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Abdul Rahman Mohammed is a young entrepreneur with a degree in marketing & finance, who has successfully steered the company into a leading manufacturer of advanced quality water and wastewater treatment solution provider in India. His modern business approach supported by technological intervention and dynamic leadership has made his group companies grow efficiently with turnover above INR 1000 million.

CAREFUL MANAGEMENT REDUCES WATER STRESS

The world is facing uncertain and worrying times due to water stress and growing pollution. The severe impact of climate change is also visible in several parts of the globe with torrential rains and drought becoming a common occurrence. The recent heavy rainfalls inundated the Indian cities of Bhopal, Bengaluru, and Hyderabad claiming loss of lives and properties. The spiralling water stress has consequences for the water industry which are already having a major impact on the management of water utilities and manufacturers of all types of equipment.

India continues to be facing difficulties as compared to other countries in terms of access to safe water. Almost half of the households in India still lack access to safe water. The situation threatens to worsen further with India's population growth expected to touch 1.6

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billion by 2050. India is set to surpass China as the world's most populous country in 2023, a United Nations report recently predicted that high fertility would also challenge the economic growth of the country.

By 2030, India's water demand is projected to be twice the available supply, implying severe water scarcity for hundreds of millions of people and an eventual 6 percent loss in the country's GDP. It is not surprising that the WWF's Risk Filter analysis has projected a bleak scenario for India, with 30 Indian metros and tier 1 cities being qualified as 'high risk' and extremely 'susceptible to water stress in the next few decades. The pandemic has further increased the pressure on already strained water resources as overstretched water utilities and municipal water supply services who have been struggling to meet current water supply gaps.

It is absolutely essential that water utilities must adopt the smart and modern approach to water management in Indian cities and uncover the unlimited potential that digital technologies can offer to transform the city water network systems. What India needs is a mission–mode approach to lead the change in building a water–smart and resilient India. It essentially needs understanding and swift decision–making around the critical challenges and how smart water technologies can lead the way for a better water future with sustainability.

Globally, water utilities could save an estimated USD 7–12 billion each year by using smart water solutions such as advanced leak detection and pressure management techniques to maintain and build water networks.

24 KLD Fully Automatic RO Water Treatment Plant

Water Supply System

As per the constitution of India, water is a state subject, and the responsibility of water

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resources development and management rests with individual states. Water governance in India is decentralized at the state level and governed by the states governments.

At the central level, the provisioning of water supply in the city mainly lies under the purview of the Ministry of Jal Shakti through formulating policies and providing resources to meet urban demand. The erstwhile Ministry of Water Resources, which is now known as the Ministry of Jal Shakti had introduced National Water Policy in 1987 and revised it in 2002 and 2012 making significant changes for the management of water resources and supporting drinking water infrastructure. The regulatory management of the water supply has been put in place to help meet the demands of industries, agriculture as well as the population.

To effectively handle the water scarcity and ensure an adequate supply of water to support the industrial and citizen demands, the city authorities are using flowmeters to track water consumption by each locality and business to understand the demand and manage it. The data from the flow meters are collated digitally and sent wirelessly to a central control room to analyze and track water usage and optimize water management. The flow meters are used to ensure users adhere to allocations of water when supply is limited as well as reduce leakage from the distribution network, an important challenge that India is facing with almost half of supply getting lost in transition.

Reducing Leakage

A World Bank estimate suggests that a staggering 45 million cubic meters of treated water is lost globally through leakage every day. This is an enormous quantity of water that must be replaced, treated, and pumped again to maintain supplies to customers. Reducing water leakage is vital for addressing water stress challenges while increasing the sustainability of the system.

A good example is from the Koppal district in Karnataka where end–to–end digital solutions are helping the water authority track, measure, and optimize water usage. The 1.3 million population of Koppal district was facing regular water shortages with disruption in supplies leading to economic losses. The challenge was to accurately measure water flow and use digital technology to integrate measurement and track water usage, but also leakage. The digital system installed helped to detect even very small variations in flow that had been crucial in combating the water shortage challenges.

Water Leaks are not only costly for utilities but it highly increases the chance of water pollution. India is among the countries with high levels of the water loss ratio, and needs the technology and smart monitoring system to reduce on such wastage with quality monitoring in the supply network. Electronic instruments, such as pressure and acoustic sensors, telemetry units, and software connected wirelessly, providing inputs

on a real–time basis to the monitoring system create insights for the decision–makers and allow utilities to detect and pinpoint leaks quickly and precisely. Data–driven technologies such as continuous monitoring and adaptive control can enable the optimization of water resources vis a vis supply and distribution network.

India is facing the daunting task of water leaks that varies between cities depending on the location and age of the water supply system. Some cities are losing upto 70 percent of supplied water due to broken pipelines, tampered meters or prevailing water theft, etc. Pipe leaks and breaks that allow water to escape are dangerous as it becomes the source of contamination harming the quality of water. Water pollution in the country is a serious issue as an estimated about half a million children die every year due to water–borne diseases.

The water distribution network is hidden below the surface where it can't be easily seen or measured and tends to have undetected water leaks. The operators find it difficult to locate the real place or cause of leaks and breakdowns and what percentage of water is being wasted. Repair efforts are usually done to the most obvious places of water loss, like significant water main breaks or clearly visible water accumulation at the surface.

Reusing Wastewater

Treating and reusing wastewater creates a 'new' water source, says The World Resources Institute (WRI), and may hold the key to alleviating severe water stress. Aside from water reuse, there are other valuable by–products of recycling wastewater.

Urban India is generating about 73 billion liters of municipal wastewater every day and has a very limited capacity for its treatment. It is estimated that more than two–thirds of it is never treated and disposed of as it is in water bodies. India needs to develop not only treatment plants but also an adequate provision of reusing treated water for industrial and agricultural purposes. The challenge lies not only in channelling used water back into the waterways post–treatment, but processing it to the level of reuse for other applications. There has been a growing trend worldwide toward water reuse projects. Some classic example is Singapore, which uses almost 40 percent of wastewater for augmenting its water supplies. Australia, the USA, and Israel deliver high–quality treated water that can be used to augment the potable water supply. The wastewater treatment plant in Adelaide, Australia delivers 3.8 billion liters of reused water for recreation and commercial purposes every year. In order to achieve that it uses the most reliable and accurate measurement instruments to ensure that water is safe to be discharged back into the environment. India needs to follow these best practices to make water reuse a lucrative affair while addressing the water scarcity challenges as well.

In India, Chennai Metropolitan Water Supply and Sewerage Board (CMWSSB) has formulated a set of service standards and installed two Tertiary Treatment Reverse Osmosis (TTRO) plants, the first facilities of this nature and scale in India to treat and reuse wastewater. Once these plants ramp up to a full capacity of 45 million liters per day (MLD) each, they will be able to recycle about 20 percent of Chennai's sewage, enabling the city to reduce its consumption of fresh water. A study by Anna University has calculated that by 2050, Chennai can meet up to 50 percent of its water needs by recycling and reusing its sewage.

3672 FRP Pressure Vessel for Industrial RO Water Purification System installed in Le–Meridien

Such examples are rare in India, but it needs to be followed by all water utilities and municipalities, to begin with reuse facilities for non–potable purposes to scale up and meet the demand of industries and irrigation.

Smart Technologies

Globally, water utilities could save an estimated USD 7–12 billion each year by using smart water solutions such as advanced leak detection and pressure management techniques to maintain and build water networks. The information systems will enable the collection and interpretation of data, which can optimize capital expenditure management and smarter water quality monitoring systems that include remote–controlled devices and sensors. Sahara Industry has indigenously developed modern manufacturing solutions for producing smart water treatment systems for industries and water utilities. The products are designed

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specifically as per Indian requirements and working conditions to meet the regulations and help in day to day operations of water utilities and manufacturing units helping them develop and manage smart water supply systems.

Adoption of smart technologies provides diversity and innovativeness, by combining water as per usage with digital control to support data–driven models that can help integrate and optimize smart pumps, valves, sensors, and actuators. It can also enable each device to “talk” to each other or for that matter to the utility and customers, and send real–time information that can be accessed and shared over the cloud for taking immediate remedial actions leading to better service standards and reducing operational costs.

Future Growth

One of the biggest challenges of this decade could be the declining water resources and meet growing demands for water. We need to understand the emerging situation and devise an effective plan for implementation with resource generation and augmentation and creating new water from the used water. Technology has to play an important role.

Digital technology is helping water companies around the world sustain the growth in demand and an increasingly unpredictable supply of water. Finding a route to satisfy the growing demand for water is arguably only achievable through maximizing the efficiency of our water treatment. The by–product of doing so also helps in minimizing the environmental impact of water treatment and distribution. Advanced digital instruments and analysis are helping water utilities to meet the needs and expectations of a growing population.