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# DROPLET

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## MUMBAI CENTER

- **Er. Maniessa Palande**  
- Chairperson
- **Er. Pramod Dalvi**  
- Hon. Secretary

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- **Er. Dilip Sonwane**
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### *from Chairperson Desk*

Hello IWWA Mumbai Centre members,

To begin with let me offer you Diwali greetings. It is festival of lights and celebrations of victory on evils. In our Indian sub-continent, it is also a mark for end of a harvest season. Over centuries due to multi fold changes in urban living as well as rural cultivating habits; in recent dewyears, Air Pollution problems is becoming a critical concern.

We recently conducted a lecture meeting on World Water Monitoring Day celebrations. Mr. Santosh Narayan Jathar, Food Analyst, Municipal Corporation of Greater Mumbai delivered lecture on Water Quality : Monitoring & Management. It was well elaborative lecture. Mr. Jathar has developed onetime bacterial kit for water quality monitoring. IWWA Mumbai centre encourages such innovations and appeal all concern authorities to make wide use of it, We also appeal to engineering colleges and institutes to involve students in such activities for a meaningful orientations and creating awareness.

With strenuous efforts of all our health departments and India leading drive on vaccination are providing great hopes on subsiding of Covid-19 impact. Recent permissions on theatre are bringing good news for us as well for planning on off lines activities. A well organised seminar shall be one the event wherein we shall involve everyone and can enjoy face to face interactions, exchange of knowledges. We solicit your suggestion for better planning.

IWWA 54th convention in being organised at Lucknow on 08-09 January 2021. We appeal all our members to participate in this mega event.

Details are available at - [www.iwwaconvention2022.org](http://www.iwwaconvention2022.org)

**- Er. Maniessa Palande**



### *Editor Brief*

The impact of climatic changes are visible worldwide in various forms like flash floods, cyclones, storms, melting of glaciers, temperature rise etc. Every year COP (Conference of the Parties) convention is held, and the talks are hosted by a different country where delegates from every government take part to advance global efforts to ward off the adverse impact of climate change. The COP negotiations are centred on the legal mechanisms for governments to hold each other accountable. The summit sees politicians, business leaders, campaigners and journalists engaging in discourse on what climate action means in the real world.

Addressing the COP26 Summit in Glasgow this year, Prime Minister Mr. Modi placed five elixirs from India to overcome this challenge of climate change. (i) India will reach its non-fossil energy capacity to 500 GW by 2030 (ii) India will meet 50 per cent of its energy requirements from renewable energy by 2030 (iii) India will reduce the total projected carbon emissions by one billion tonnes from now to 2030 (iv) India will reduce the carbon intensity of its economy to less than 45 per cent by 2030 (v) India will achieve the target of Net-Zero by 2070.

All these commitments are with respect to energy demand, production and consumption for various usages. Inline with Global requirements and our Country's commitments, it is necessary for all Engineers to design the processes which are less energy intensive, increase the efficiency of existing water / wastewater systems / plants to reduce energy usage, plan options of creating energy within treatment plants or waste to energy plants for municipal solid waste.

**- Er. Dilip Sonwane**



# Stalwart's Advise

## Dr Pradip Kalbar

Indian Institute of Technology Mumbai

### Drivers for Intermittent Water Supply in India and Way Forward

In India, all the Water Supply Systems (WSSs) are designed as per the Central Public Health and Environmental Engineering Organization (CPHEEO) norms. The norms are based on the Continuous Water Supply (CWS); accordingly, standards for all the design parameters are defined. However, the WSSs are operated intermittently, with supply duration varying from 1 to 6 h/day. The wide gap between the design and actual operation results in inefficient WSS. Some of the consequences of Intermittent Water Supply (IWS) are inequitable supply, increased Non-Revenue Water (NRW), and deteriorated water quality. The reasons for the failure of WSS in India are not straightforward. There are numerous reasons which form a vicious cycle of WSS failure in India.

The drivers for the vicious cycle of WSS

failure in India include the design, analysis, and operational aspects of WSSs. Also, consumer satisfaction, revenue, and institutional capacity affect the efficiency of the WSSs. The norms for population forecast, peak factor, minimum diameter, and per capita demand fail to capture the ground reality, result in deterioration of pipelines and ultimately failure of the WSS. Furthermore, the impact of service connection and household storage is often ignored in WSS analysis in India. Hence, it is not easy to simulate the actual operation of WSS in India. The operation practice like short duration supply, lack of District Metered Area (DMA), unplanned expansion, uncontrolled withdrawal, and lack of asset management deteriorate WSS's infrastructure condition in India.

Consumer satisfaction depends upon the service quality, which comprises infrastructure condition and reliability. In addition to the deteriorated infrastructure, interrupted electricity supply, uneven population growth, seasonal variation, drought conditions, an unexpected surge in water demand (e.g., large social gatherings) hamper the reliability of the WSS.

To fulfill the water demand, consumers invest in various alternative strategies, termed as coping costs. The unfulfilled water demand results in reduced willingness to pay, reducing the revenue. As revenue generation reduces, the funds for operation and maintenance of the WSS diminishes, and the WSS enters the vicious cycle of failure.

Most of the planning, design, and

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### Pneumatic Waste Collection System (PWCS)

Mr. Vishal Pawar, Solid Waste Expert, Tata Consulting Engineers Ltd



Human habitations and activities generate large quantities of solid waste. The rising population, better living standards, food packing etc.

has resulted in more generation of municipal solid waste over the years and handling of solid waste has become critical for many Indian cities. Improper management of municipal solid waste (MSW) causes hazards to inhabitants. Also, high population growth and industrialization put strain on the basic infrastructural and municipal services. Solid Waste Management is a part of public health and sanitation. The Management of solid waste reduces or eliminates adverse impacts on the environment and human health and supports economic development and

improved quality

of life. The solid waste management system includes collection, transportation, transfer and processing of solid waste in environmentally friendly manner. The collection of solid waste from various sources is an important activity to ensure better streets, residences and hygienic condition in civic areas.

#### Pneumatic Waste Collection System

PWCS is an ideal way to collect solid waste from the source to a centralized collection inside or outside the building. A network of tubes (400mm/500mm) runs throughout the building both vertically and horizontally and also in public areas of the facility. Multiple buildings can be easily connected with this system reducing operation time and increasing efficiency and hygiene.

The main principle of the Pneumatic Waste Collection & Transportation

System is that the waste is collected directly from the source and transferred to the waste collection centers without intermediate handling or manual handling. PWCS is hygienic and sealed system, which is minimizing the odor when compared to the traditional bin/gravity chute or manual collection system. It is also an automation that is provided to end users and this system is an integral part of SMART buildings.

The entire collection process is Automated using Vacuum Suction. The system uses State-of-the-art Artificial Intelligence for Operation. Waste Transport Commences when waste stored in the storage section is full and sends a signal for collection. The Control System starts the exhausters and creates the vacuum and when air speed is reached, the Discharge Valve opens and empties waste into the pipe network. Depending upon the fraction

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# Engineers Day Celebration : 15th September 2021 Webinar on Koyna Lake Tapping

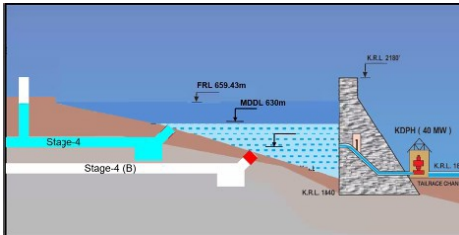
The Engineers Day is observed annually to commemorate the birth anniversary (15th September) of the greatest Indian Engineer Bharat Ratna Shri Mokshagundam Visvesvaraya as Engineer's Day. The Indian Water Works Association, Mumbai center has

arranged a Webinar on "Koyna Lake Tapping" on 26th September 2021

Er. Rajnish Ramkishor Shukla, Chief Engineer & Joint Secretary, Water Resources Department, Govt. of Maharashtra, Mantralaya, Mumbai has delivered a presentation on Koyna Lake Tapping.

Er Shukla shared the developmental stages of Koyna hydroelectric project since its inception and types of lake tapping. He explained a nonconventional intake system which involves piercing the lake from the

bottom by blasting final rock plug using Norwegian technology called as "Lake tapping". The Koyna Hydro Electric Project is one of the largest Hydro Power project of India. It comprised of 103 m high rubble concrete dam with impounding capacity of 105 TMC along with 4 stages of power generation and a Koyna Dam Foot Power House with total installed capacity of 1960 MW. The Koyna Project is re-ferred as "The life Line of Maharashtra" ... while lake tapping is an Engineering Marvell.



# WORLD HABITAT DAY CELEBRATION 9th October 2021

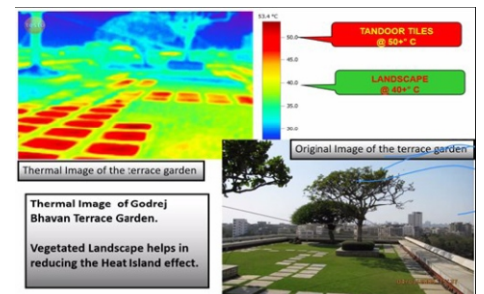
The World Habitat Day is celebrated on 9th October every year. The theme for this year's World Habitat Day is accelerating urban action for a carbon-free world.

History Society, Mumbai have been invited on this occasion.

Mr. Praveen Soma, Senior Counsellor has delivered a talk on Green Building Movement in India. He shared the progress on Green buildings in India and various parameters to be considered from resource consumption per-spective while planning a building or large size area development projects. Dr. P. Sathiyaselvam discussed on Chilika Lake Biodiversity & Conservation during his presentation.

The webinar has good response with presence of about 40 students, engineers and professionals from reputed institutions and organizations.

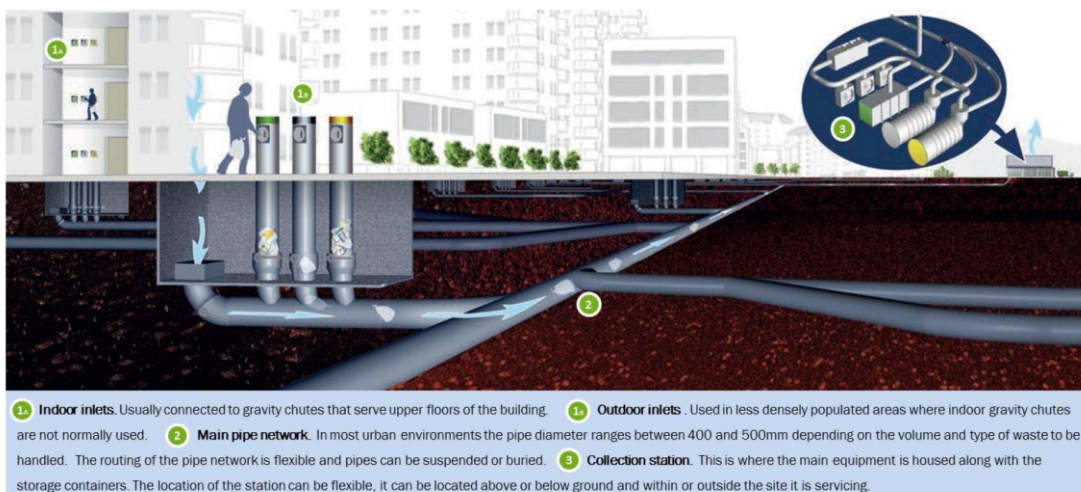
The Indian Water Works Association, Mumbai center has arranged a Webinar to celebrate the World Habitat Day on 9th October 2021. Two eminent speakers Mr. Praveen Soma, Senior Counsellor and Dr. P. Sathiyaselvam, Assistant Director - Wetlands and Flyways Programme, Bombay Natural



## Pneumatic Waste Collection System .....cont'd from Page 2

of waste which sends the signal the Pneumatic discharge Valve (PDV) divert waste into the dedicated storage container located at transfer station or processing plant. This avoids the manual collection, handling and spillover of solid waste

on ground. Some of the projects where this system has been implemented includes GIFT city in Gandhinagar, NICDC-Dadri Node and Bhopal Smart city.



1 Indoor inlets. Usually connected to gravity chutes that serve upper floors of the building. 2 Main pipe network. In most urban environments the pipe diameter ranges between 400 and 500mm depending on the volume and type of waste to be handled. The routing of the pipe network is flexible and pipes can be suspended or buried. 3 Collection station. This is where the main equipment is housed along with the storage containers. The location of the station can be flexible, it can be located above or below ground and within or outside the site it is servicing.

*Stalwart's Advice .....cont'd from Page 2*

operation work is outsourced to external agencies. The external agency fails to thoroughly understand the ground reality and suggest interventions based on the experience of other countries (primarily developed nations). Automation is considered as the most relevant solution to improve the efficiency of WSSs. However, the operation and maintenance of such high-end solutions are costly. Also, with reduced willingness to pay by consumers, generating financial returns of the considerable investment in automation becomes an uphill task.

The ultimate goal of a WSS is to provide water to consumers in adequate quantity and prescribed quality in CWS mode. However, with the present scenario of operating the WSS, directly converting the IWS to CWS will result in more problems, as such approach will not tackle the drivers to IWS. This will not effectively use the investment made for achieving CWS as the WSS will again move back to IWS with such an

approach of direct transition. There should be an intermediate step of improving the performance of existing IWS such that the vicious cycle of failure is broken. To improve the existing IWS, the application of appropriate design and operation interventions is required. Limited studies proposed the alternative design and operation methodology for IWS. Recent work from IIT Bombay suggested few design and operation interventions, viz. shaft, manifold, and multi-outlet tanks, for improving the efficiency of existing IWS.

Once the performance of IWS is improved and consumer satisfaction is achieved, a gradual transition to CWS is possible. Such a transition will result in sustainable CWS. To summarize, the approach of directly converting IWS to CWS will lead to reinforcing the vicious cycle of failure. To overcome such situations, an intermediate step is necessary to bridge the gap between IWS to CWS.



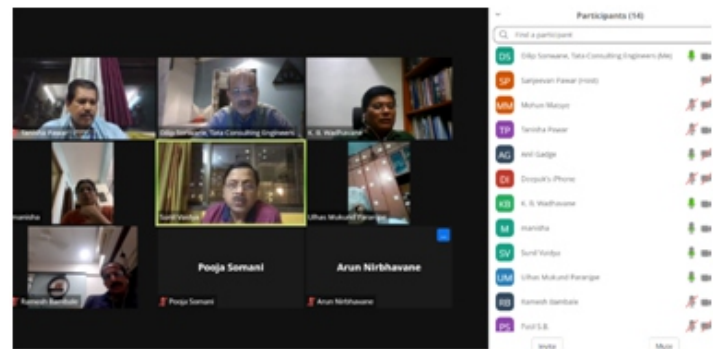
# NEWS ROOM



**A.** The Indian Water Works Association was founded in 1968 with headquarter in Mumbai. IWWA provides a common platform for the persons and organizations working in water and waste water sector to exchange views, share ideas, disseminate information and knowledge about new and appropriate technologies for improving and upgrading the services. IWWA Mumbai Centre celebrated Founders Day On 10th October 2021 in the memory of Mr D R Bhise, Founder-IWWA.

**B.** The Engineers Day was celebrated to commemorate the birth anniversary (15th September) of the greatest Indian Engineer Bharat Ratna Shri Mokshagundam Visvesvaraya as Engineer's Day. On this occasion, a MoU has been signed between IWWA Mumbai Centre and Jalvardhini Pratisthan to increase co-operation between two organisations.

**C.** The Managing Committee meeting of Mumbai centre was held on 25-11-2021 under virtual mode.



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