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Industrial water reuse remains the key to sustainability

Aamir Jariwala : June 2, 2011, 2:08 pm



New Delhi : Depletion of underground water due to its misuse and the rising cost of fresh water due to differential water tariffs for industrial, domestic and agricultural use of water are cited as the prime reasons for persuading industry to look at water recycle, a viable proposition now due to the cost of treating the available raw water and the cost of disposal of effluent.

Pollution control board standards for all manufacturing industries are planned to become more rigorous and enforcement would become tighter with measures of effluent disposal, water recycling, and minimizing wastewater being considered while granting permissions to new industry.

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As per Central Pollution Control Board (CPCB), the water consumption in Indian industry is about eight per cent of the total fresh water use in the country and total industrial wastewater discharge about 83,048 MLD. Hence, civic bodies are encouraging industry to treat sewage and use it for their processes, rather than draw from the scarce water resources.

As per World Bank, the water demand for industrial use and energy production will grow to 228 BCM in 2025. Reverse osmosis, ultra-filtration systems and other tertiary treatment processes are followed by industry for resource optimization.

On the other hand, recycle technologies mainly comprises Activated Sludge Process (ASP), Fluidized Aerobic Bioreactor (FAB), Membrane Bio-Reactor (MBR) and Sequential Batch Reactor (SBR). SPML has adequate experience in effluent treatment with plants in Okhla, Bawana, Naraina & Lawrence Road successfully installed and running in Delhi.

Water-intensive industries

The industrial segment uses water for its heating and cooling processes after which 80 per cent of it is discharged as waste water and effluent. Thermal power, petroleum & refinery, textiles, pulp and paper and iron and steel are highly water-intensive sectors where water is primarily used in heat transfer.

In power plants, refineries, chemical industries and steel plants, chemical industries and steel plants, water is the most cost-effective medium to produce steam in boilers to produce electricity. In air-conditioning and cooling tower units, there is no better means to lower the temperature. In our experience, SPML Infra executed a water intake and plant water system for the Bakreshwar Thermal Power plant and a Raw Water Makeup System from Panchet Dam Reservoir to Santaldih Thermal Power Station.

Other leading players in the industrial water sector include VA Tech Wabag, Ion Exchange, Thermax, Driplex and Doshi Veolia.

ISO-14001, the prevailing industry standard followed by most responsible and large industrial players makes it mandatory to install zero liquid discharge plants. In distilleries where water is an integral part of the process, through zero discharge treated effluent is used for bio-composting using agricultural residues and even municipal solid wastes. Refinery Sector wastewater is reused as make-up water for fire fighting, green belt development and other non-potable purposes.

Desalination for industrial use

Desalinated water has been mainly used for coastal areas as the transportation cost is fairly significant. Major deterrents are energy costs and environmental concerns, related to disposal of the concentrate and the impact on marine life. Production cost of sea water is likely to reduce with better membrane technology and improvements in energy recovery.

As per a study, of the 70 cities in the world with no direct access to additional fresh water source, 42 are in coastal areas. Traditionally, the Middle East has been the biggest market whereas other growth will be witnessed in USA, Israel, Spain, Australia, China and Mediterranean (Algeria, Libya).

However, the market for desalination is relatively nascent in India with only few desalination projects. Most of the desalination plants are in the industrial sector – Nirma Industries, Reliance Industries, Gujarat Electricity Board, Chennai Petroleum Corporation.

The largest desalination plant in India is coming up in Minjur, Chennai due to the surface water scarcity in the region.

SPML's JV with Aqualyng, a Norwegian market leader in RO desalination is a step towards addressing the paucity of fresh water in coastal regions of our country, both for industrial and drinking purposes.

In conclusion, the industrial water & wastewater treatment markets are expected to grow on account of growing investments in the high water polluting sectors. Industrial water reuse is the key to sustainability.

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