESALINATION**
By SK Sarkar, TERI, New Delhi
- 16 **SAMUDRA MANTHAN ≈ SEA WATER DESALINATION!**
By Dilip Yewalekar and Manisha Kinge, Jain Irrigation
- 20 **SEA WATER DESALINATION FOR MEETING FRESH WATER REQUIREMENT**
By Hari Saran Das, Environment & Safety Advisor
- 26 **DESALINATION, SEAWATER REVERSE OSMOSIS (SWRO)**
By Dushyant Jindal, Hitech Enviro Solutions
- 30 **DESALINATION: GROWTH PATTERN AND DECISION MAKING**
By Manoj Nainani, Egis India
- 34 **OVERVIEW ON WATER DESALINATION**
By Dr. Mayur J. Kapadia, By Dr. Mayur J. Kapadia, Ex GNFC Ltd.

TECH2.0:

- 40 **A SHORT REVIEW ON ASSESSING GROUNDWATER FACILITY FOR SMART SUSTAINABLE MANAGEMENT**
By Abhijeet Das, Research Scholar, C.V. Raman Global University
- 44 **SATELLITE RADAR FOR LEAK DETECTION IN SMART CITY UDAIPUR: ADVANCEMENTS IN PIPELINE MONITORING AND LOCALIZATION**
By Riddhish Soni, Divyang Soni, Kartik Khatik, Dr. Kapil Sharma, Nirmal Chittora, Mukesh Pujari, Navneeta Mathur, Chandrakant Yadav, Navisha Goyal, Rohit Sharma

CASE STUDY:

- 48 **ATLC INFRACONSULTANTS DESIGNS A WATER SYSTEM 25 DAYS AHEAD OF SCHEDULE, PROVIDING POTABLE WATER TO 300,000 PEOPLE IN INDIA**
By Sandra DiMatteo, Bentley Systems
- 50 **VONTRON SEAWATER MEMBRANES ENABLES HIGH-PURITY WATER FOR RABIGH POWER PLANT**
By Dr Liang Songmiao, Time Vontron Technology Co., Ltd.
- 54 **OSMOFLO CASE STUDY FOR GLOW ENERGY, THAILAND**
By Osmoflow

Raybon Chemicals & Allied Products

Out Performing Polymers with Outstanding Service

FEATURES

- ✔ Fritz Filter is the world's first microfiltration system that is NOT pressure-driven.
- ✔ It is designed to treat high volumes of water.
- ✔ The self-cleaning filtration system is capable of filtering up to a 10-micron range
- ✔ Fritz filter is a replacement for conventional sand filter
- ✔ Fritz filters can remove TSS, algae, and other solid-bound parameters without clogging the pores.
- ✔ Fritz filter is ideal for cooling tower side stream filtration
- ✔ It can be used to recover fibre in the paper industry
- ✔ Filtration rate and quality can be improved with the help of coagulant and flocculants dosage.
- ✔ Ideal for prefiltration before UF/RO plants



813, Samanvay Silver, B/s Royal Orchid Central Hotel, Akota - Mujmahuda Road, Vadodara - 390020
chemicals@raybonchemicals.com

www.raybonchemicals.com More Information call us
VISIT OUR WEBSITE 0265-2985733, 2986733

SATELLITE RADAR FOR LEAK DETECTION IN SMART CITY UDAIPUR: ADVANCEMENTS IN PIPELINE MONITORING AND LOCALIZATION

By Riddhish Soni 1, Divyang Soni 2, Kartik Khatik 3, Dr. Kapil Sharma 4, Nirmal Chittora 5, Mukesh Pujari 6, Navneeta Mathur 7, Chandrakant Yadav 8, Navisha Goyal 9, Rohit Sharma 10

Abstract:

This technological investigation delves into the capabilities of leak detection engineering based on satellite radar reflectometry and its confluence with SCADA systems. The focus of this study area is the pipeline infrastructure extending from Jaisamand lake to Titardi in the Udaipur District, with an aim to evaluate the benefits, challenges, and prospective advancements of this remote leak detection technology. The project highlights its imperative role in enhancing water conservation, facilitating risk anticipation, and augmenting infrastructural quality, thereby providing a broader perspective on its potential relevance to the pipeline operation and maintenance project.

Introduction

Udaipur, known as the “City of Lakes,” faces a critical issue with its water infrastructure due to numerous detected leaks, impacting the availability and quality of water for residents and visitors. A collaborative project between the Udaipur Municipal Corporation, PHED and Aumsat Technologies LLP was initiated to inspect the 600 mm diameter pipeline connecting Jaisamand Lake to Titardi Water Treatment Filter Plant in Udaipur city. The 52.8 km pipeline, constructed in 1995 is supported by four pumping stations, transports 525m/minute of water to the Titardi plant daily. Over a three-month period from January 1, 2023, to March 20, 2023, satellite radar technology effectively examined the

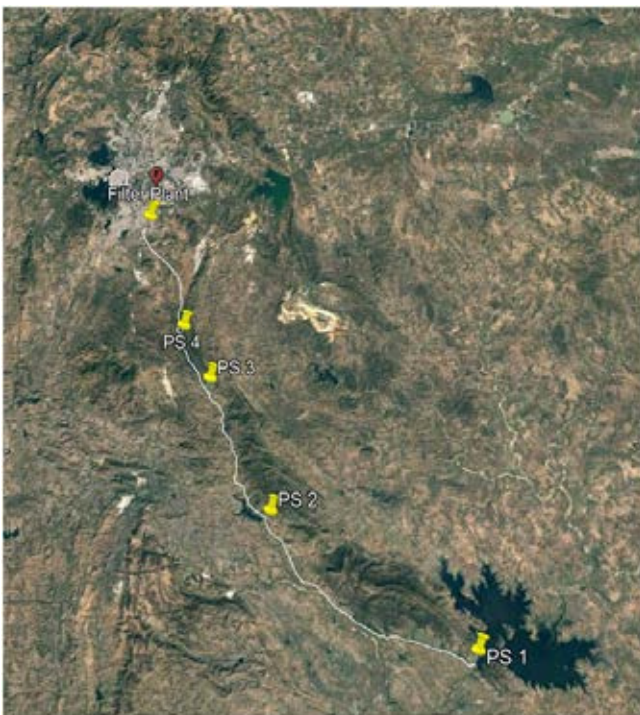


Image 1: Jaisamand to Udaipur Pipeline



Pump Station 1



Pump Station 2



Pump Station 3



Pump Station 4



Water Treatment Plant

pipeline, identifying 11 leak points and validating the leak detection methodology's effectiveness.

This technological advancement sheds light on the importance of addressing these leaks and their adverse impact on Udaipur's water supply. It also highlights the necessary measures to rectify the situation. Notably, a cost-effective remote solution has played a significant role,

resulting in substantial cost savings of approximately 75% in logistical and economic aspects.

Pipeline Digitalization and SCADA integration

The Jaisamand-Udaipur pipeline, constructed in 1995, was transitioned from hardcopy paper maps to digital maps through scanning, GPS surveys, and geocoding. These digitized maps were integrated into a customized SCADA system, enabling real-time monitoring, remote control, data analysis, asset management, regulatory compliance, and enhanced safety and emergency response. This modernization improved operational efficiency, safety, and regulatory adherence.

Radar Satellite deployment

The satellite radar, with its extensive monitoring capabilities, accurately isolated water pixels and detected 11 leaks in a day. This capability facilitated swift identification, localization, and timely repairs, while also serving as an early warning system, ultimately minimizing water loss and ensuring proactive maintenance.



Image 2: Digitalization of Pipeline Maps

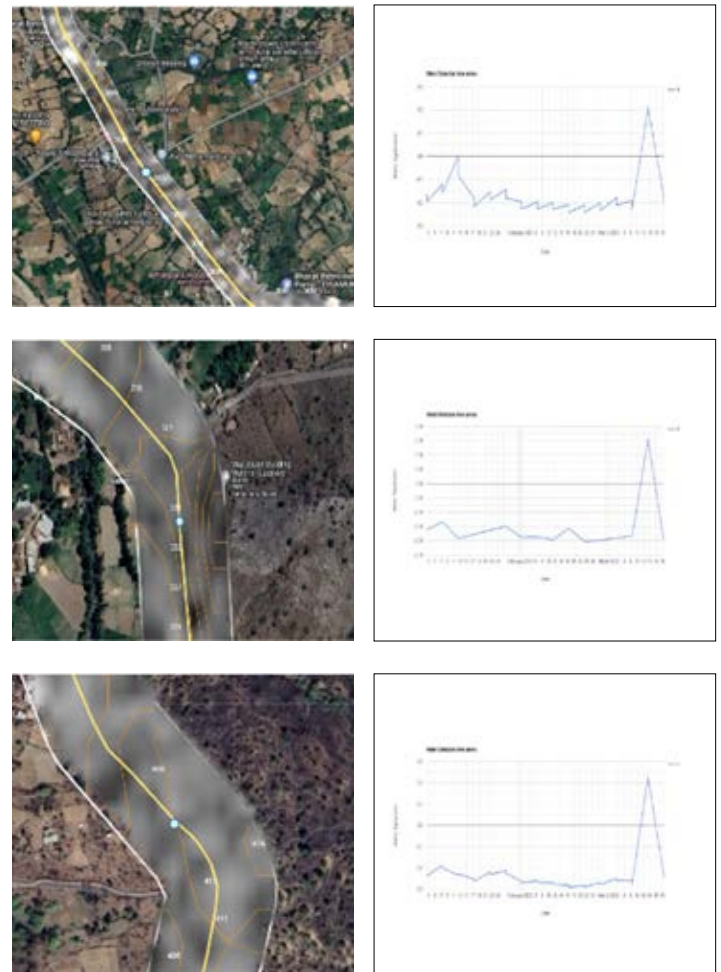


Image 3: Satellite Radar

Validation and Verification

The PHED Operations and Maintenance team diligently validated leaks using thermography and field observations. Their expertise enabled the identification and confirmation of 11 genuine leaks. This meticulous process prevented unnecessary repairs, optimizing leak detection efficiency. The team’s commitment to accuracy played a crucial role in the effectiveness of leak detection and repair operations.

Conclusion

The results of this study provide substantial evidence of the significant

advantages associated with the integration of satellite radar-based leak detection technology and SCADA systems for the Jaisamand lake to Udaipur pipeline. The technology demonstrated a commendable level of precision in the detection of leaks, facilitating swift intervention and reducing the likelihood of water losses. Furthermore, the amalgamation with SCADA systems bolstered real-time monitoring capabilities, enabling proactive leak detection and efficient maintenance planning. Additionally, the technology exhibited its potential in forecasting and mitigating prospective risks, thereby making a valuable contribution to the overall enhancement of the pipeline’s infrastructure.

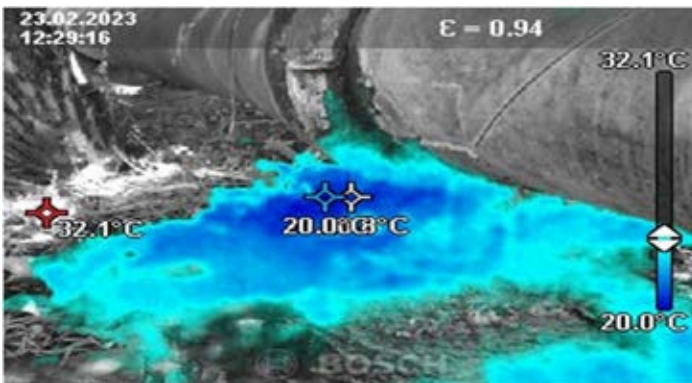
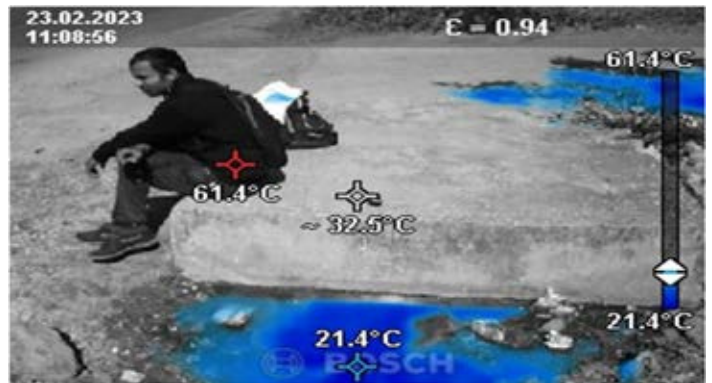
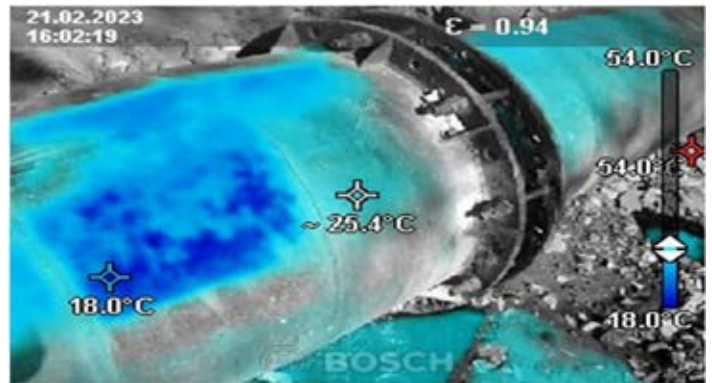
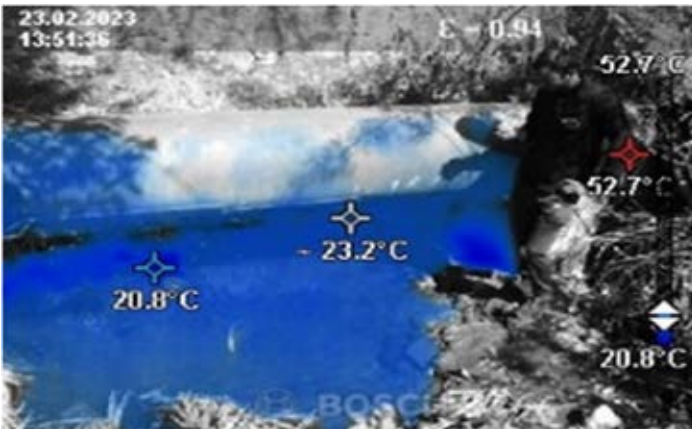
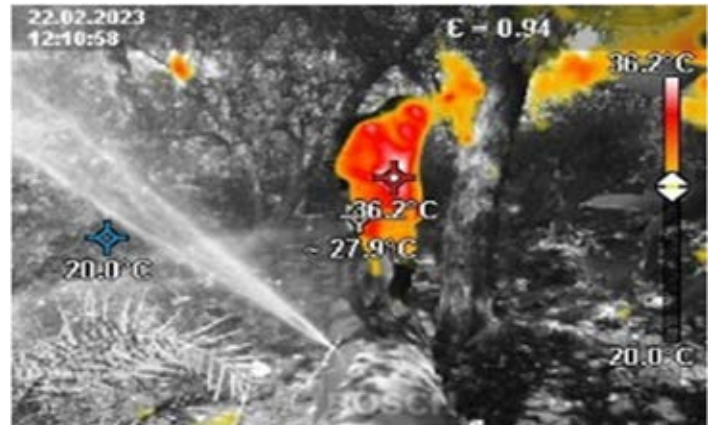


Image 4: Leak Validation and Verification



About the Author

Riddhish Soni: Ex-ISRO Scientist and part of Chandrayaan 2 Mission. He comes with 9 years' experience in Space Application Industry.

Divyang Soni: GIS Analyst at Aumsat Technologies LLP. He has 2 years' experience in Radar signal processing and Geodatabase creation

Kartik Khatik: Field Engineer at Aumsat Technologies LLP. He has 4 years' experience in Operations and Maintainance.

Dr. Kapil Sharma: is Director, iSenses Incorporation Private Limited and Technical Head at Greenfield Eco Solutions Private Limited. He has been former Additional Secretary to PMO office and former Director of the National Institute of Hydrology, Roorkee. He comes with a 40 years of field experience in hydrology.

Nirmal Chittora: National Water, Sanitation & Hygiene (WASH) Expert, Ministry of Jal Shakti Gol, having experience of 38 years in WASH Sector.

Mukesh Pujari: He is Superintendent Engineer, Smart City Udaipur. He comes with a decade of experience in Water, Sanitation & Hygiene (WASH) sector.

Navneeta Mathur: She is Executive Engineer at Public Health Engineering Department (PHED) Udaipur.

Chandrakant Yadav: He is Executive Engineer at Public Health Engineering Department (PHED) Udaipur.

Navisha Goyal: She is Assistant Engineer at Public Health Engineering Department (PHED) Udaipur.

Rohit Sharma: He is Junior Engineer at Public Health Engineering Department (PHED) Udaipur.

To share your feedback or enquire about the author, write to us at deepak.chaudhary@eawater.com

Organized By



18th EVERYTHING ABOUT
WATER EXPO
2023

South Asia's Largest Water Expo & Conference

03-05 | Hall No. 11, Pragati Maidan
AUGUST 2023 | **New Delhi, India**

*Where The Water
Community Comes Together*

**10000+ Focused Business Visitors from
Industries, Trade and Government**

250+ Exhibition & Participating Companies

500+ Conclave Delegates



We cordially invite you to join us at the EverythingAboutWater Expo and contribute to the collective efforts towards a sustainable future for our precious water resources. Your presence and active participation will undoubtedly enhance the overall experience of the event.



Supported By



**BOOK YOUR
SPACE NOW**

Contact Us
EARTH WATER FOUNDATION

7, Khullar Farms, Mandi Road, Sultanpur, New Delhi, 110030,
INM: +91 8588 911033 | E: enquiry@ewaterexpo.com
W: www.eewaterexpo.com

Follow us on