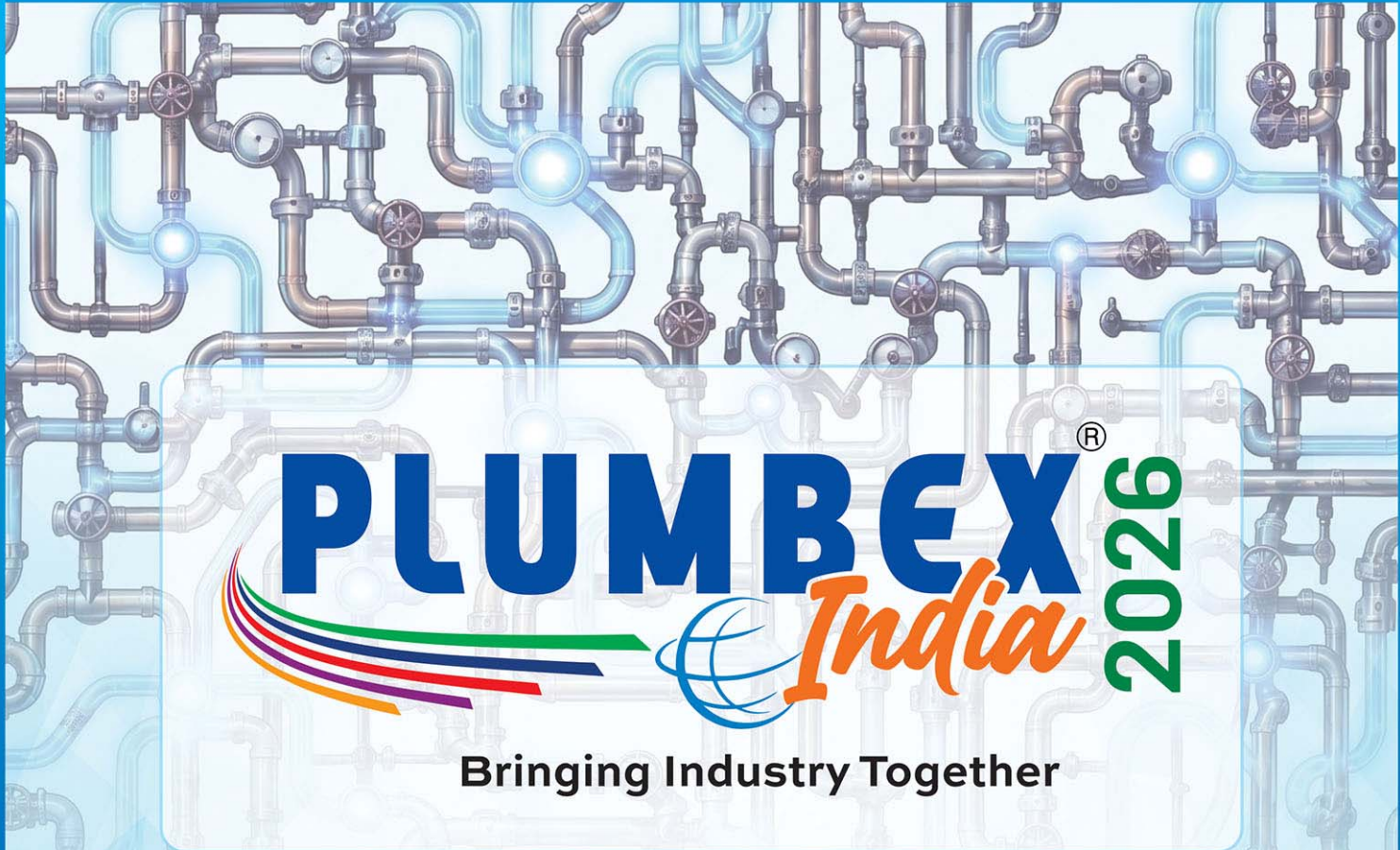


# Indian Plumbing Today

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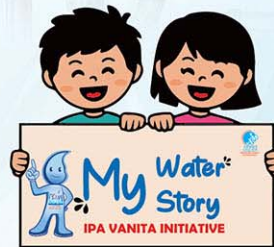
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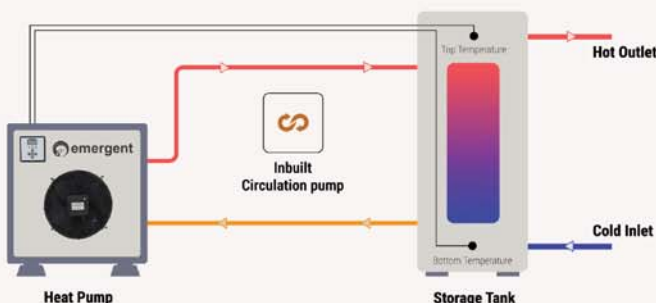
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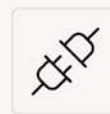
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Dear Readers,

Plumbing is related to health, hygiene and environment of any of the built space in modern time. The human body has 60,000 miles of blood vessels, arteries, veins, capillaries, each calibrated to carry life where it is needed most. Replace blood with water, and that metaphor becomes the very blueprint of a civilised built environment.

Beneath every gleaming façade of India's booming skyline lies an invisible circulatory system, pipes that never sleep, valves that never rest. From the ancient Roman *fistula aquariato* to today's smart pressure-independent control valves (PICVs) that self-regulate flow regardless of system fluctuations, the evolution of this underground engineering has been nothing short of revolutionary. Modern pipes now outlast the buildings they serve, resisting biofilm formation, thermal expansion, and chemical corrosion simultaneously. Ball valves engineered with Polytetrafluoroethylene (PTFE)-lined seats deliver near-zero leakage across decades of operation. Yet what makes this theme profoundly urgent today is India's own reckoning. Urban water systems across our cities continue to lose enormous volumes through ageing, non-compliant pipework. It is a haemorrhage that better pipes and precision valves are uniquely positioned to heal.

And in April 2026, the industry did not just speak, it successfully held **PlumbexIndia 2026**, from 16th to 18th April at BIEC, Bengaluru, which emerged as a landmark convergence of purpose, drawing over 15,000 visitors, 180 exhibitors, and international representation from the US, Germany, Italy, Japan, and beyond. 2 very unique signature initiatives debuted at this edition. **IPA Around the Drop**, a water-design challenge sensitising architecture / engineering students to water-based thinking, and the **IPA Bathroom Challenge**, a live, skill-based installation competition conducted in collaboration with IAPMO and IWSH, were both launched and executed with resounding success. Their complete reports are presented inside this edition.

The momentum does not stop here. The 32nd Indian Plumbing Conference (IPC) with the theme **Water, Sanitation & Plumbing : Operation and Management (Challenges to Solutions)** is scheduled for **17th to 19th December 2026** at **Chennai Trade Centre, Chennai**, a congregation we look forward to with great anticipation.

On the horizon too is the **IAPL (Indian Architectural Plumbing League)** platform, poised to bring architects and plumbing professionals into a shared dialogue that this industry has long deserved and deeply needs. In every pipe flowing silently behind your wall, in every valve that holds back a torrent or releases it with quiet precision, there is science engineering, art all related to plumbing which is essential for Human Life.

Warm Regards,

**Chandra Shekhar Gupta**

IPA National Vice President & Founder Member  
IPT Editorial Board Member



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# Grease Interceptor and Sustainability



- P. Sravan Kumar

The next time you order a yummy benne dosa, or a finger lickin' butter pav bhaji, or an extra cheese burger, while you relish the food, give a thought to the impact you are creating on the planet. Food in general, and Indian food in particular, uses a medium of fat – in any form of oil, fat, butter, ghee, vanaspati, lard, margarine etc., Some of them will be of vegetable origin and the remaining of animal origin. Again, among the vegetable origin, some may be crude and others 'refined'. All these generally called FOG, (fat, oil, and grease), have a disastrous effect on the environment.

Cooking absorbs a maximum of 25% of oil in deep frying, with much lesser absorption in other methods like shallow frying or a simple 'tadka'. After adjusting for absorption and evaporation (maximum of 15%), the remaining FOG accounts for about 40 per cent and above. While a small street side food operator 'tops up' this with fresh oil and continues to use, a more organized outlet will simply 'dispose', often with dire consequences.

## Effects of FOG

1. When FOG enters oil un-intercepted, initially it contaminates the soil, with the agricultural produce grown there having high chances of being carcinogen laced, impacting the health of humans and animals consuming such produce. Continued discharge into the soil renders it unfit for agriculture or construction, with a further possibility of the FOG entering the sub-terranean aquifers, altering the quality of ground water, make it unusable or

harmful for consumption or agriculture.

2. FOG, without interception, when enters a drain network, over time, causes choking of drain pipes, corrosion, and possible rupture or leakage, with a potential of cross contamination between waste water and fresh water, causes foul smell, with their known health impacts.
3. If these substances enter any water body – lake, stream, river or sea, it immediately alters the water quality, create chemical oxygen demand, make the water unfit for irrigation or consumption by humans or animals, and challenge the aquatic organisms' ability to reproduce and survive. Refined oils or more dangerous than crude oils, and vegetable oils are less toxic than animal fats.

## Grease interceptor – small in size, big on impact

As the name suggests, a grease interceptor stops the pollutants – floating or settleable, from entering the drainage system and flow further into the municipal sewer line or get into the soil. Its functioning is pretty simple – it slows down the flow of (hot) greasy waste water, breaking it into three layers – the oil and grease floats to the top, solids (sludge) sinks to the bottom, with only clear water, flowing through baffles for further filtration and allow it to enter the sewer line. This appliance protects the pipelines, prevents backups and ensures you have a healthy working environment around.

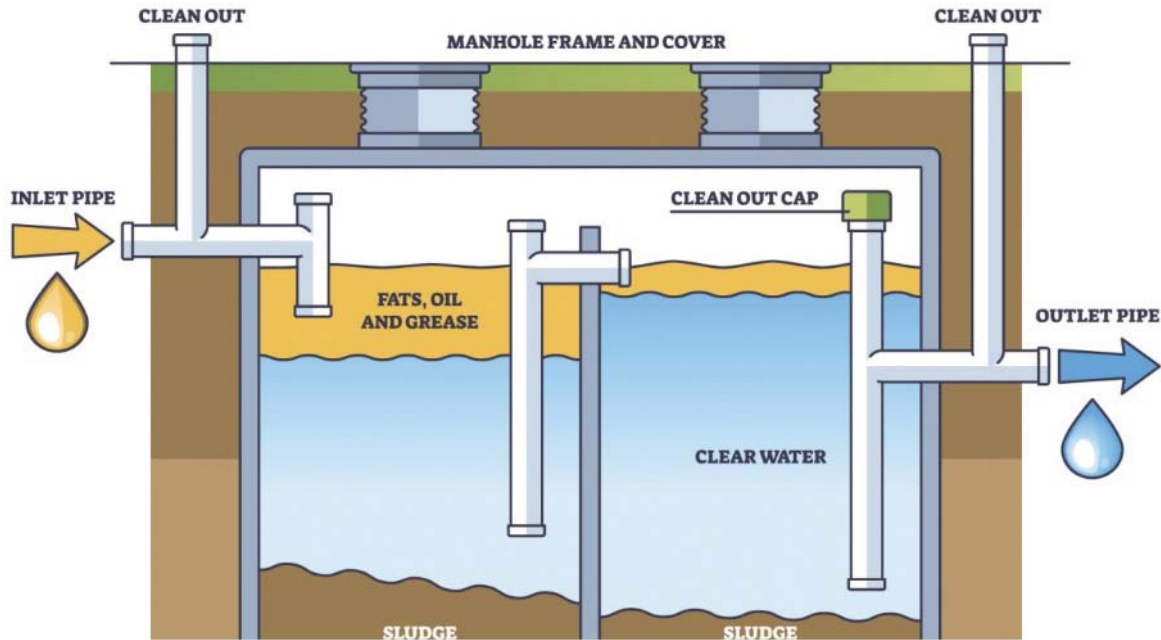


Fig 1: Typical section and working of a grease interceptor

### Types of grease interceptors

To avoid confusion and ambiguity, a smaller sized appliance is called a grease trap and a larger one as a grease interceptor. The end use of both is similar, the function may slightly vary.

Passive grease traps; these are also called Hydro mechanical grease interceptors. These are rated for low volume, ideal for small restaurants, installed under the sinks, or within the kitchen, use baffles, flow control and air entrapment to function.

Automatic grease interceptors; also intended for indoor use, these automatically skim and collect the accumulated FOG into a container, controlled through a timer for disposal. While these minimize manual intervention, they are expensive.

Gravity grease interceptors; designed for large volumes, they depend on settling down as a principle to separate the elements. The oils float, sludge settles down, and the clean water flows through, since the retention time is pretty much long. These should be installed outdoors, either buried down, or suspended, as per the overall plumbing design, suitable for large kitchens, food courts and malls.

There are bio-remedial grease digestors too, however, they use a bacterial medium which consumes the grease, and hence are not to be put into same category of grease interceptors.

To avoid confusion and ambiguity, a smaller appliance is generally called a grease trap and a larger one as a grease interceptor, with no change in their role. It is essential that the larger ones are installed outside the kitchen to prevent shut down during cleaning and to prevent foul smells in the kitchen.

A grease interceptor can be constructed on site in civil work with stainless steel components as a preferred mode, or by using mild steel components. These function on a bucket-lift system, wherein, periodical cleaning is through lifting the pollutants through bucket tied up to a chain. However, multiple options are now available in plastics such as PVC and Polypropylene, offering light weight choices, besides convenience of excavate-install-bury and use.

### Capacity planning of a grease interceptor

Since the grease interceptor impacts several factors such as space, location, operation, maintenance and investment, it is essential to choose the right size of grease interceptor. A smaller than required size is more prone to malfunction and calls for more frequent pump-outs, and a larger one occupies more space and involves a higher investment. Many countries have well laid down stipulations on their capacity and sizing, whereas in India, it is still done based on experience and need, more so due to the diversity of culinary practices, variety of ingredients and the resultant variations in the grease and sludge discharge from the kitchens.



Fig 2: Under sink grease interceptor (for small kitchens)

Based on the key parameters of flow rate, (generally in gallons per minute), grease retention capacity, and

retention time, (the time required to separate the mixture into water, sludge and grease – with a universal standard of about 24 minutes), capacity planning of grease interceptors can be done on any of the following methods:

- 1. Volume method** (based on the fixtures); this is normally used for smaller outlets preparing limited menu. The total volume of all sinks is arrived at, and adjusted for actual content, by reducing for the dishes inside the sink, which gives the actual water in all sinks put together. This volume is then adjusted for the desired drainage period (generally 1 to 2 minutes), to identify the GPM required. Based on this figure, the grease interceptor should be equivalent to, or the nearest higher capacity should be opted for.

**Example: Based on the sink volume**

20 gallon sinks x 3 nos.	60
30 gallon sinks x 1 no.	30
50 gallon (three sink unit) x 1 no.	50
Total theoretical volume	140
Adjusted realistic volume @ 70%	98 gallons
Ideal size of grease interceptor	100 gallons

**Example: Based on fixture flow rate**

Fixture	No	Flow rate - GPM	Volume	Average multiplier	Net volume
Floor drains	12 nos.	7.5	90	0.10	9
3 compartment sinks	2 nos.	2.5	50	0.25	12.5
Pre rinse units	2 nos.	15	30	0.25	7.5
2 compartment sinks	2 nos.	10	20	0.25	5
1 compartment sinks	4 nos.	5	20	0.25	5
Hand wash sink	3 nos.	7.5	22.5	0.20	4.5
					43.5 GPM
Ideal size of grease interceptor					50 GPM



## 2. Seating capacity method

There are established standards of the gallons of water per meal, which is taken as an indicator. Under this method, sizing is done as follows:

Number of meals per hour x flow rate per meal x retention time x storage factor

Example:

A 100 seater fine dining restaurant with an occupancy of 70%, with an average meal time of 1 hour =  $100 \times .7 \times 1 = 70$  meals per hour

Meals per hour	Average flow rate	Retention time	Storage factor	Result
70	6	1/2 hours	8 hours	1680 gallons in 8 hours

Ideal size will be  $1680/8 = 210$  gallons of liquid per hour grease interceptor

It is prudent to opt for a slightly larger size of grease interceptor for a long, hassle-free functioning and to protect the kitchen environment. Modern, factory-made grease interceptors come with multiple options of sludge holding and grease arresting volume, and many leading manufacturers offer on-line calculators for arriving at the right size.

### Maintenance

Grease interceptors can be maintained either by bacterial remediation products or by emulsifiers. In case of the first, the grease-eating bacteria will establish a colony within the interceptors and regularly consume the grease. Emulsifiers further liquify the FOG, to reduce its density, for a free flow of waste water. Ammonia, white vinegar and acetone are effective in cleaning the surfaces of the grease interceptors.

### Challenges

One of the foremost challenges is the location, especially for larger ones. Outdoor space is normally unavailable, and when it is, comes at a premium, and it is not possible to instal them indoors, due to floor rise constraints. One way to overcome is to instal under-sink grease traps, and then interconnect them to the main drain-out.

A second challenge is the maintenance. It calls for a special skill to extract the sludge and grease from the interceptor, without spilling it all over. Due to the issues of hygiene and foul smell, it is difficult to find skilled people to carry out this job. Neglecting for a period beyond the regular time-frame will lead to overflow, fouling the entire environment.

Third challenge is the safe disposal of the extracted grease and sludge. It is desirable to hand it over to the local / municipal waste collection agency for safe

disposal; dumping in a garbage yard negates the effort, and simply transports the problems from one spot to a slightly distant spot.

Fourth, yet, the most important challenge is time. Unless cleaned in regular timelines, the grease interceptor leads to overflow, when it is too full of accumulated grease and solids, which impacts its ability to separate FOG from waste water. Unless timely intervention is attended to, this overflow will result in grease spilling over into the drainage system.

Fifth, and a dangerous challenge is to identify generation of toxic gases. An ill-maintained grease interceptor builds up and releases methane, hydrogen sulfide, carbon monoxide, carbon dioxide, and other gases, causing foul smell at the least to respiratory issues at their worst.

Sixth challenge is in compliance requirements. You should check with your local FSSAI rules and the conditions imposed by the Pollution Control Board. Many countries have evolved strict standards and codes for grease interceptors, whereas in India, it is an integral part of the hygiene and sanitation requirements.



Fig 3: A badly managed grease interceptor



## Sustainability benefits

### 1. Building protection

By ensuring the waste water is not blocked, it ensures that there is no water damage to the structure, protecting the strength, maintain the plumbing and especially drainage infrastructure.

2. Collected grease is generally accumulated and converted into bio-diesel, thereby reducing the pressure on extraction of fossil fuels.

3. By arresting FOG and allowing only waste water into water bodies, contamination of water sources is prevented, which in turn, protects the aquatic life-systems.

4. By cutting down the need of clean-up, the carbon foot print involved in anti-pollution drives is reduced, as well as it reduces emissions of methane gases from land-fills.

5. By re-cycling the accumulated waste oils into detergents, cosmetics, as ingredients in animal feed and bio-diesel, and more, extraction of natural minerals is reduced to that extent as well as land-fills.

## The 25 to 100 rule of happiness

The recommended practice is to clean up the grease interceptor when the floating mass is around 25 per cent of the total depth. This gives a perfect scope for thorough and deep cleaning, and leads to trouble-free operations.

A much neglected, much required essential appliance brings in benefits of work-place health and operational efficiency balance, protects the plumbing system of the building, enhances the life of the STP, slows down the corrosion or blockage of municipal sewer system, protects soil by preventing contamination, protects water bodies and the aquatic life. Besides all these, the food business operator can feel proud of complying to the municipal and local bye-laws and enjoy peace of mind.



### P. Sravan Kumar

Co-Founder of Excellence Hospitality  
Chairman, IPA Hyderabad Chapter

P. Sravan Kumar is Co-Founder of Excellence Hospitality, a consulting firm based at Hyderabad. His domain expertise includes back of house and facility planning for hotel projects, commercial kitchen design for hotels, stand alone restaurants, food courts, institutional, healthcare and religious entities. He is qualified in Hotel Management, followed by post-graduation in environmental law, consumer law and arbitration. He is Chairman, Indian Plumbing Association, Hyderabad chapter, and is also Vice-Chairman, Ethics, MOA and elections committee of FSAI. He is also Co-founder of Hospitality Consultants Forum, is an academician, professional speaker, and an author.



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SCAN FOR MORE DETAILS

# Intelligent Leak Detection and Smart Water Management in Modern Plumbing Systems



## Leveraging Digital Monitoring, Predictive Analytics and Automated Controls

- Jitender Thirwani

### Introduction

Water leakage remains one of the most persistent challenges in plumbing systems across residential buildings, commercial campuses, and urban infrastructure. Studies across multiple urban utilities suggest that 20–35% of treated water is lost due to leaks, pipeline failures, and inefficient plumbing systems. In multi-dwelling residential buildings, a large portion of these losses occur within internal plumbing networks where leaks remain unnoticed for extended periods.

Traditional leak detection approaches depend primarily on manual inspection, complaint-based detection, or visible structural damage. Such reactive methods often identify leaks only after substantial water loss has already occurred.

However, advancements in digital monitoring, smart metering technologies, and data analytics are enabling a shift from reactive detection to proactive and predictive leak management. Modern plumbing infrastructure increasingly integrates real-time monitoring, anomaly detection algorithms, and automated control mechanisms that help identify leaks early and prevent water wastage.

This article explores how smart water monitoring, predictive analytics, district metering concepts, and automated controls are transforming leak detection into a critical component of intelligent water management.

### The Growing Challenge of Water Loss in Buildings

Residential communities and large building complexes typically rely on a multi-layered water distribution system consisting of:

- Underground supply pipelines
- Storage reservoirs and overhead tanks
- Pumping systems
- Internal plumbing networks
- Individual dwelling unit pipelines

Over time, factors such as aging pipelines, installation defects, pressure fluctuations, and material degradation contribute to leakage.

Common causes of plumbing leaks include:

- Corrosion in pipelines
- Excessive water pressure
- Loose joints and fittings
- Continuous flow from faulty fixtures
- Underground pipeline damage
- Tank overflow incidents

Since many of these leaks occur inside walls, underground pipelines, or concealed plumbing networks, they may remain undetected until major water loss or structural damage occurs. Early detection is therefore essential for water conservation, operational efficiency, and infrastructure protection.



## Smart Water Management and Leak Detection

Smart water management represents the integration of digital monitoring, automated metering infrastructure, data analytics, and remote-control capabilities to optimize water usage and reduce losses.

In conventional plumbing systems, water usage visibility is limited. Consumption data is typically available only during periodic meter readings. This delay prevents early detection of abnormal water usage.

Smart water management systems overcome this limitation by enabling:

- Real-time monitoring of water consumption
- Continuous analysis of flow patterns
- Detection of abnormal usage
- Automated alerts for potential leaks
- Remote control of water supply systems

Through continuous monitoring of water flow, these systems can detect indicators such as:

- Continuous flow during non-usage hours
- Sudden spikes in consumption
- Abnormal usage patterns
- Gradual increases in baseline consumption

These anomalies often indicate hidden leaks within plumbing networks. By enabling immediate alerts and quick corrective actions, smart water monitoring significantly reduces water losses and operational risks in residential communities.

## Architecture of Smart Leak Detection Systems

Modern leak detection systems combine sensors, digital water meters, communication gateways, and cloud-based analytics platforms. Water consumption data collected from multiple monitoring points is transmitted to a centralized analytics platform, where it is processed to identify irregular flow patterns.

### Figure 1: Smart Leak Detection System Architecture

*Architecture of an intelligent leak detection system integrating digital meters, pressure sensors, data gateways and cloud analytics for real-time monitoring and anomaly detection.*

The architecture typically includes:

- Digital water meters for flow measurement
- Pressure sensors to detect system stress
- Communication gateways for data transmission
- Cloud-based analytics platforms
- User interfaces for alerts and monitoring

Such systems provide continuous visibility into water consumption behaviour, enabling early leak identification.

## District Metered Areas (DMAs) for Effective Leak Monitoring

The concept of District Metered Areas (DMAs) has been widely adopted in municipal water distribution systems to monitor water losses.



Figure 1

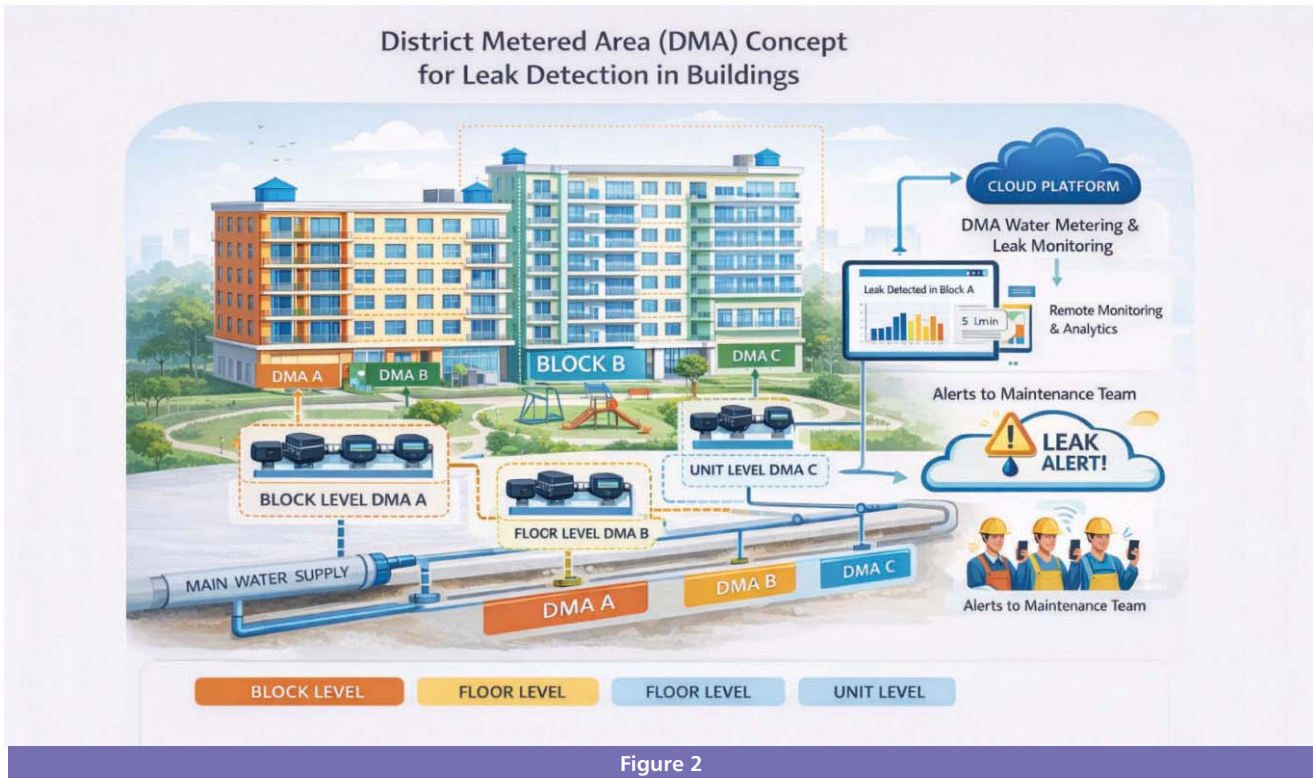


Figure 2

A DMA is a clearly defined section of a water distribution network where water inflow and consumption are continuously measured. By comparing supplied water with actual usage, operators can identify discrepancies that indicate leaks or system losses.

In residential communities, the DMA concept can be implemented at different levels:

- Block level
- Floor level
- Individual unit level

This layered monitoring approach enables precise localization of leaks.

### Figure 2: District Metered Area (DMA) Monitoring in Residential Buildings

*Implementation of District Metered Areas within residential buildings to monitor water distribution and identify leak zones.*

When a discrepancy occurs within a DMA zone, facility teams can focus inspection efforts within that specific section rather than the entire plumbing network.

### Predictive Leak Detection Using AI and Machine Learning

Artificial Intelligence and Machine Learning are increasingly being used to enhance leak detection

capabilities. Traditional monitoring systems rely on fixed thresholds to identify abnormal water consumption. However, such approaches may fail to detect slow leaks or unusual usage patterns.

AI-driven analytics can analyze:

- Historical consumption data
- Daily and seasonal water usage patterns
- Behavioural usage trends
- Flow anomalies

Machine learning models learn the normal consumption behaviour of buildings and households and detect deviations from these patterns.

### Figure 3: AI-Based Water Consumption Pattern Analysis

*AI-based analytics identifying abnormal water consumption patterns and generating early leak alerts.*

Through predictive modelling, AI systems can identify:

- Continuous low-flow leaks
- Gradual pipeline failures
- Abnormal consumption spikes
- Hidden leak events

Such predictive capabilities significantly improve leak detection accuracy.

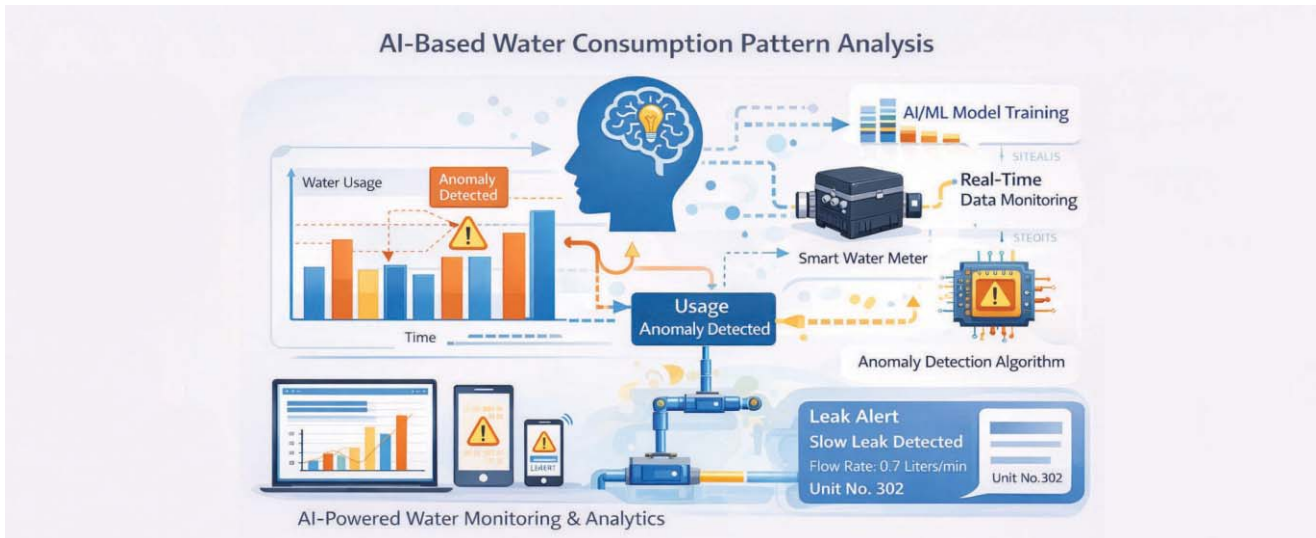


Figure 3



Figure 4

### Smart Water Metering with Leak Detection and Remote Shutoff

One of the most advanced developments in modern plumbing systems is the integration of smart metering, leak detection, and remote shutoff capabilities.

In this approach, water meters continuously measure flow rates and detect anomalies in consumption patterns. When abnormal flow is detected, the system can automatically trigger alerts.

In certain cases, automated valves or remote shutoff systems can be used to stop water supply immediately, preventing further damage or wastage.

### Figure 4: Smart Water Metering with Leak Detection and Remote Shutoff

Integration of smart water meters, leak detection alerts, and remote shutoff valves for automated water loss prevention.

Key capabilities of such systems include:

- Real-time water monitoring
- Automated leak alerts
- Remote control through digital platforms
- Rapid response to leak incidents

These systems significantly reduce the time required to detect and control leaks.



### Role of Pressure Management in Leak Prevention

Excessive water pressure is one of the leading causes of pipeline leaks.

High pressure can result in:

- Burst pipelines
- Joint failures
- Increased leakage rates
- Fixture damage

Pressure management strategies include:

- Installation of pressure reducing valves
- Zoning of plumbing networks
- Smart pump control systems
- Continuous pressure monitoring

Maintaining optimal pressure levels helps reduce stress on pipelines and prevents leak formation.

### Maintenance Strategies for Large Plumbing Installations

Even with advanced monitoring systems, preventive maintenance remains essential.

Effective maintenance strategies include:

- Periodic Water Audits – Water audits help identify discrepancies between supplied and consumed water.
- Pipeline Inspection Programs - Regular inspection helps detect early signs of wear and corrosion.
- Fixture Monitoring - Leaking fixtures can contribute significantly to water losses.

- Data-Driven Maintenance - Monitoring data helps identify high-risk zones within plumbing networks.

### Benefits of Intelligent Leak Detection Systems

Implementing advanced leak detection technologies offers several benefits:

- **Water Conservation**- Early leak detection significantly reduces water wastage.
- **Cost Reduction**- Lower water bills and maintenance expenses.
- **Infrastructure Protection**- Prevents damage to building structures.
- **Operational Efficiency** - Facility managers gain better control over plumbing systems.
- **Improved User Awareness** - Real-time data encourages responsible water usage.

### The Future of Smart Leak Detection

With growing urban populations and increasing water stress, efficient water management will become a critical requirement for modern buildings.

Future leak detection systems will increasingly combine:

- IoT-enabled sensors
- AI-based predictive analytics
- Smart metering infrastructure
- Integrated building management systems
- Automated response mechanisms

These technologies will create intelligent plumbing networks capable of detecting, predicting, and preventing leaks autonomously.

### Conclusion

Leak detection has evolved from a manual inspection process to a data-driven and technology-enabled discipline. By combining real-time monitoring, predictive analytics, smart metering, and intelligent plumbing design, building operators can significantly reduce water losses and improve operational efficiency. As cities continue to face growing water scarcity, adopting smart leak detection and water management strategies will be essential for building sustainable and resilient urban infrastructure.



**Jitender Thirwani**  
Chief Operating Officer  
SmarterHomes Technologies Pvt. Ltd.

Jitender Thirwani is the Chief Operating Officer at SmarterHomes Technologies Pvt Ltd, leading the charge in transforming water management through IoT-driven innovation. With over two decades of experience in technology-enabled infrastructure systems, he focuses on advancing intelligent water monitoring, predictive leak detection, and sustainable resource management.



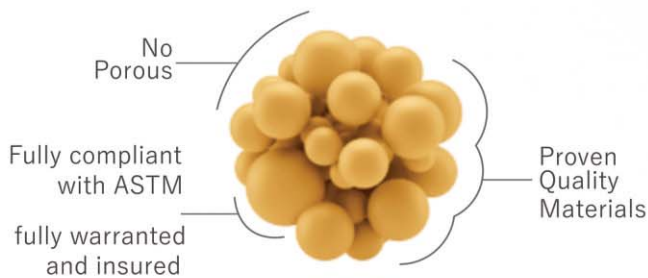
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# BEYOND THE SPOTLIGHT

PlumbexIndia 2026 reinforced its position as a premier platform for plumbing innovation, driving meaningful conversations around engineering water security for a future-ready India. This edition introduced the IPA Bathroom Challenge, adding a dynamic and engaging dimension to the event, alongside the IPA Around the Drop, which further elevated audience participation.

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## PLUMBEXINDIA UNFOLDS IN A WAVE OF BRILLIANCE



## LIGHTING THE LAMP THE CEREMONIAL OPENING OF PLUMBEXINDIA 2026



**Welcoming with Grace:**  
Karnataka's Regional Dance

**A Moment of Pride:**  
The National Anthem at PlumbexIndia





**Gurmit Singh Arora**  
National President  
Indian Plumbing Association

JAL KO JEEWAN DO,  
KYUNKI,  
JAL HAI TOH KAL HAI

In his thought-provoking presentation, Gurmit Singh Arora underscored the urgent need to “give life to water” by reimagining, restoring, and rejuvenating the water systems around us. Reflecting on Bengaluru’s changing landscape, he remarked that the city, once celebrated as the “City of Lakes,” is now confronting an alarming water crisis. He highlighted that Bengaluru once housed nearly 1,000 lakes, whereas today, barely 99 remain operational — a stark reminder of the environmental degradation and unsustainable practices that have gradually weakened the city’s ecological balance. Addressing the larger Anthropocene challenge faced by modern society, he emphasized that water conservation can no longer remain a choice, but must become a collective responsibility embedded in everyday behaviour and infrastructure planning. He called for transformative behavioural changes, adoption of global best practices in water management, and the implementation of efficient and sustainable plumbing systems that minimize wastage and maximize resource efficiency. His address served as a powerful call to action, inspiring delegates to move beyond conversations and actively contribute towards building a water-secure and sustainable tomorrow.



**Balakrishna Mehta**  
Chairman  
Indian Plumbing Association Bengaluru Chapter

Balakrishna Mehta commenced the inaugural session of Plumbex India 2026 by warmly welcoming the chief guest, the IPA National Executive Board (NEB), IPA National Executive Council (NEC) members, Bengaluru Chapter committee members, organizing team, industry partners, exhibitors, and the entire IPA family. He also extended a special welcome to the IAPMO and IWSH teams. In his address, he emphasized that modern plumbing is no longer confined to pipes and fittings alone, but has evolved into an essential pillar of smart systems, water sustainability, and resilient communities. Highlighting the importance of Public Health Engineering (PHE), he remarked that plumbing professionals are “the doctors of the nation,” safeguarding public health through efficient water and sanitation systems. He noted that PlumbexIndia 2026 reflects this transformation by showcasing innovation, cutting-edge technologies, and intelligent plumbing systems that are shaping the future built environment. Balakrishna Mehta also briefly introduced the Indian Plumbing Association, established in 1993, to the distinguished guests present during the inaugural session.

Addressing the gathering as the Chief Guest at PlumbexIndia 2026, Mahesh Kumar Khaitan delivered a compelling message on water sustainability, urban responsibility, and the urgent need to restore Bengaluru's ecological balance. Reflecting on the city's growing water challenges, he emphasized that while Bengaluru was once celebrated as the "City of Lakes," it is today more commonly identified with traffic congestion and environmental stress. He noted that reviving the city's water systems is not impossible, provided there is collective willingness and industry-wide commitment. Highlighting the deteriorating condition of the Vrishabhavathi River, he remarked that rivers and water bodies, once considered premium assets, have now been reduced to neglected channels due to years of unchecked urban impact. He stressed that safeguarding both water conservation and water quality must become a shared responsibility of developers, consultants, architects, and industry stakeholders.



Chief Guest, PlumbexIndia 2026  
**Mahesh Kumar Khaitan**  
 Director, Sattva Group

In his inaugural speech, Satish N. Iyengar extended a warm welcome to all dignitaries, exhibitors, partners, industry leaders, and visitors for being a part of PlumbexIndia 2026. He expressed heartfelt gratitude to every stakeholder whose contribution has consistently strengthened the exhibition's growing stature over the years. Reflecting on this year's edition in Bengaluru, he remarked that PlumbexIndia continues to scale new heights with increased participation, a larger exhibition footprint, and an impressive rise in the number of exhibitors, making the 2026 edition one of the most significant milestones for the industry platform.



Chairman PlumbexIndia 2026  
**Satish N. Iyengar**  
 Vice Chairman-IPA Bengaluru Chapter

Delivering the Vote of Thanks at PlumbexIndia 2026, Minesh Shah expressed heartfelt gratitude to the Chief Guest, Mahesh Kumar Khetan, for his insightful address and valuable presence at the event. He also acknowledged the contribution of international partners, industry collaborators, sponsors, and stakeholders whose continued support strengthened the exhibition's global outlook and industry impact. He extended special appreciation to the IPA leadership, National Executive Board, Chapter representatives, executive committee members, and the Bengaluru Chapter team led by Balakrishna Mehta and Satish N. Iyengar along with IPA HQ team for their dedicated efforts in successfully organizing the event.



**Minesh Shah**  
 National Secretary  
 Indian Plumbing Association



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# MoU Signing : Consortium of Accredited Healthcare Organizations (CAHO) and Indian Plumbing Association (IPA)

A Memorandum of Understanding (MoU) was formally signed between the Consortium of Accredited Healthcare Organizations (CAHO) and the Indian Plumbing Association (IPA), and was formally unveiled at PlumbexIndia 2026, held at the Bangalore International Exhibition Centre, Bengaluru on 17th April, 2026.



This formalization marks a significant step towards strengthening collaboration between the healthcare and plumbing sectors, with a shared focus on advancing standards in water, sanitation, and hygiene within healthcare infrastructure.



L-R: Sharat V. Rao, Dr. Saandeepani Vajje, Prem Chander, Chandra Shekhar Gupta, Minesh Shah, K. Bhaskar



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## MoHUA's Urban Challenge Fund (UCF) Launch - IPA Joins as Implementation Partner

On April 15, 2026, the Union Minister for Housing and Urban Affairs, Shri Manohar Lal, officially launched the Operational Guidelines for the ₹1 lakh crore Urban Challenge Fund (UCF). This landmark initiative aims to transform urban infrastructure across India by promoting market-driven and sustainable development. Scheduled for implementation from FY 2025–26 to FY 2030–31, the fund is expected to catalyse investments worth ₹4 lakh crore through ₹1 lakh crore in central assistance.



The National Executive Board of the Indian Plumbing Association (IPA) was virtually present during the launch of this significant initiative. Representing IPA, National President Gurmit Singh Arora digitally signed the Letter of Intent (LoI)-cum-MoU. The agreement was also signed by D. Thara, IAS, Additional Secretary and Mission Director, AMRUT 2.0, Ministry of Housing and Urban Affairs (MoHUA), formally recognizing IPA as one of the implementation partners for the initiative in the water and sanitation sector.

IPA congratulates the Ministry of Housing and Urban Affairs (MoHUA) for this progressive and forward-looking initiative. The Association reaffirms its commitment and extends full support towards the effective and successful implementation of the Urban Challenge Fund (UCF), particularly in advancing water efficiency and sustainable sanitation practices across urban India.



The Letter of Intent (LOI) - Private Sector Organization



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# Engineering Water Security for a Future-Ready India

The session explored sustainable water security strategies, resilient plumbing systems, infrastructure challenges, policy integration, and innovative solutions for a future-ready India.

**Panellists:**

- **Vikas Bramhavar** – Director, Transwater System Private Limited
- **Dr. Pramod Kumar** – Professor & Chair, ICER, Indian Institute of Science, Bengaluru
- **Manjunath Prasad** – President – Engineering, Brigade Group
- **Ar. V. Vishwanath** – Founder & Principal Architect, YV Architects
- **Dr. Shihabudheen M. Maliyekkal** – Professor, Indian Institute of Technology, Tirupati

**Moderator:**

- **Prasanna Venkatesh G** – Executive Vice President, Plumbing, Fire & Environment Dept, Sobha Limited



Distinguished voices shaping the dialogue - panelists take the stage

The panel discussion on the theme “Engineering Water Security for Future-Ready India,” was commenced by the **moderator, Prasanna Venkatesh G**, who set a thought-provoking tone by drawing from ancient Indian scriptures and wisdom that emphasized the sanctity and significance of water.

Quoting a verse from the Rigveda — “*Apoishtha mayo bhuvah, ta na urje dadhatana, maheranaya chakshase*” — he highlighted how water has been revered since

ancient times as a source of joy, vitality, and well-being. He further referenced the Mahabharata, where Bhisma Pitamaha, while imparting teachings on Rajadharma to Dharmaraja, stated “*Na apsu pāpam pravartate*,” signifying that water is the ultimate symbol of purity and life.

Connecting these timeless teachings to present-day realities, Prasanna Venkatesh G expressed concern over the alarming degradation of water bodies, particularly



## Engineering Water Security for a Future-Ready India

in Bengaluru. He remarked that while the city was once celebrated as the “City of Lakes,” only a fraction of its lakes remain functional today. Referring to examples such as Vrishabhavathi and Bellandur Lake, he noted how unchecked urbanization and pollution have severely impacted natural water ecosystems.

He further observed that water today is no longer merely an environmental concern, but a pressing challenge affecting cities, industries, public health, and the economy. Raising the central question of the discussion — “How prepared are we to engineer water security for a future-ready India?” — Prasanna Venkatesh G emphasized that while challenges are immense, viable solutions already exist. He called for collaborative action involving policy makers, engineers, industries, and citizens to build a sustainable and water-secure future for the nation.

Further, **Ar V. Vishwanath** emphasized the urgent need for sustainable water management practices in urban infrastructure. Highlighting Bengaluru’s recurring challenges with water logging, lake beds, and groundwater depletion, he stressed that rainwater conservation is one of the most effective pathways toward creating water-neutral buildings. Sharing a successful case study from a senior citizens’ home project near Yelahanka, he explained how extensive rainwater harvesting, groundwater recharge pits, and wastewater reuse through a sewage treatment plant significantly reduced dependence on borewell water.

Adding to the point, **Vikas Bramhawar** highlighted the pressing challenge of managing excess treated water from apartment STPs in Bengaluru. He explained that while treated water is commonly reused for flushing and gardening, nearly 60–70% still remains unutilized due to limited avenues for reuse. With Bengaluru consuming massive quantities of Cauvery and groundwater daily, he stressed the urgent need for scalable water management solutions. He also noted that Bengaluru recently introduced a policy allowing apartments to sell surplus treated water, creating opportunities for wider reuse and sustainable water conservation practices.

**Manjunath Prasad** emphasized the growing urgency of water security, recalling reports that identified Bengaluru among cities at risk of severe water scarcity. He highlighted how environmental clearance norms

introduced over two decades ago made Environment Impact Assessments (EIA) and STPs mandatory for large projects. He explained that developers were required to prepare water balance plans and ensure water reuse through flushing, irrigation, and HVAC systems in commercial spaces. Citing projects like Brigade Gateway and Brigade Metropolis, he stressed the importance of integrated water reuse solutions for sustainable urban development.

**Dr. Pramod Kumar** further mentioned that water conservation must become a collective responsibility as global demand for potable water continues to rise. He described water as nature’s universal solvent and stressed the need to protect natural resources through sustainable practices and groundwater recharge. Highlighting the link between energy and water consumption, he noted that electricity generation itself requires significant amounts of water. He also raised concerns about rapid urban concretization reducing natural absorption capacity. Speaking on data centers, he stated that while they are inevitable for future development, the sector must prioritize recycled water and sustainable cooling technologies to reduce freshwater dependency.

Adding to the discussion **Dr. Shihabudheen M. Maliyekkal** highlighted that water security is a complex challenge requiring collective responsibility beyond just technological advancement. Emphasizing water’s critical role in health, infrastructure, agriculture, and energy, he stated that access to clean water is a fundamental human right. He spoke about the development of nanotechnology-enabled water and wastewater treatment solutions, while also stressing the importance of sustainability through recycling spent nanomaterials into value-added products. He advocated for a circular, recycle-based approach to water management instead of conventional disposal-driven systems.

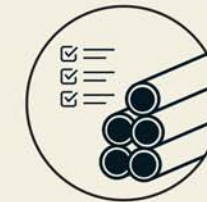
The panel discussion underscored the urgent need for sustainable water management through conservation, groundwater recharge, wastewater reuse, and innovative technologies. Experts emphasized that water security requires collective responsibility from governments, industries, architects, and citizens alike. The session reinforced that future-ready India can only be achieved through integrated, scalable, and environmentally conscious water solutions.

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# Showcasing Women Leaders Shaping the Plumbing Sector

The session highlighted women leaders driving water security, sustainable plumbing practices, inclusive leadership, innovation, and resilient infrastructure for a future-ready India.

**Panellists:**

- **Rajini Venugopal** – Associate Director, AECOM
- **Supreeta Shetty** – Head of Specification - India, Geberit Plumbing Technology India Pvt. Ltd.
- **Shobha N V** – Founder & Chief Executive Officer, Infinite Building Technologies
- **Manjula T** – CEO & Principal Consultant, Adithi Building Services
- **Vidya S. Veeresh** – Director, ESVE Design Solutions Pvt. Ltd.
- **Saloni Rai** – PHE, Fire Fighting, irrigation system Total Environment
- **Ar. Tapasya Das** – Prestige Group

**Moderator:**

- **Dr. Saandeepani Vajje** – Founder & CEO, Chinoy Design, Chairperson, IPA Amravati Chapter



The panel discussion was commenced by **Dr. Saandeepani Vajje**, who highlighted the evolving role of women in India’s construction and plumbing industry, where female participation has now crossed 10%, though leadership representation remains extremely limited. The moderator emphasized that women should not merely be identified through gender-based labels like “SHE panel,” but recognized as professionals and industry leaders. Comparing India with western countries, where women hold nearly 40–50% participation in core sectors, the discussion reflected on the long journey toward true gender

equality in construction and real estate. She also underlined the unique strengths women bring to the industry, particularly their sensitivity towards resource management, water conservation, and determination to overcome barriers. In the context of plumbing and sustainability, these qualities become highly valuable for shaping responsible infrastructure and future-ready development practices. Before moving into the main discussion, the moderator addressed the growing overuse of the word “sustainability.” While many people claim to be tired of hearing the term, the panel observed that there is still limited understanding of its

### Engineering Water Security for a Future-Ready India



true meaning. To explore diverse perspectives, she invited each panelist representing architecture, green buildings, consulting, manufacturing, and global standards to share their personal understanding of sustainability and its relevance in everyday life and the built environment.

Adding to the discussion, Jewel Changi Airport was highlighted as a powerful example of why early collaboration between architects and MEP consultants is essential in large-scale developments. **Ar. Tapasya Das** explained how delayed MEP integration in a one-million-square-foot project created major design challenges, including space loss and reduced efficiency due to unplanned shafts for a 20-meter waterfall feature. Despite setbacks, coordinated efforts helped optimize the building design. Referring to Jewel Changi Airport's 40-meter vortex waterfall, she emphasized that iconic architecture becomes feasible only when architects, consultants, and technical teams collaborate from the project's inception.

Further, **Vidya S. Veeresh** emphasized that MEP planning must begin from the initial design stage rather than being treated as a later addition. She explained that mixed-use developments involve diverse functions such as hotels, banquet halls, retail spaces, restaurants, cinemas, and recreational facilities, each with unique technical requirements. According to her, the key to efficient building design lies in understanding the end-user needs and intended space utilization from the beginning. She stressed that close collaboration between architects and MEP consultants ensures seamless integration, prevents costly retrofits, and enables flexible, "plug-and-play" infrastructure solutions.

**Manjula T.** highlighted the significant transformation in plumbing design, moving beyond basic water-saving measures like aerators toward advanced circular water management systems. The focus today is on treating, recycling, and reusing every drop of water generated within a project to create resilient and self-sufficient developments. She emphasized that true sustainability depends on project-specific factors such as demographics, rainfall intensity, and regional conditions. Rather than claiming "net zero," the goal is to achieve water-positive or water-neutral projects through optimized treatment systems and efficient reuse strategies integrated with evolving technologies.

Moving further, **Salomi Rani** discussed the growing importance of international green building standards such as LEED, BREEAM, EDGE, and WELL, which aim to

achieve net-zero goals by 2030. She highlighted a major gap between top private developers, who are increasingly adopting greywater recycling and sustainable practices, and mid- or lower-level construction sectors, where awareness remains limited. She stressed that sustainability awareness must extend to end users as well, especially regarding water reuse practices. Additionally, she pointed out critical infrastructure challenges in public sectors, including poor sewage and stormwater management systems, which hinder sustainable urban development.

The discussion focused on the growing impact of climate change and the construction industry's responsibility in addressing it through sustainable design. **Ranjini Venugopal** explained that climate change extends beyond rising temperatures and includes heat waves, urban flooding, cyclones, and extreme weather events. With construction consuming nearly 30–40% of total energy, especially through electrical and air-conditioning demands, sustainable planning has become essential. She emphasized that development and climate responsibility can co-exist through integrated design approaches involving architects and consultants from the beginning, while prioritizing energy efficiency, water conservation, locally sourced materials, and long-term environmental resilience.

**Supreeta Shetty** emphasized that sustainable and efficient buildings require collaboration across the entire ecosystem — from planning and design to implementation and operations. Referring to standards such as NBCC and Uniform Illustrated Plumbing Code, she highlighted the importance of integrating technology and functionality from the start. She identified implementation as the biggest challenge due to the shortage of skilled technicians and qualified professionals in India. **Supritha** also stressed that operations teams must be involved early, as long-term building performance depends on continuous coordination between architects, consultants, contractors, suppliers, and facility managers.

The panel discussion emphasized that sustainable construction is not just about design, but about collaboration, long-term efficiency, and responsible resource management. Experts highlighted the importance of integrating architects, MEP consultants, operations teams, and end users from the beginning to create resilient, water-conscious, energy-efficient, and future-ready buildings capable of addressing climate change and urban challenges.

**Satish N. Iyengar**  
Vice Chairman -  
IPA Bengaluru Chapter



**Satish N. Iyengar** is a distinguished MEP and sustainability consultant with over five decades of expertise in engineering design and integrated building services. A B.E. (Hons.) graduate with an MBA, he began his professional journey with Crompton Greaves and Voltas before establishing Services Consultants in 1988. Under his leadership, the firm has delivered innovative, energy-efficient MEP solutions for IT parks, hospitals, hotels, malls, and large-scale developments across India, aligned with ASHRAE and ECBC standards. A founding member and former National President of ISHRAE, he currently serves as Vice Chairman of the Indian Plumbing Association, Bengaluru Chapter, while actively mentoring professionals and contributing to industry knowledge through publications and training.

## Honouring IPA Bengaluru Committee & IPA HQ Team



**Top Row:** P.L. Shashidhara, S.C. Veeresh, Prasanna Venkatesh G, B.K. Prasad, Manjunatha N. Balakrishna Mehta, Minesh Shah, Satish N. Iyengar, Sharat V. Rao, Amit Gupta, Shashikant Pobbathi, Krishna Prasad, Sridhara, Bhaskar, K. Bhaskar  
**Second Row:** Panchanathan Subromony, Shreyans Mehta, Chandra Shekhar Gupta, Chethan Jois, Anand B. G., Bhadrash, B.O. Prasanna Kumar



**L-R-** Umesh Kumar, Rachna Kaushal, Parul Aggarwal, Rohit Srivastava, K. Bhaskar, Minesh Shah, Sharat V. Rao, Balakrishna Mehta, Aditi Mishra, Sushanta Sinha

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Edition 1 - 2026

# My Water, My Story

## By IPA Vanita

*A Celebration of Young Voices and Water Wisdom*

The Indian Plumbing Association's women's wing, **IPA VANITA**, continues to champion awareness, inclusivity, and education in the water, sanitation, and plumbing sector through meaningful grassroots initiatives. One such impactful endeavor, "**My Water, My Story**," was conceptualized to inspire young minds to reflect on their relationship with water—its value, challenges, and the urgent need for conservation. Designed for students of Grades 6 to 8, the initiative witnessed an overwhelming response across the country. With participation from **13 IPA chapters**, the campaign reached **68 schools** and engaged **over 10,000 students**, making it a powerful platform for expression, creativity, and awareness. Through storytelling, students were encouraged to articulate their perspectives on water—transforming technical discourse into personal narratives that resonate deeply.

### NATIONAL WINNER : MY WATER MY STORY



Name : Anvitha A; Class : 8th; School : Kendriya Vidyalaya , IISC, Bengaluru;  
Mentor : Sudarshan, NIAS Advanced Learning Centre, Bengaluru



IPA Vanita's Chapter coordinators receiving awards  
on behalf of chapter-level student winners for My Water My Story

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Edition 1 - 2026

# My Water, My Story

By IPA Vanita

*A Celebration of Young Voices and Water Wisdom*

## Anvitha's STORY



### The girl who stole the rain

Everyone in my community was helpless and waited for rain

But I was determined to steal it

Not from the sky of course! But from the Air!! This idea came to me when our lake shrank and became a playground. The scorching heat made it worse. Posters did appear everywhere saying SAVE WATER but they were like whispers in a storm of leaky taps and unbothered people.

So, I built a cloud catcher, no it wasn't magic it was nets stretched across my terrace inspired by stories of villages that harvested fog from the wind. Each dawn, slid downward, and dripped into a bucket. My first morning's collection? Half a bucket. I danced anyway.

Soon recharged by this success I added more innovations all over, A pedal-powered washing machine that recycled rinse water into a garden tank. A device powered by a microcontroller that will stop water if the water usage is increased and will only reset the next if there was no emergencies.

At first people laughed, "trying to outsmart the clouds, girl" asked the park worker.

But when my grandmother used recycled water to grow spinach twice as green as before, the laughter lessened. When the school's water bill shrank, the principal called me to the stage. My fog nets spread across rooftops like gossip. Children competed to design the smartest greywater systems. Even the Sarpanch asked for a blueprint.

By the next dry season, our town did not wait helplessly for rain. We harvested mist, reused every rinse, and treated leaks like emergencies instead of inconveniences.

One evening, during late summer I was standing looking at my cloud catcher when a cold breeze hit me which was followed by tiny drops of happiness.

Our community came with many more ideas like this and by doing so we learned to save every drop possible.

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# IPA's Award of Excellence



The IPA's Award of Excellence 2026 was unveiled at Plumbex India 2026, where accomplished professionals from across the plumbing and allied sectors were honoured for their outstanding contributions. These prestigious accolades recognized excellence in workmanship, design expertise, innovation, and managerial leadership within the plumbing and building services industry.

Nominations were received from a wide spectrum of the industry, including **plumbing engineers and designers from MEP consultancy firms; plumbing engineers and managers from ULBs and government departments; professionals from real estate development, facility management, and hospitality sectors; as well as practicing architects, supervisors, and plumbers from contracting firms.**

The awards were conferred across the following categories:

1. **Distinguished Leader in the Plumbing Industry** – Celebrating professionals with over 25 years of exemplary service and leadership.
2. **Outstanding Leader in the Plumbing Industry** – Honouring individuals with approximately 15 years of significant achievements
3. **Emerging Leader in the Plumbing Industry**– Recognizing professionals with around 10 years of impactful contribution.

A total of 11 Distinguished Leader awardees, 7 Outstanding Leaders, and 2 Emerging Leaders were felicitated during PlumbexIndia 2026.

Building on the success of previous editions, the IPA continues to elevate industry benchmarks by recognizing excellence and inspiring the next generation of plumbing professionals. The Awards of Excellence will remain a key highlight of upcoming PlumbexIndia events, further strengthening the ecosystem of skill, innovation, and leadership in the sector.



# Distinguished Leaders



**K. Sankar**  
Sampath Kumar Associates Pvt. Ltd



**Paramaguru. S**  
Shobha Limited



**Bhadrash Shivashankar**  
Sattva Developers



**Jitendra M.**  
Shobha Limited



**Venkatsubrao Nagaraj Rao Girish**  
Prestige Estates Projects Limited



**Lakshmi M**  
DesignTree Service Consultants Pvt. Ltd.



**Prasanna Kumar. S. L**  
Mapple Engg-Design Services India Pvt. Ltd.



**S Gururaj**  
HMN TechConsultants Pvt. Ltd.



**Venkatesh Iyer**  
Santech Engineers Pvt. Ltd.



**Er. Vithal P. Balakundi**  
YV Architects (Formerly Vishwannath Associates)



**Gulam Mohiuddin**  
Brigade Enterprises Limited



# Outstanding Leaders



**Ranjini Venugopal**  
AECOM India Pvt. Ltd.



**Anand BG**  
Design Solutions Pvt. Ltd.



**Pravat Kumar Das**  
Shreeji Associates



**Guruprasad J Rao**  
Adithi MEP Consultants Pvt. Ltd.



**K. Shwetha**  
Sri Vinayaka & Industrial Piping Co.



**Manas Ranjan Mishra**  
VDB Construction



**Vishnu Murthy M**  
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Floor trays  
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Floor drains  
Yard drains  
Parking deck drains



## Outdoor drains

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Gutter drains



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Pumping stations  
Submersible pumps  
Hybrid lifting stations





The IPA Bathroom Challenge 2026, conducted during PlumbexIndia 2026 at BIEC, Bengaluru, marked a **first-of-its-kind initiative in India** aimed at elevating plumbing installation standards through a structured, skill-based competition. Organized by the **Indian Plumbing Association (IPA)**, the initiative was designed to bridge the gap between **design intent and on-site execution**, while promoting global best practices in plumbing.



Inaugural of Bathroom Challenge

### Objective of the Initiative

- To create a **platform for skill benchmarking** in plumbing execution
- To promote **best practices and standards as per UIPC-I** in installation practices
- To provide **hands-on learning exposure** to contractors and students
- To establish a **replicable model** for future skill competitions at a national level

### Event Format

#### Day 1 – Training

- Comprehensive training conducted by **IWSH Foundation** and **IAPMO**
- Focus on:
  - o Plumbing standards as per UIPC-I and NBC
  - o Best practices in installation
  - o Safety protocols and tool usage

#### Day 2 – Competition

- Live **Bathroom Installation Challenge** conducted across **7 booths**
- Duration: Approximately **6 hours**
- Scope of work:
  - o Water supply piping
  - o Drainage system installation
  - o Fixing of sanitary ware and CP fittings
- Key rules:
  - o Work based on predefined drawings
  - o Submission of material list prior to execution
  - o Strict adherence to safety norms



Participants in process of making the bathroom under jury supervision

- o Evaluation based on quality, accuracy, time, and workmanship

### Composition of Teams

Each participating team consisted of:

- **1 Engineer/ Supervisor**
- **1 Skilled Plumber**
- **1 Helper/ Technician**
- **1 Student (Observer)**

This composition ensured a blend of **technical supervision, skilled execution, and learning exposure**.

### Evaluation Framework

Participants were assessed based on:

- Technical accuracy and adherence to drawings
- Workmanship and finish
- Time management
- Safety compliance
- Innovation and execution quality
- Aesthetics and presentation
- Demonstration and explanation



A panel of experienced jury members comprising of Subhash Deshpande, Milind Shete and Prasanna Venkatesh G evaluated the teams using a structured scoring system aligned with international benchmarks.

**Felicitation of Bathroom Challenge Jury along with IAPMO & IWSH Team**

**WINNERS**



**First Prize**  
Booth - 2  
Prize Money : ₹ 20000  
Sponsored by Geberit  
Contractor : Yashwanth Enterprises  
Participants : K.M. Muddaiah,  
Rajendra Rout, Manoj Swain



**Second Prize**  
Booth - 7  
Prize Money : ₹ 15000  
Sponsored by Sloan, SFA, ACO and Kitec  
Contractor : Shreeji Associate  
Participants : Sanat Kumar Das,  
Birendra Behuria, Sanatan Bhoi



**Third Prize**  
Booth - 1  
Prize Money : ₹ 10000  
Sponsored by Astral  
Contractor : N.K. Sanitation  
Participants :  
J. Manikandan, Ramakantha, Subhas Das

The IPA Bathroom Challenge 2026 has proven to be a path-breaking initiative, successfully demonstrating that structured, skill-based competitions can significantly elevate industry standards.

With strong industry support and the technical backing of IAPMO and IWSH Foundation, this initiative has the potential to evolve into a national benchmark for plumbing excellence, driving quality, consistency, and professionalism across the sector.



## AROUND THE DROP

An initiative by the Indian Plumbing Association, curated by Ethos Empowers, the Around The Drop Challenge brings students to focus on developing water resilience across buildings, campuses, neighbourhoods, and systems that may not have been designed for today’s water realities.

The inaugural edition of “Around The Drop” aimed to present a **creative, time-bound design challenge** that encourages participants to conceptualize and develop innovative solutions around water, plumbing, sustainability, and related themes through a focused, hands-on, and mentored exercise. Elected participants had the opportunity to visit the PlumbexIndia 2026, offering valuable industry exposure.



Inaugural of Around the Drop Challenge

Around the Drop was launched on **23rd March 2026**, with registrations and **Stage 1 submissions** closing on **15th April 2026**. The **final event** was held over two days, **17th & 18th April 2026** as a part of the PlumbexIndia 2026.

### Stage 1

Participants were required to select a real functioning building site in Bengaluru. The chosen site could have a combinations of flat roofs, sloped roofs, paved areas, and landscaped spaces.

The students had to collect the following information about the chosen site.



**Identify the building type and occupancy, estimate water demand** using standard norms, and compare with actual usage if available.



Observe **existing water-saving measures** such as tap aerators, RO reject reuse, and tank level controllers.



**Study current rainwater management** and estimate wastewater generation, including its treatment and disposal.



Collect relevant information about the building - **building plan, site plan, areas of various surfaces, site photographs.**

The teams were assigned **names inspired by different rivers of India**, reflecting the theme of water and strengthening the contextual relevance of the design challenge.

### Stage 2

The students had to present their learnings, findings, and proposed retrofitting strategies to the jury panel comprising water experts, architects and academicians from Bengaluru. Following this, the most innovative and detailed solutions were awarded.

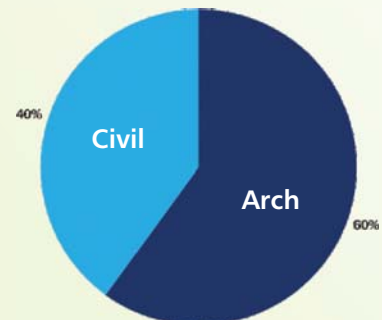
A total of 60 students from across Bengaluru participated in the event, with 16 teams representing 10 different colleges.

More than 20 teams had registered, showcasing strong interest and enthusiasm.

**Total number of Participants: 60**

**Total number of Unique Colleges: 10**

Balanced participation was seen from both Civil Engineering and Architecture courses.



## WINNERS



Mohammed Umar Farooq, Shalvika Halli, Sandhya S, M. Venkat Sreeram



Geetha, Vridhi Mutha, Harshini Kumar



Shubhang Hiten Bhagat, Annam Nimra, Tanvi Agarwal & J Niraj

## Social Media Challenge Winner

Social Media Challenge a parallel challenge for the team that creates the most engaging social media post about the event.



Aadvika, Abhish, Shakthi K & Suprith Sthavan N T

## The first edition of 'Around The Drop' successfully fostered innovation and awareness around water resilience.



The event provided a collaborative platform for students to develop practical solutions and engage with industry experts. It also opened the idea of pursuing a career in water resilience post a degree in architecture or civil engineering. The initiative sets a strong foundation for future editions.



The jury appreciated the range of solutions proposed by the teams despite time constraints. They particularly noted that several ideas, especially those addressing public spaces, have the potential to be further developed and presented to the Bangalore Development Authority (BDA), as city authorities are actively working towards improved urban water management.



The jury also expressed hope that this challenge can be extended to other cities and IPA chapters, fostering greater awareness among the next generation of professionals across the country.

**ANNOUNCEMENT**



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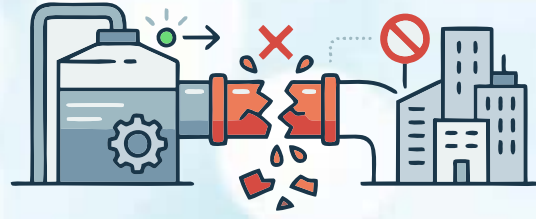
Prepare yourself for whatever comes tomorrow. Starting today.

**Let water flow smart**



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Possibility in every drop



# From STP to System

## Why Water Reuse Fails

## Even When Treatment Works

### Part 1 : The Missing Link in Water Reuse: Understanding Where Systems Break Down

- Madhava Narasimha Murthy Nedunuri

#### Abstract

Water reuse has become an integral component of modern township infrastructure, driven by increasing freshwater scarcity, rising tanker costs, and regulatory expectations. Most developments today incorporate sewage treatment plants (STPs) designed to deliver treated water suitable for non-potable applications such as flushing, landscaping, and utilities. In many cases, these systems perform satisfactorily at the treatment level and meet prescribed quality standards.

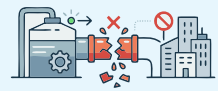
Yet, a recurring gap persists across projects. Despite technically sound STPs, reuse remains inconsistent, underutilised, or gradually abandoned over time.

This contradiction reveals a fundamental oversight. The industry tends to evaluate reuse at the treatment stage, whereas its success is determined at the system level. Distribution design, storage behaviour, operational discipline, and user perception collectively influence whether treated water is actually used.

This article examines why reuse fails even when treatment works. It presents a system-level perspective that integrates hydraulic design, storage dynamics, operational control, and behavioural acceptance. It argues that sustainable reuse is not achieved through treatment efficiency alone, but through a coordinated system that ensures treated water is reliably delivered, maintained, and trusted at the point of use.

#### Introduction

Water reuse is no longer a design aspiration; it is a necessity in large residential developments. Urban townships today operate under increasing pressure from limited municipal supply, declining groundwater levels, and rising operational costs associated with tanker water. In response, most projects incorporate STPs with the intention of reducing dependence on external water sources.



The underlying design assumption is simple and widely accepted: if treated water is available, reuse will follow. However, practical experience across projects suggests otherwise. Many townships operate STPs that consistently meet required quality parameters, yet continue to depend on freshwater or tanker supply for applications such as flushing and landscaping. Systems that were designed as core infrastructure gradually become intermittent or secondary. In some cases, reuse is bypassed altogether.

This creates a disconnect between design intent and operational reality.

The question, therefore, is not whether STPs work—they often do. The real question is why reuse fails even when treatment works.

The answer lies not within the plant, but in the system that surrounds it.

## From STP to System – Integrated Water Reuse Framework

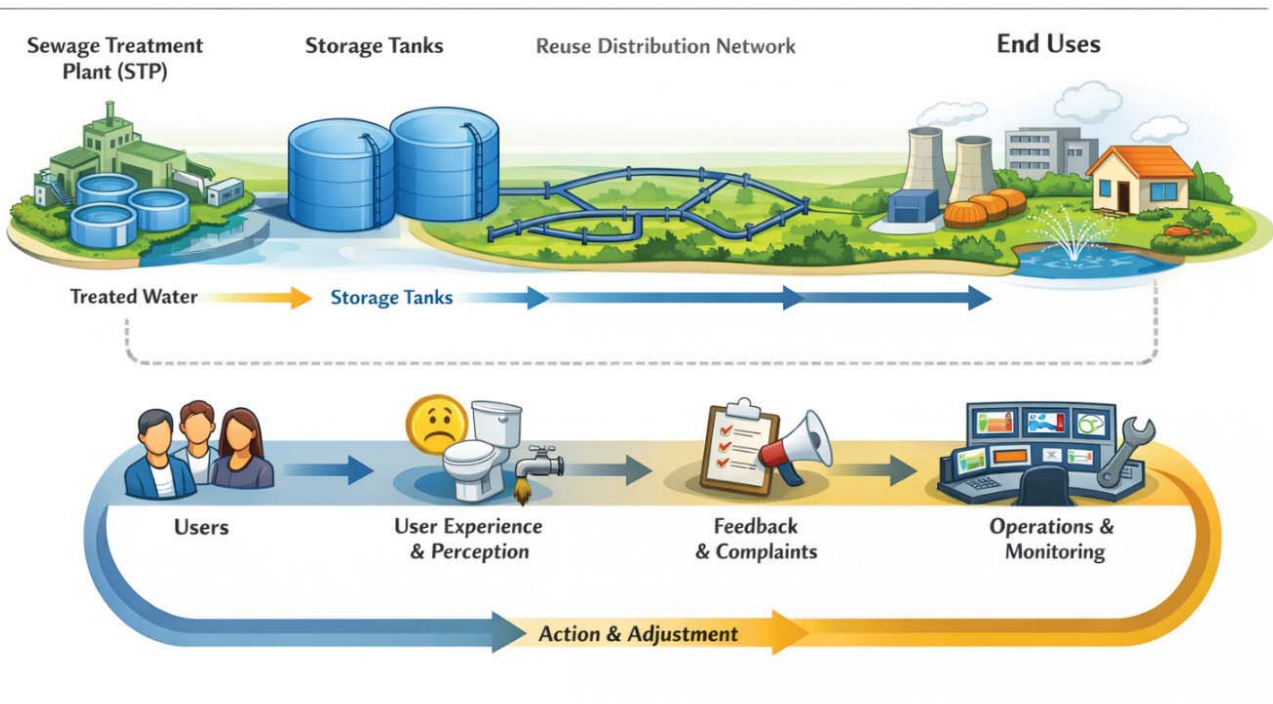


Fig 1: From STP to System - Integrated Water Reuse Framework

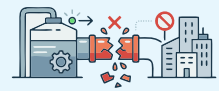
### The Assumption That Breaks Reuse

A key reason for reuse failure is the industry’s tendency to equate treatment success with reuse success. Design efforts are typically concentrated on selecting appropriate treatment technologies, achieving required effluent quality, ensuring compliance with regulatory standards, and commissioning the plant successfully. Once these objectives are achieved, reuse is assumed to be an automatic outcome.

In reality, reuse is not a direct output of treatment. It is a system-level behaviour that depends on how treated water moves, stabilises, and is accepted within the built environment.

For reuse to function reliably, multiple layers must work together. Treated water must be stored under conditions that preserve its quality, distributed through networks that maintain hydraulic stability, delivered with sufficient pressure at end-use points, and supported by operational systems that monitor and respond to variations. At the same time, users must develop confidence in the system based on consistent experience.

When any of these layers are weak, reuse becomes unreliable. The system may produce treated water, but it does not necessarily deliver usable water.



## Where Reuse Actually Fails

### Distribution Failure: The Hydraulic Reality

In many developments, reuse distribution networks are designed with less rigour than potable systems. While potable water networks are carefully planned to ensure reliability and user comfort, reuse networks are often treated as secondary infrastructure.

This difference in design intent becomes evident in operation. Distribution networks may include dead-end branches where water remains stagnant for extended periods. In the absence of looped systems, pressure variation across towers becomes significant, leading to inconsistent performance at the point of use. In some areas, excessive flow is observed, while others receive insufficient pressure for basic flushing operations.

From an engineering standpoint, these issues reflect a lack of hydraulic balance. Treated water leaving the STP may meet all quality parameters, but its condition at the end-use point is influenced by how it travels through the network. Without proper circulation and pressure stability, water quality degrades during transit.

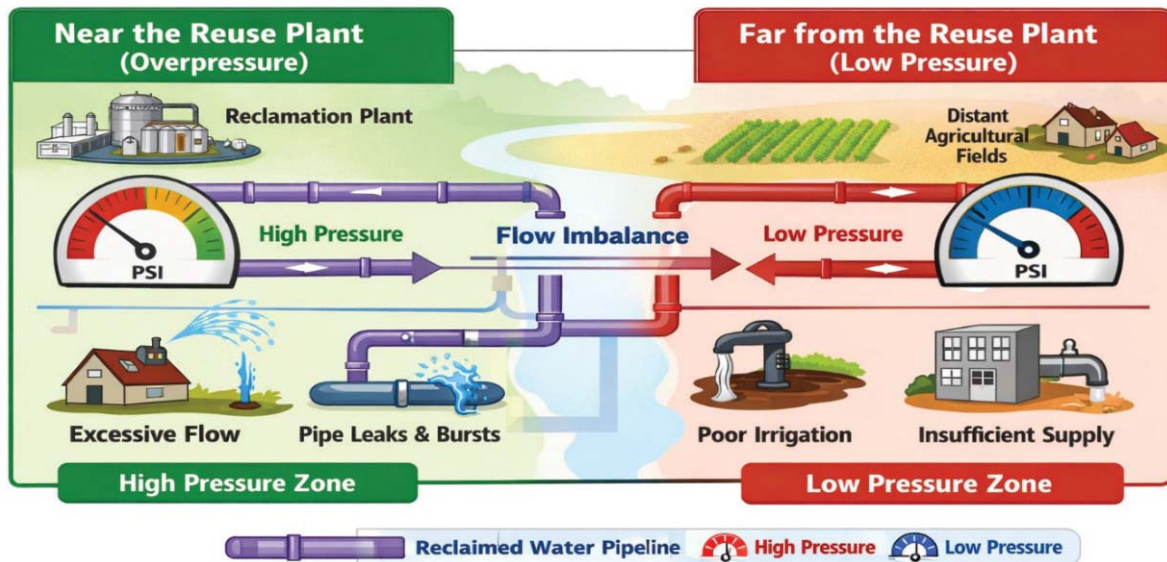


Fig 2: Hydraulic Imbalance in Reuse Distribution Networks

### Storage Failure: The Behaviour of Retained Water

Storage systems play a decisive role in determining the quality of reused water, yet they are frequently under-designed or poorly understood.

Unlike potable water, where demand is relatively continuous, reuse demand is variable and dependent on occupancy patterns. This leads to fluctuating inflow and outflow conditions, often resulting in extended retention times within storage tanks. When tanks are oversized relative to actual demand, turnover reduces further.

From an engineering perspective, retention time becomes a governing parameter. Prolonged storage allows for biological and sensory changes in water, particularly in systems where ventilation is inadequate or maintenance is irregular. In practice, this is where many reuse systems begin to fail visibly. Water that leaves the STP within acceptable parameters may develop odour or discoloration during storage due to low turnover. When this reaches end-use points such as flushing systems, it directly affects user experience and triggers complaints. These issues are often attributed to treatment failure, even though the root cause lies in storage behaviour.

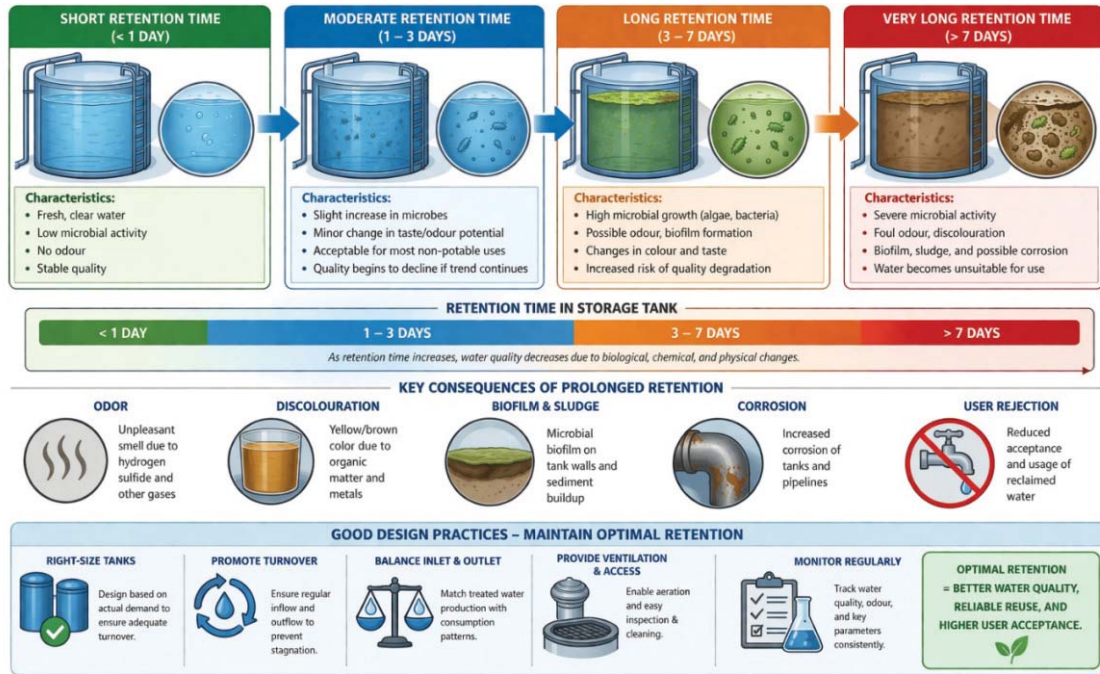
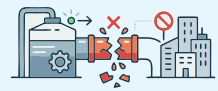


Fig 3: Impact of Retention Time on Reuse Water Quality

### Operational Failure: The Missing Feedback Loop

Reuse systems are inherently dynamic and require continuous monitoring. However, in many projects, operational practices remain reactive rather than analytical.

Without measurable linkage between treated water generation and reuse consumption, system performance cannot be evaluated. In the absence of data, operations teams rely on observation, and freshwater becomes the fallback solution.

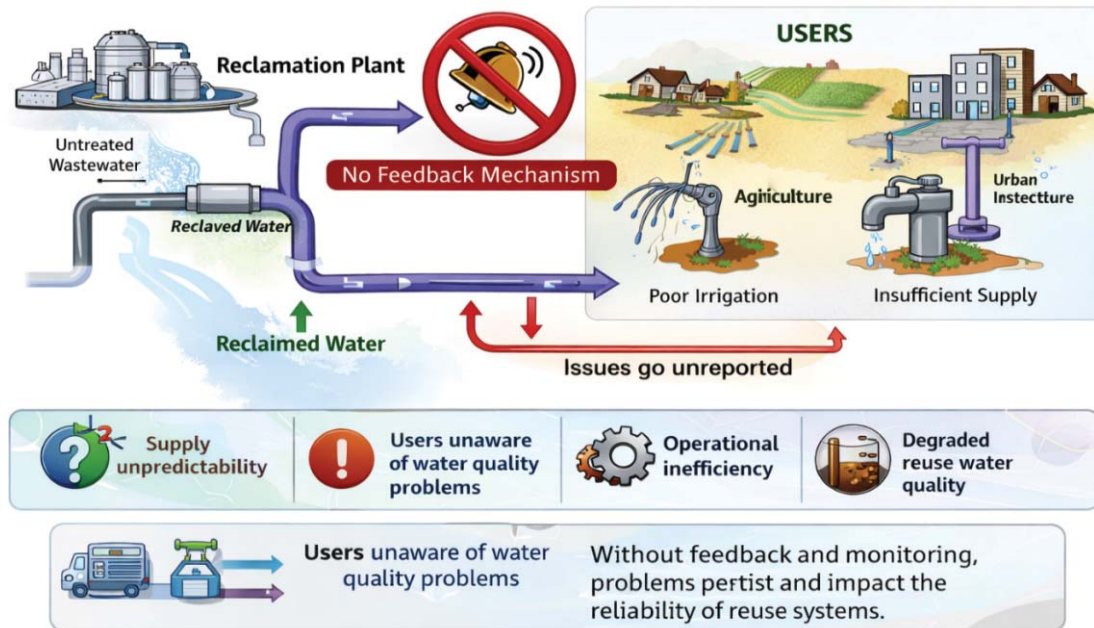
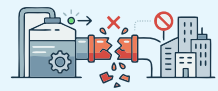


Fig 4: Lack of Feedback Loop in Reuse Systems



## Perception Failure: The Decisive Factor

While engineering challenges are significant, the most critical barrier to reuse is often perception. Users evaluate water based on experience rather than parameters. A single adverse event can significantly affect acceptance, leading to reduced usage and further system degradation.

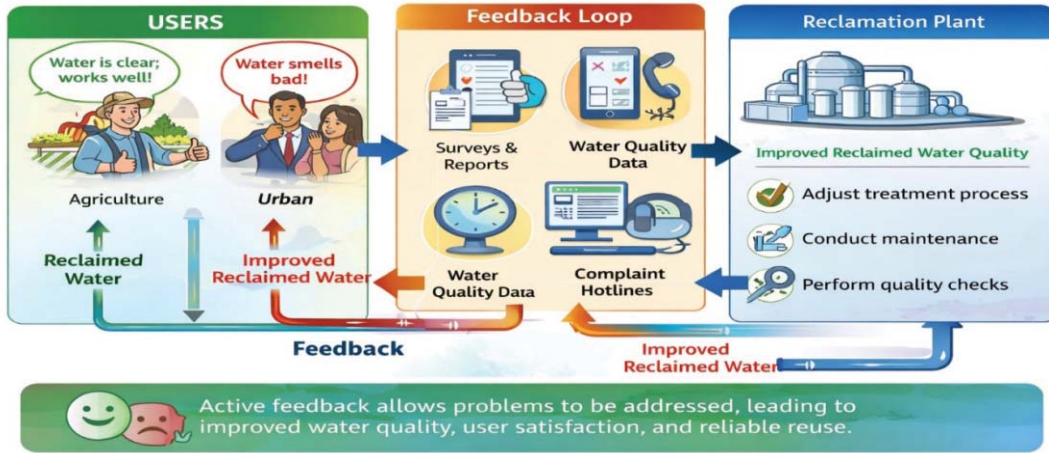


Fig 5: User Perception Feedback Loop

## Conclusion

Water reuse does not fail because treatment fails. It fails because the system beyond treatment is incomplete. The industry's focus on STP performance has created a blind spot—where the plant is optimised, but the network that delivers water is not.

Reuse is not achieved at the outlet of the STP.

It is achieved at the point of use.

If reuse depends on the system rather than the plant, then the question is no longer how to design an STP. The question is how to design a system that ensures treated water is actually used. That is where the discussion must move next.

Part 2 will examine how reuse systems must be designed beyond the STP, with a focus on distribution, storage, and system integration. It will also highlight common design and execution gaps that cause reuse systems to fail in practice.



**Madhava Narasimha Murthy Nedunuri**  
FIE, Senior MEP Leader

Madhava Narasimha Murthy Nedunuri, FIE, is a senior MEP leader who has spent two decades shaping complex building environments across India. His career spans leadership roles at Urbanac Infra Projects, IL&FS Engineering, Shapoorji Pallonji, and HCC, where he led delivery of high-rise residential towers, hospitals, malls, data centers, townships, and large commercial developments. A Fellow of The Institution of Engineers (India), Chartered Engineer, PMP®, PMI-RMP, and IGBC Accredited Professional, he is known for uniting technical clarity with execution reality. His approach emphasizes design-to-site alignment, lifecycle-focused decision-making, and building strong second-line leadership rather than dependence on individuals.

He can be reached at [madhu091@gmail.com](mailto:madhu091@gmail.com)

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