AUM SYSTEMS
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WATER MANAGEMENT WITH PERIODIC AUDITS

AUTOMATION AND MAINTENANCE MANAGEMENT SYSTEMS

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FLOW MONITORING SPECIALIST

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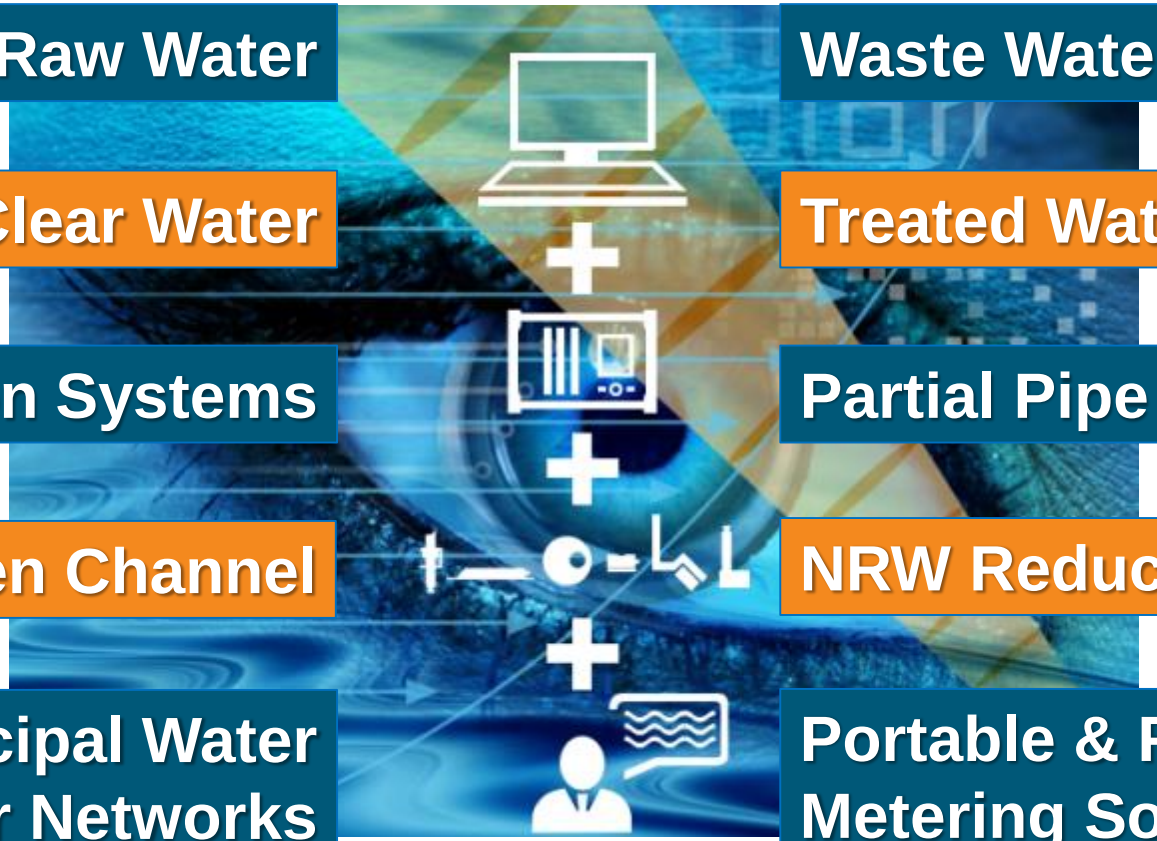
We measure WATER !!



- Raw Water
- Waste Water
- Clear Water
- Treated Water
- Irrigation Systems
- Partial Pipe Flows
- Open Channel
- NRW Reduction
- Industrial & Municipal Water & Waste Water Networks
- Portable & Fixed Metering Solutions

“Measure Better to Manage Better”

ARE THESE YOUR CONCERNS ?

- Is you water network leaking ?
- Is availability of water for supplying during summer months, a concern ?
- Is there a lack of monitoring of water network ?

WHY DO WE NEED TO MEASURE ?

1. Come summer time, water stress in our country increases drastically.
2. Old network pipelines, because of the wear and tear over the years, become susceptible to leaks.
3. These leakages add to the woes of water scarcity in many places.
4. Periodic flow measurements/verifications in water networks, hence, is pivotal.
5. All existing flow meters in the water network must be periodically verified with certified and calibrated portable flow meters.
6. At locations where there is no existing flow meter, temporary measurements for a duration of 1 to 3 days can provide good insight into flow patterns and volumes. This time period can be easily extended if required.

ONE OF INDIA'S LARGEST MUNICIPAL CORPORATION, MCGM, HAS ENTRUSED US WITH MEASUREMENTS TO BE DONE AT VARIOUS POINTS IN THE WATER NETWORK FOR A PERIOD OF ONE YEAR

NOTABLE REFERENCES

1. Flow measurements for a duration of 72 hours at 50 points for Municipal Corporation of Greater Mumbai.
2. Assessment of wastewater and treated water discharges for 15 days continuously with 11 concurrent measurement points for Indian Institute of Science (IISc), Bangalore.
3. 17 water schemes (about 260 points) measured in Kerala, each for a duration of 72 hours with about 15 measurement points concurrently, for KITCO Limited.
4. A total of 27 water schemes measured across 27 towns in Tamilnadu, as part of AMRUT project, for TWIC, Chennai.
5. Flow and pressure measurements at 10 DMA networks for Chennai Smart City.
6. Flow and pressure measurements for Suez Projects Pvt. Ltd., Coimbatore Smart City RS Puram area.
7. About 100 measurement points for water supply schemes in Hubbali and Kalaburagi for L&T Limited.
8. Temporary flow measurements at more than 100 points for IOCL, Barauni and Gauhati.

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WATER MANAGEMENT & AUDITS FOR MUNICIPALITIES & TOWNSHIPS

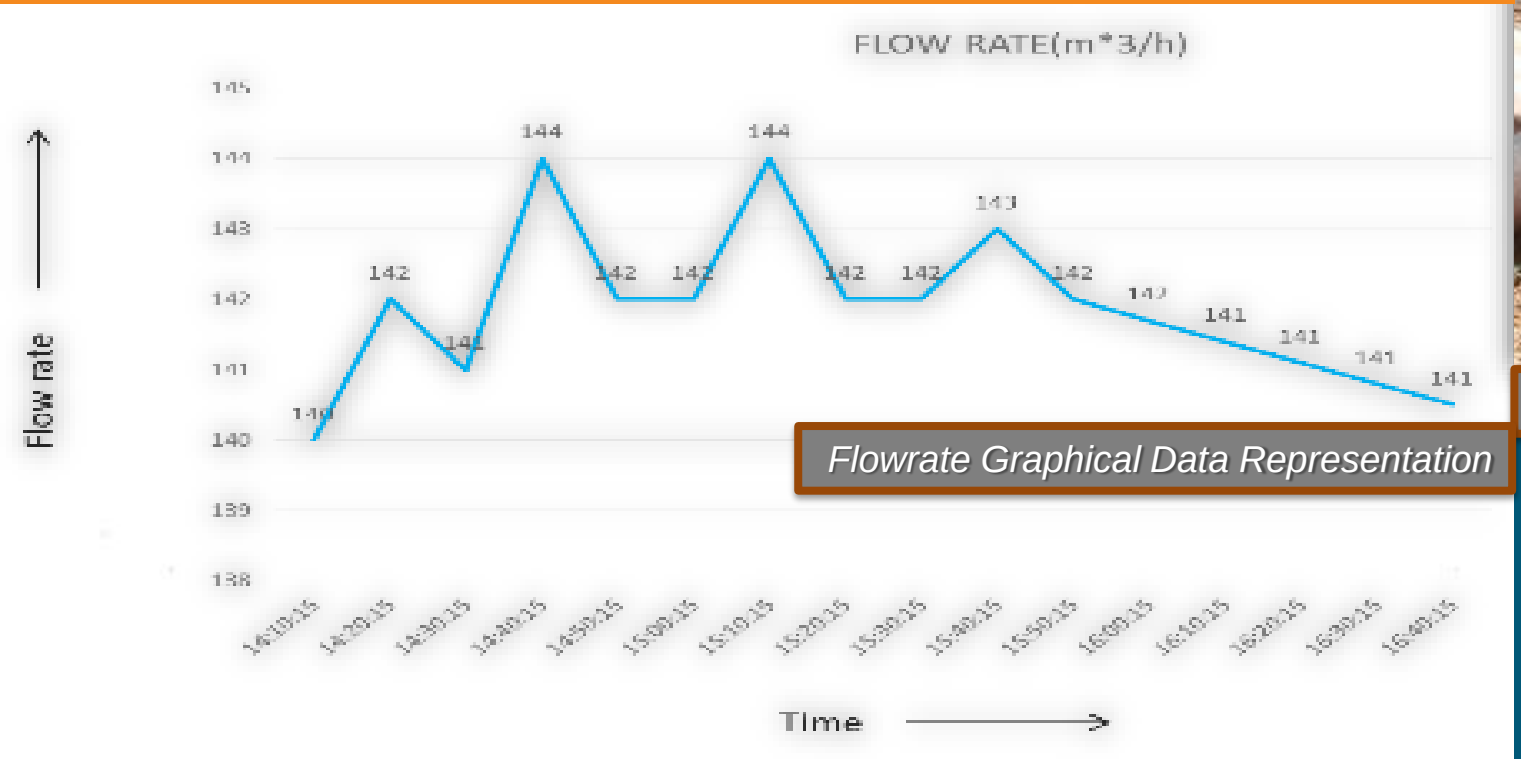
CASE STUDY 1 @ *27 AMRUT Cities, TN*

PURPOSE

- Assessment (Flow & Pressure Measurement) of Water Supply Schemes (WSS) in 27 AMRUT (Atal Mission for Rejuvenation and Urban Transformation) cities in Tamil Nadu.
- Subcontract for Tamil-Nadu Water Investment Corporation (TWIC).

ACTIONS TAKEN

- The number of measurements, on an average of 10 per city were carried out.
- Flowrates and pressure were recorded and graphically represented.



Flowrate Graphical Data Representation

Water Audit @ (AMRUT Cities), Chennai

RESULTS

- At all locations, Totalizer was recorded for 2.5 hours in m^3 and the pressure in bar.

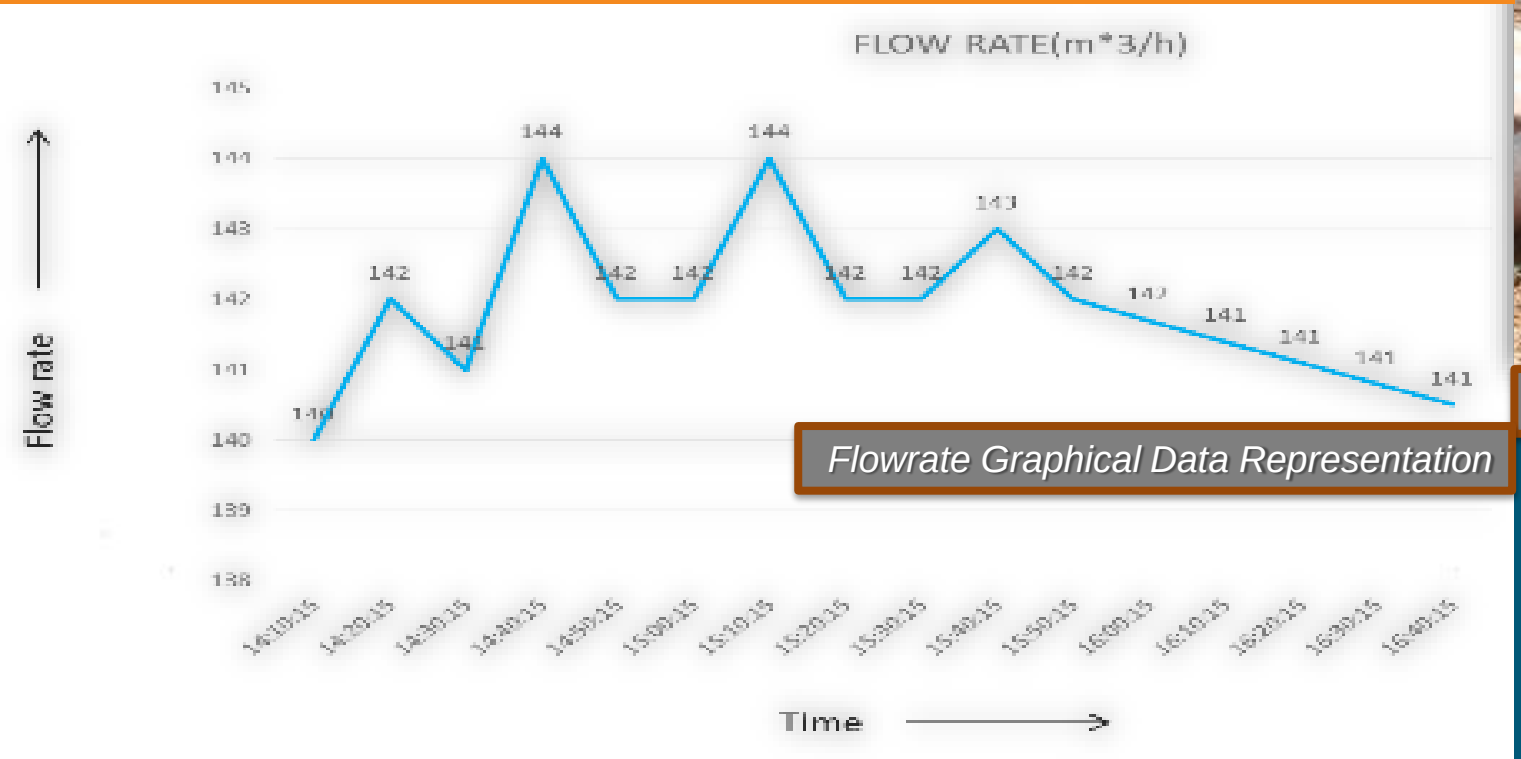
CASE STUDY 1 @ *27 AMRUT Cities, TN*

PURPOSE

- Assessment (Flow & Pressure Measurement) of Water Supply Schemes (WSS) in 27 AMRUT (Atal Mission for Rejuvenation and Urban Transformation) cities in Tamil Nadu.
- Subcontract for Tamil-Nadu Water Investment Corporation (TWIC).

ACTIONS TAKEN

- The number of measurements, on an average of 10 per city were carried out.
- Flowrates and pressure were recorded and graphically represented.



Flowrate Graphical Data Representation

Water Audit @ (AMRUT Cities), Chennai

RESULTS

- At all locations, Totalizer was recorded for 2.5 hours in m^3 and the pressure in bar.

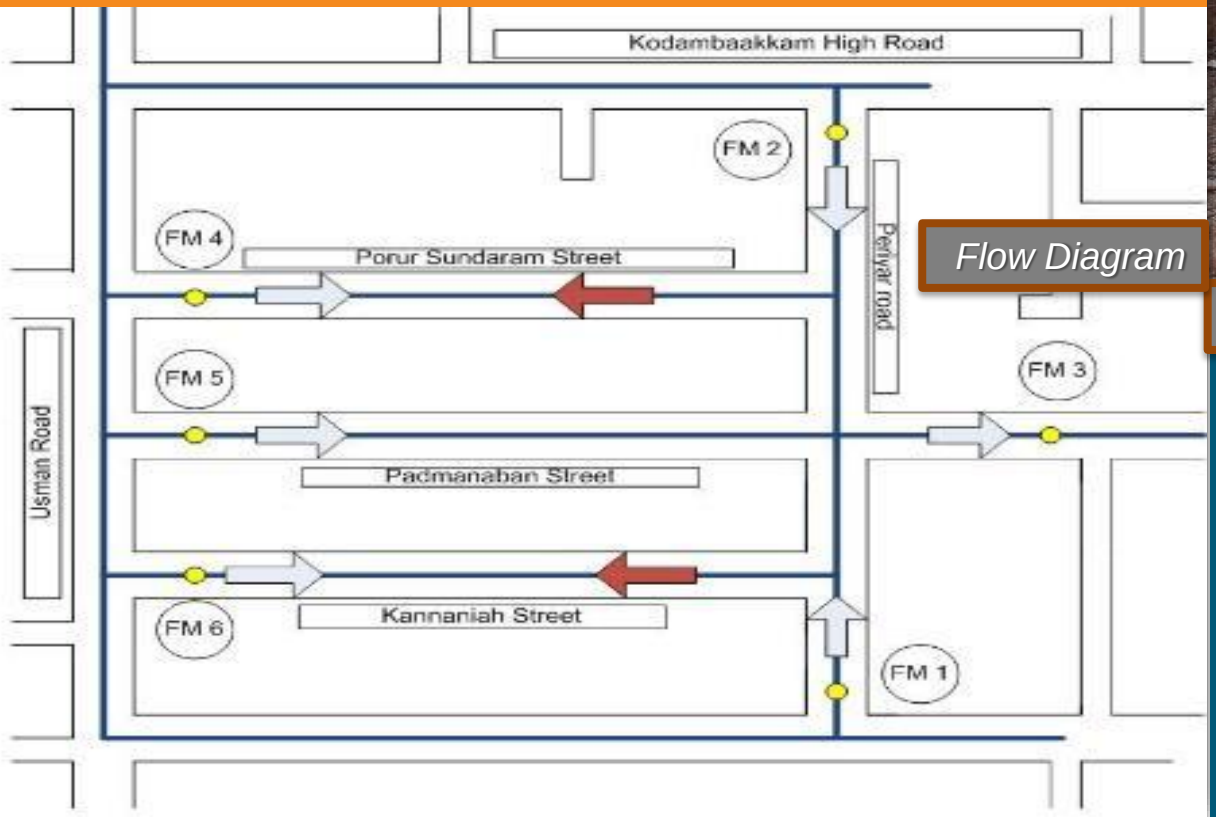
CASE STUDY 2 @ *10 DMA's, Chennai Smart City*

PURPOSE

- Water Audit for 10 District Metering Areas (DMA's) in Chennai under Smart City Mission, Tamil-Nadu.
- Subcontract for Tamil-Nadu Water Investment Corporation (TWIC).

ACTIONS TAKEN

- Water audit for 24 hours at different locations in one DMA.
- Flowrates, pressure, negative totalizer and positive totalizer were tabulated.



Flow Diagram

Water Audit @ Chennai City under Smart City Mission

RESULTS

FM1 Flowrate: m³/h Pressure: bar Positive Totalizer: m³	**FM2** Flowrate: m³/h Pressure: bar Positive Totalizer: m³	**FM3** Flowrate: m³/h Pressure: bar Positive Totalizer: m³
FM4 Flowrate: m³/h Pressure: bar Positive Totalizer: m³ Negative Totalizer: m³	**FM5** Flowrate: m³/h Pressure: bar Positive Totalizer: m³	**FM4** Flowrate: m³/h Pressure: bar Positive Totalizer: m³ Negative Totalizer: m³

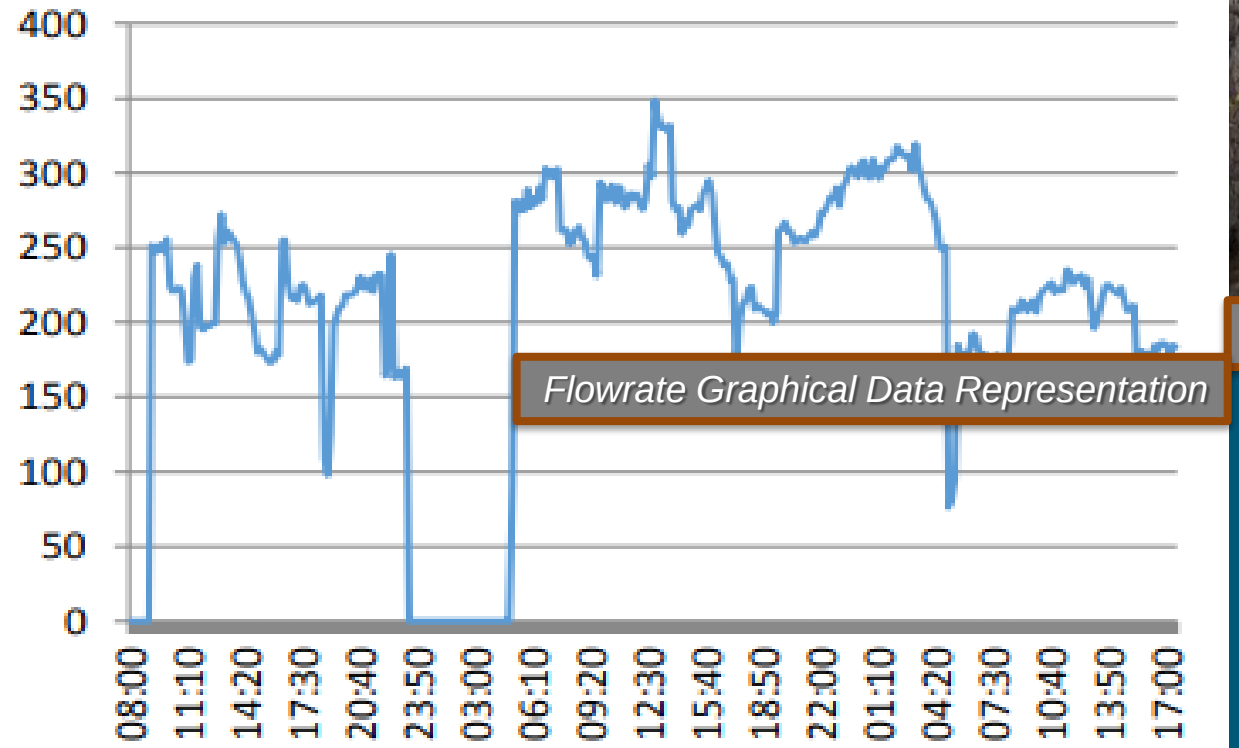
CASE STUDY 3 @ *RS Puram, Coimbatore*

PURPOSE

- Flow Measurement and Pressure Measurement services in RS Puram area of Coimbatore City, Tamil-Nadu.
- Subcontract for Suez Projects Pvt Ltd, Coimbatore.

ACTIONS TAKEN

- Carried out flow and pressure measurement at 11 locations each for a duration varying between 24 hours and 72 hours.
- Flowrates and flow velocities were tabulated and graphically represented.



Flowrate Graphical Data Representation

Flow & Pressure measurement @ RS Puram, Coimbatore

RESULTS

- At all locations, Total Cumulative Flow in m^3 for a duration of 57 hours and the pressure at an instant in kg/cm^3 were recorded.

CASE STUDY 4 @ *ARWSS, Kerala*

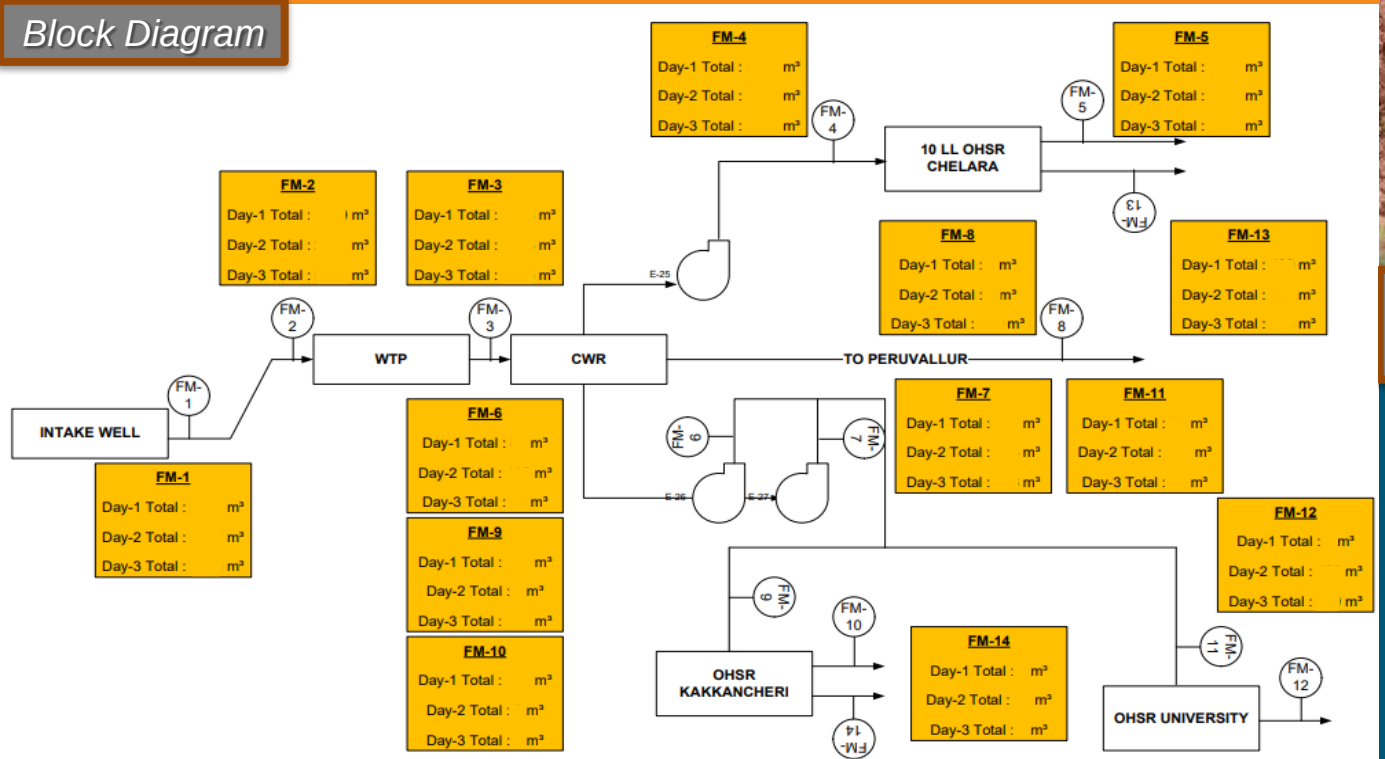
PURPOSE

- Flow Measurement services for Area-wide Rural Water Supply Services (ARWSS) at different locations within 10 districts of Kerala.
- Subcontract for KITCO Ltd, Cochin, Kerala.

ACTIONS TAKEN

- Carried out flow measurement at 14 locations each for a duration of 72 hours.
- Hourly flowrate and eight hourly total flowrate were tabulated.

Block Diagram



Flow measurement @ Pump outlet

Flow measurement @ OHT common outlet

RESULTS

- At all locations, the hourly, eight hourly total and 24 hours total in m^3 were recorded.

CASE STUDY 5 @ *Hubballi & Kalaburagi, Karnataka*

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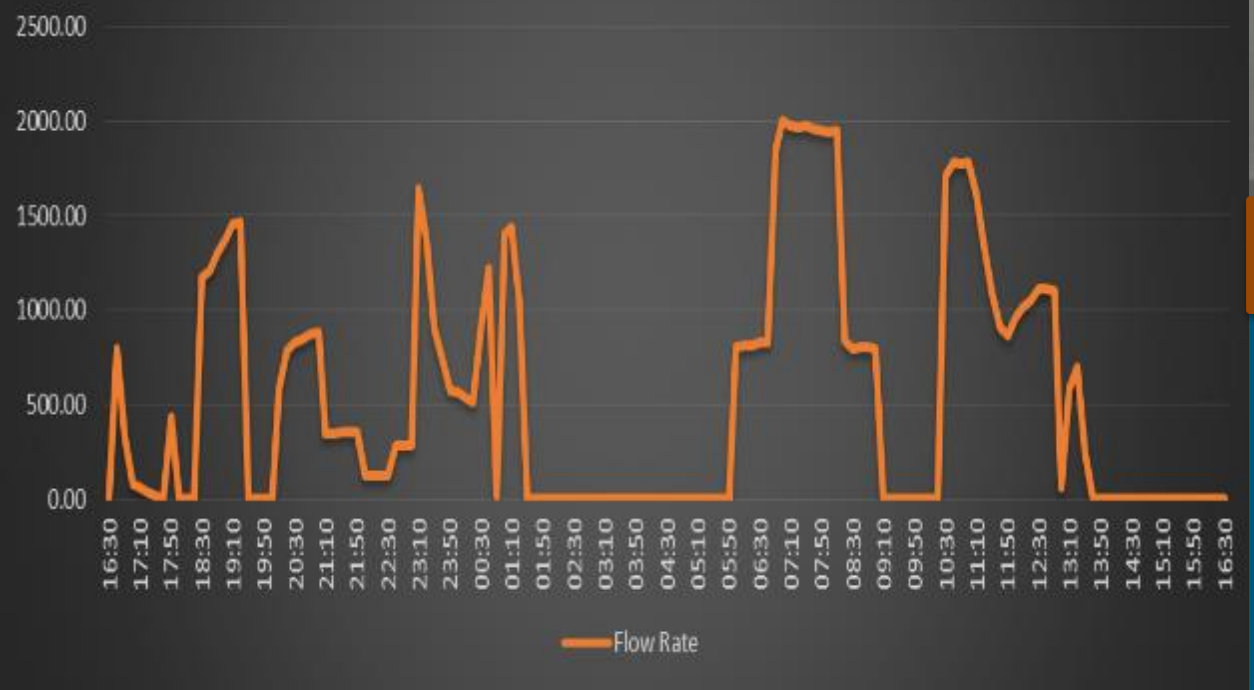
PURPOSE

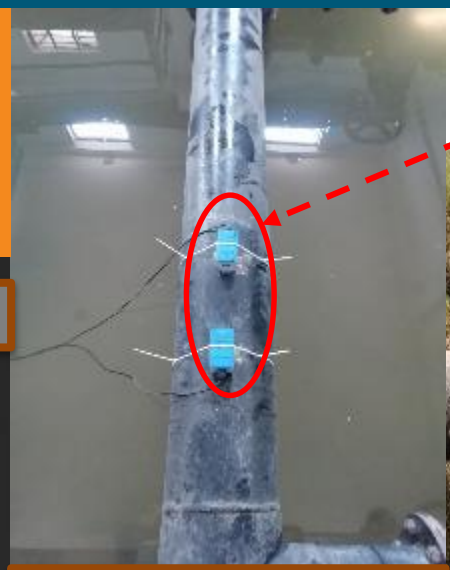
- Temporary Flow Measurements for identified points in Hubballi-Dharwad city and Kalaburagi city for a duration of 24 hours.
- Subcontract for Larsen & Toubro Construction Ltd.

ACTIONS TAKEN

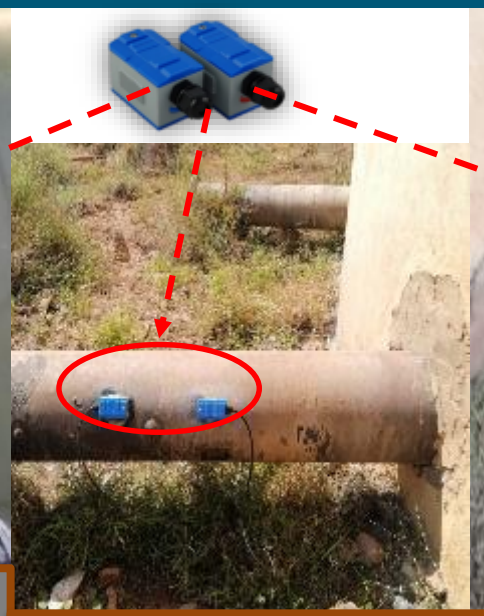
- Carried out flow measurements at water supply lines to measure for a duration of 24 hours at 15 locations in Kalaburagi city and 39 locations in Hubballi-Dharwad city.

Flowrate Graphical Data Representation





Flow measurement @ Kalaburagi



Flow measurement @ Hubballi- Dharwad

RESULTS

- At all locations in the city of Kalaburagi and Hubballi-Dharwad, Flowrates in m^3/h, Velocities in m/s and Totalizers in m^3 were recorded.

INDUSTRIAL WATER MANAGEMENT & AUDITS

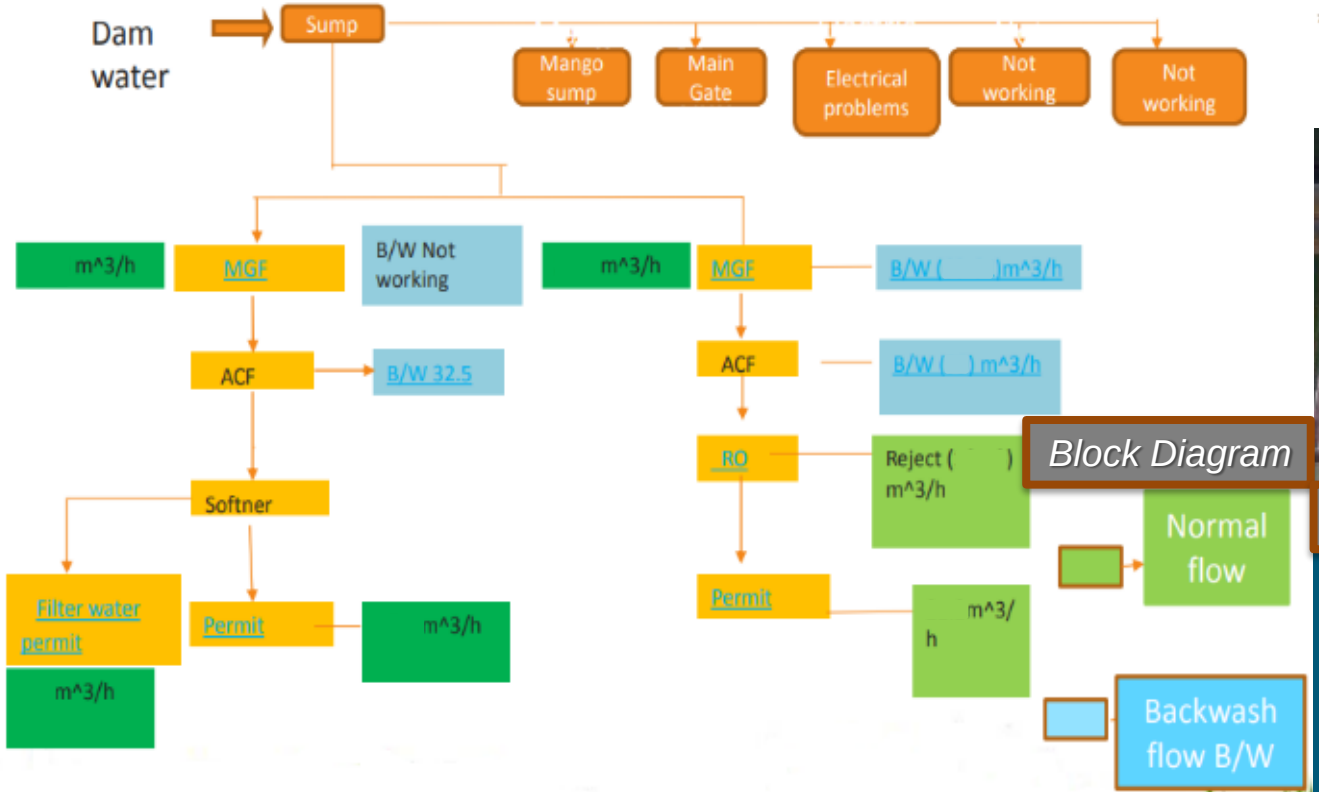
CASE STUDY 1 @ *AB InBev, Hyderabad*

PURPOSE

- Flow Survey at Anheuser-Busch InBev India Ltd, Hyderabad.

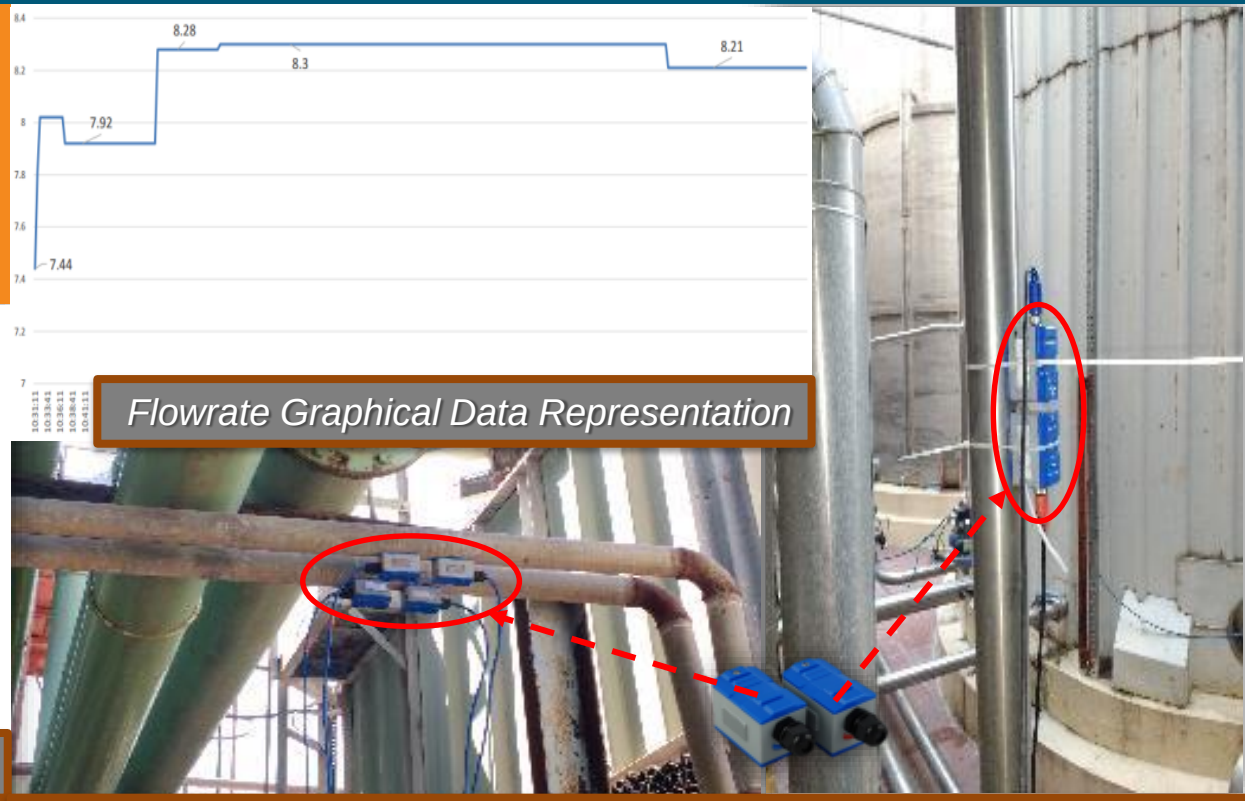
ACTIONS TAKEN

- Carried out flow survey at 30 locations each for a duration of 2.5 hours.
- Flowrates and flow velocities were recorded and graphically represented.



Block Diagram

Flowrate Graphical Data Representation



Flow survey @ AB InBev

RESULTS

- At all locations, maximum Flowrates in m^3/h and maximum Flow Velocities in m/s were recorded and data's were graphically represented.

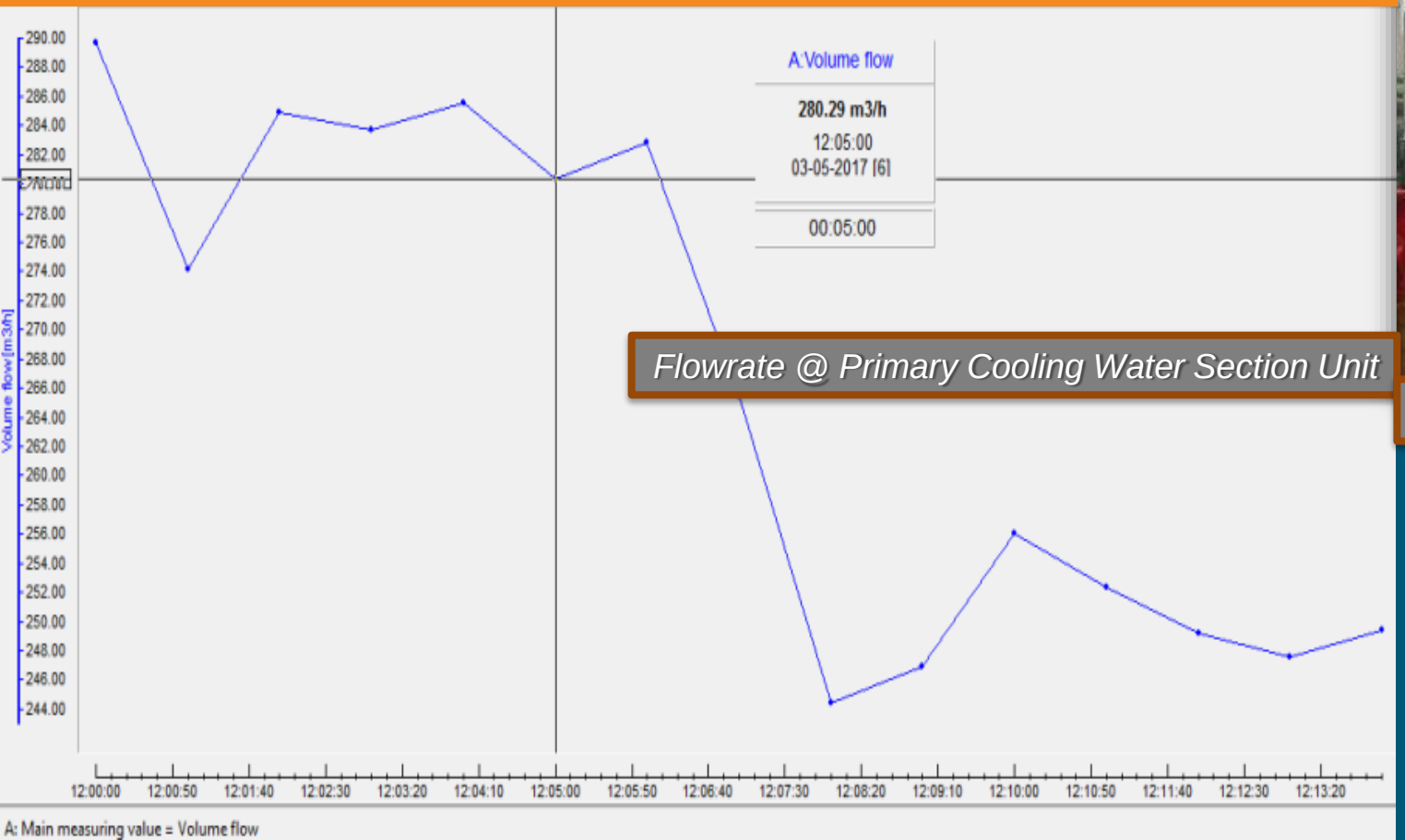
CASE STUDY 2 @ *(2 * 50 MW) HEP, NHPC*

PURPOSE

- Flow Survey at (2 * 50 MW) Hydro-Electric Project, NHPC, Himachal Pradesh.

ACTIONS TAKEN

- Carried out flow survey at 11 locations.
- Flowrates and flow velocities were recorded and graphically represented.



Flowrate @ Primary Cooling Water Section Unit

*Flow survey @ (2 * 50 MW) HEP, Himachal Pradesh*

RESULTS

- The Flowrates and the Flow Velocities at all locations were recorded in m^3/h and in m/s and were graphically represented.

CASE STUDY 3 @ *IPAPPM, Andhra Pradesh*

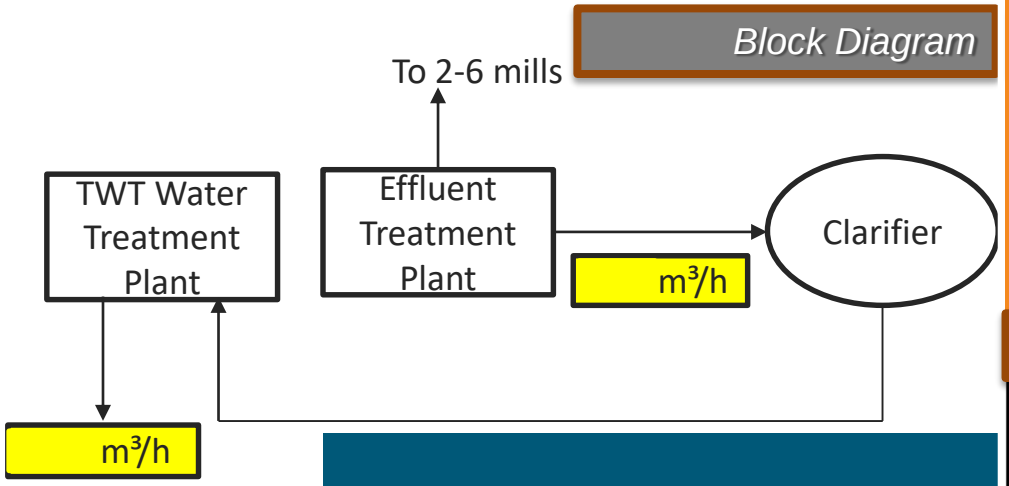
PURPOSE

- Water Audit at International Paper Andhra Pradesh Paper Mills (APPM), Andhra Pradesh.

ACTIONS TAKEN

- Carried out water audit at 20 locations.

Block Diagram



RESULTS

- The Flowrate at all locations were recorded.

CASE STUDY 4 & 5 @ *IOCL Refinery*

PURPOSE

- (5) On-line Flow Measurement of fresh water, service water, ETP treated water & condensate flow at various locations of IOCL Refinery, Assam.
- (6) Flow Measurement of water streams, condensate & BFW for water study by using Clamp-On Flow Meters at IOCL Refinery, Bihar.

ACTIONS TAKEN

- Carried out flow monitoring at 18 major locations at IOCL refinery, Assam.
- Carried out flow monitoring at 20 major locations at IOCL refinery, Bihar.
- Flowrates at every location were recorded.

Flowrate tabulated for one location (Unit Cooling Tower (UTC))

SL.NO	Location/Point Name	Date	Time	Pipe Size(mm)	Flow Rate(m3/h)
1	Unit Cooling Tower Discharge Point 1	16.05.2019	15.05		
2	Unit Cooling Tower Discharge Point 2	16.05.2019	15.20		
3	Unit Cooling Tower Discharge Point 3	16.05.2019	15.45		
4	UCT Return	16.05.2019	16.00		
5	UCT Side Stream Filter Outlet	18.05.2019	10.25		
6	Raw Water to UCT	03.06.2019	17.55		

Totalizer for Service Water Header

S.no	Date	Time	Velocity [m/s]	Flowrate [m³/h]
1	22-01-2019	12:30		
2	22-01-2019	12:31		
3	22-01-2019	12:32		
4	22-01-2019	12:33		
5	22-01-2019	12:34		
6	22-01-2019	12:35		
7	22-01-2019	12:36		
8	22-01-2019	12:37		
9	22-01-2019	12:38		
10	22-01-2019	12:39		
			Totalizer	m3

RESULTS

- At Assam refinery, the Flowrate at all locations were recorded in m³/h.
- At Bihar refinery, the Totalizer at all locations were recorded in m³.

CASE STUDY 6 @ *JK Tyres, Chennai*

PURPOSE

- Flow Survey at JK Tyres, Chennai.

ACTIONS TAKEN

- Carried out flow survey at 58 locations within 6 major units.
- Flowrates and flow velocities at every location were recorded.

Totalizer for Service Water Header

S.NO	DATE	TIME	LOCATION	FLOW RATE(m*3/h)	VELOCITY(m/s)
			NEW VAM CHILLER		
1	18.08.2017	12:00:19	PRIMARY PUMP-1		
1	18.08.2017	12:01:16	PRIMARY PUMP-1		
1	18.08.2017	12:02:19	PRIMARY PUMP-1		
2	18.08.2017	12:05:19	PRIMARY PUMP-2		
2	18.08.2017	12:06:19	PRIMARY PUMP-2		
2	18.08.2017	12:07:19	PRIMARY PUMP-2		
3	18.08.2017	12:10:19	PRIMARY PUMP-3		
3	18.08.2017	12:11:19	PRIMARY PUMP-3		
3	18.08.2017	12:12:19	PRIMARY PUMP-3		
4	18.08.2017	12:15:19	HVAC SECONDARY PUMP-1 DELIVERY		
4	18.08.2017	12:16:19	HVAC SECONDARY PUMP-1 DELIVERY		

RESULTS

- The Flowrate at all locations were recorded in m³/h.

CASE STUDY 7 @ *JSW Steel, Salem*

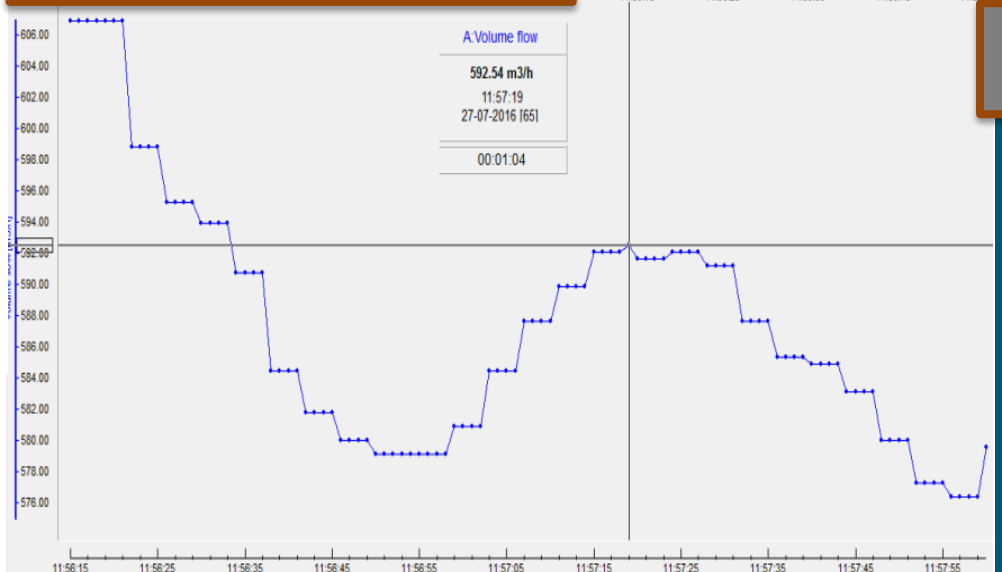
PURPOSE

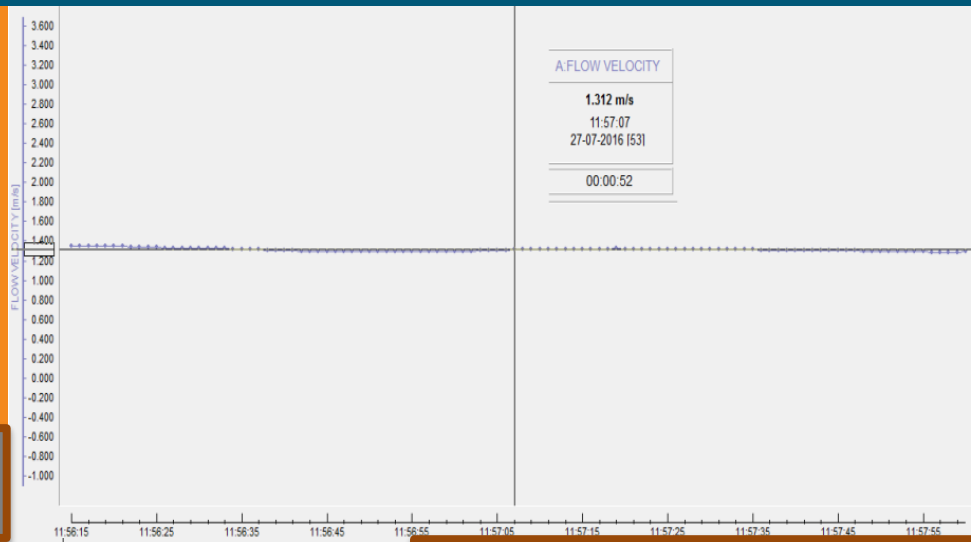
- Flow Survey at JSW Steel Plant, Mettur, Salem, Tamil Nadu.

ACTIONS TAKEN

- Carried out flow survey at 11 major locations.
- Flowrates and flow velocities were graphically represented.

Flowrate @ CCM2 Cooling Return





Flow velocity @ CCM2 Cooling Return

RESULTS

- The Flowrates at all locations were recorded in m³/h and Velocity in m/s.

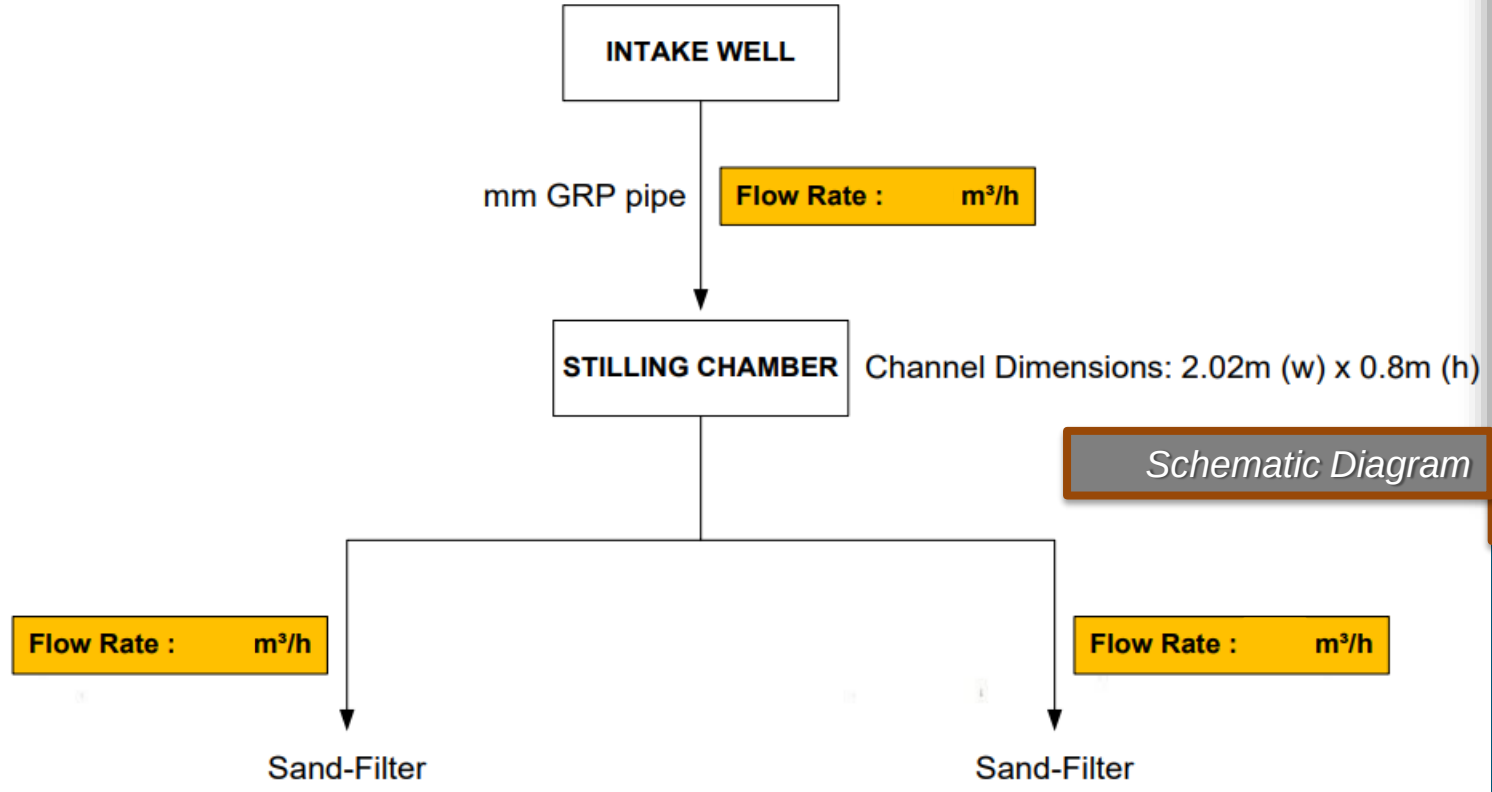
CASE STUDY 8 @ *CPCL Plant, Chennai*

PURPOSE

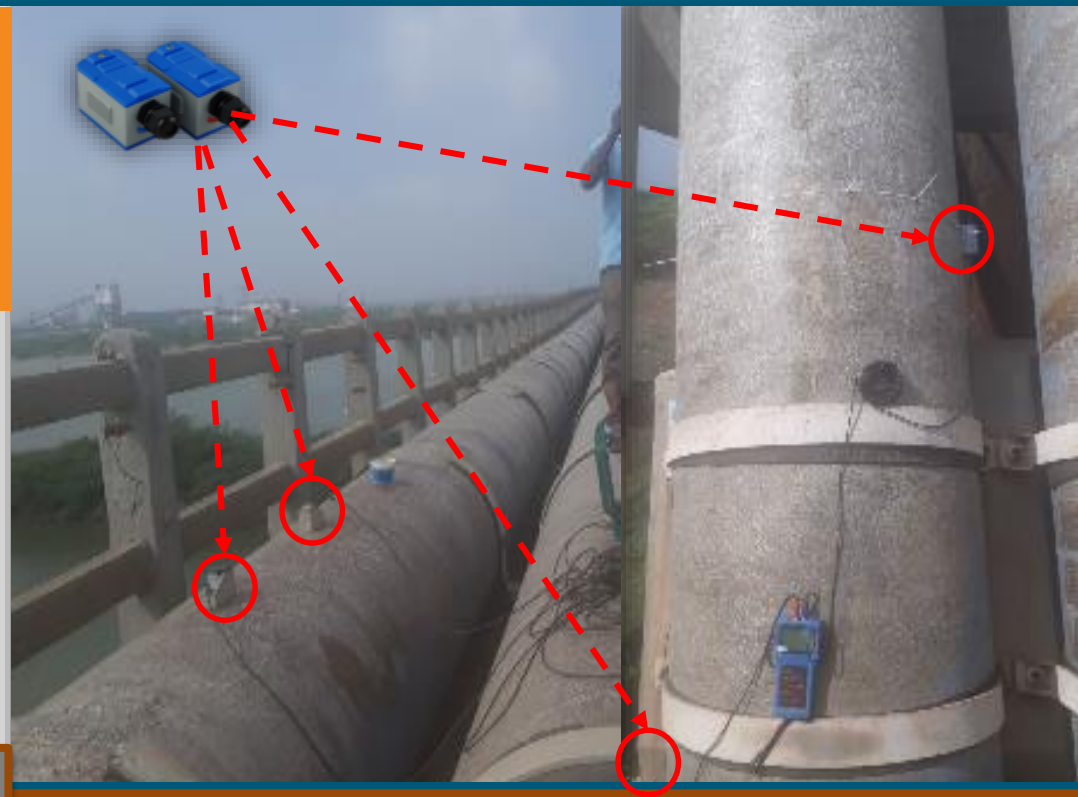
- Water Audit for Flowmeter verification at CPCL Plant, Chennai, Tamil-Nadu.

ACTIONS TAKEN

- Carried out water audit for 24 hours at two locations using Ultrasonic Clamp-on Sensor Technology.
- Analyzed and compared the flowrates in the existing flow meter with our test equipment.



Schematic Diagram



Water audit @ CPCL Plant

RESULTS

- At the two locations, Flowrates were compared with the values of the existing flowmeters at the facility.

SITE PHOTOGRAPHS

DN 500 DI Pipe

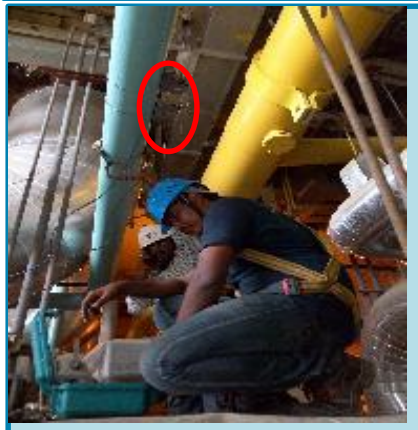
High concentration of particles was observed in the raw water from Intake. The sensor positioning and the method of installation is critical in such a situation.

DN 250 AC Pipe

Our sensors were observed to work perfectly with AC pipe with thickness of 10mm.

DN 600 Premo Pipe

We were able to measure successfully on Premo pipes, similar to RCC pipes in construction. All previously tested instruments had failed to record any reading in this pipe.



DN 200 MS Pipe

Successful measurement conducted at MS Cooling water pipeline in a Power plant.

DN 100 GI Pipe

GI inlet pipe to a water storage reservoir.

DN 150 PVC Pipe

Our meters working in PVC pipes.

CI: Cast Iron; DI: Ductile Iron; AC: Asbestos Cement; RCC: Reinforced Cement Concrete
MS: Mild Steel; PVC: Polyvinyl Chloride; GI: Galvanized Iron; Premo: Similar to RCC

THANK YOU FOR YOUR INTEREST