SPML Engineering Life

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Water | Energy | infrastructure | Environment

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SPML INFRA COMPLETED INSTALLATION OF 220 KV GIS SUBSTATION AT ALIPURDUAR, WEST BENGAL

220 kV GIS Substation, Alipurduar

The construction and erection work of 220 Kv Gas Insulated Substation (GIS) is completed in Alipurduar, West Bengal with the charging of the system on 31st August, 2017. The GIS Substation is technologically advanced and more reliable than the traditional air-insulated substations (AIS) as it uses a superior dielectric gas, SF6, at moderate pressure for phase-to-phase and phase-to-ground insulation. It is an automated system that could be controlled from a computer; is compact and lesser space is required for installation; and is maintenance free for next 20 years. The project will help our client, West Bengal State Electricity Transmission Company Limited to provide accurate voltage level of power supply in the designated areas. SPML Infra is executing a similar project in Sikar, Rajasthan.

WASTEWATER THE UNTAPPED RESOURCE

In the next one or two decades, the largest rates of urbanization will occur in the smaller urban settlements having 5 to 10 lac residents. This will greatly impact wastewater production and the potential for both decentralized treatment and use. By 2030, global demand for energy and water is expected to grow by 40% and 50%, respectively. Most of this growth will be in cities, which will require new approaches to wastewater management.

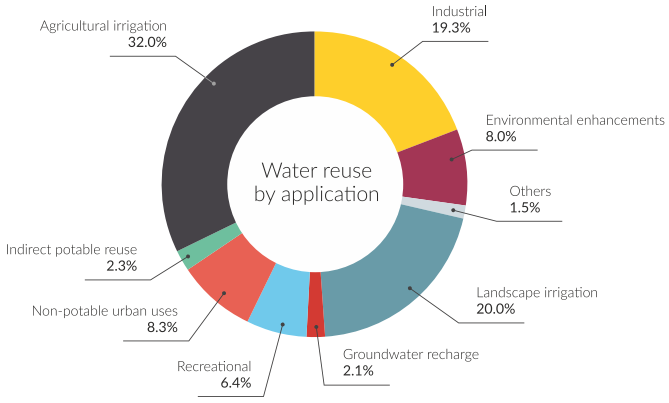
Over 80% of all the wastewater from our homes, cities, industries and agriculture flows back to water bodies without being treated or reused – polluting the already scarce fresh water sources and losing valuable nutrients and other recoverable materials. It is estimated that only 20% of wastewater is being treated globally and treatment capacity typically depends on the income level of the country. On average, high-income countries treat about 70% of the wastewater they generate, while that ratio drops to 38% in upper middle-income countries and to 28% in lower middle-income countries. In low-income countries, only 8% of industrial and municipal wastewater undergoes treatment of any kind.

Wastewater management is being seriously neglected, and wastewater is grossly undervalued as a potentially affordable and sustainable source of water, it needs to be seen as a resource, rather than a burden to be disposed of.

There are many treatment processes and operational systems that will allow us to use wastewater to meet the water demand in growing cities, support sustainable agriculture, and enhance energy production and industrial development, therefore contributing to a more sustainable, efficient and equitable water use.

We cannot allow wastewater to be disposed of in a manner it is being done presently, is dangerous to human being and damaging the natural environment. Inadequate wastewater management has also a direct impact on ecosystems and the services they provide.

95% of water that enters the home goes down the drain daily.



Global water reuse after advanced tertiary treatment

Israel recycles 80 percent of its sewage, using much of it for irrigation.

Singapore's wastewater recycling plant uses advanced membrane techniques to produce water that is clean enough to be used for drinking.

SPML Infra has contributed significantly in the treatment of wastewater from design to application of technology, construction to management and operation of sewage treatment plants, common effluent treatment plants, tertiary and water reuse treatment plants, sludge treatment, bio-gas & power generation.

DECENTRALIZED SEWERAGE SYSTEM AT MIRA BHAYANDAR, MAHARASHTRA

Mira Bhayandar is located at the northern threshhold of Greater Mumbai. Being a satellite town of Mumbai, it has been identified as a growth center around Mumbai, is well connected by suburban railway and Mumbai Ahmadabad national highway. Due to close proximity to Mumbai, Mira Bhayandar is experiencing rapid urban growth due to easy access and economical property cost and rent.

SPML Infra has executed decentralized sewerage system having separate collection and treatment facilities in 10 zones across Mira Bahayandar. This is one of India's largest and first comprehensive underground sewerage system having:

- 115 kilometres of sewer lines
- 10 pumping stations
- 10 sewage treatment plants of various capacities ranging from 7 MLD to 17 MLD with total capacity of 115 MLD having advanced MBBR treatment technology with high level treatment efficiency.

Salient Features of the Project

- 1st time in India, a decentralized sewerage scheme where sewage is collected and treated at the point of generation
- All the sewage treatment plants are in residential areas using MBBR technology that requires less power consumption and lesser space than any conventional sewage treatment plants; no foul smell or bad odor
- Environmental pollution is under control; health benefits, epidemics and viral diseases reduced effectively and overall clean environment
- Planned disposal of treated wastewater has reduced stagnation of water in storm water drains
- Septic tanks are completely eliminated which reduced soil & sub soil water pollution
- Better sanitation and cleanliness in the streets and roads

11 MLD Decentralised Sewage Treatment Plant at Mira Bhayander

13 MLD Decentralised Sewage Treatment Plant at Mira Bhayander

INTEGRATED SEWERAGE SYSTEM FOR CLEAN GANGA - KANPUR

42 MLD Sewage Tretament Plant, Kanpur

Hon'ble Chief Minister of Uttar Pradesh, Shri Yogi Adityanath inaugurated the Integrated Sewerage System on 7 September 2017 during an event.

Kanpur, the heavily industrialized city of Uttar Pradesh is having tanneries and other polluting industries that pose the biggest challenge of the gigantic task of clean Ganga mission. The main drain of the city discharges the highest amount of untreated sewage (@138 MLD) into the river and passes through heavily populated and congested areas.

SPML Infra has recently completed the Kanpur Sewerage System which is strategically planned and executed to treat the sewage and effluent of the current population of more than 3 million people and numerous industries with inbuilt capacity to handle the future demands for next 30 years.

CM Uttar Pradesh inaugurating
Kanpur Sewerage System, 7 September 2017

The project has:

- 130 km sewerage network having pipes from 150 mm to 1800 mm dia
- Three pumping stations of 14, 14 and 42 MLD
- 42 MLD sewage treatment plant based on activated sludge process including power generation from biogas
- 3 biogas engines of 380 KVA capacities
- 1140 Kw power generation which will fulfill the partial power requirement of the plant.

WASTEWATER TREATMENT PLANTS BUILT BY SPML INFRA

SPML Infra provides solutions for proper treatment and disposal of municipal and industrial wastewater to ensure that the generated wastewater does not harm our delicate ecosystem and is recycled for further usage. It also helps industries to meet the ever increasing industrial wastewater regulations, while improving efficiency and reducing waste disposal costs. SPML has constructed a number of sewage and effluent treatment plants including one of the largest STP – 240 MLD in Ahmedabad and CETP - 35 MLD in Delhi.

SEWAGE TREATMENT PLANTS

240 MLD Sewage Treatment Plant, Ahmedabad, Gujarat

72 MLD Sewage Treatment Plant, Okhla, Delhi

70 MLD Sewage Treatment Plant, Nasik, Maharashtra

COMMON EFFLUENT TREATMENT PLANTS

35 MLD Common Effluent Treatment Plant, Bawana Industrial Area, Delhi

24 MLD Common Effluent Treatment Plant, Okhla Industrial Area, Delhi

21.6 MLD Common Effluent Treatment Plant, Naraina Industrial Area, Delhi

PROJECT UPDATE

BELLARI WATER SUPPLY SCHEME, KARNATAKA

CM Karnataka Inaugurates Ballari Water Supply Projects-13 September 2017

Hon'ble Chief Minister of Karnataka, Shri Siddaramaiah has inaugurated water supply scheme for 3 zones namely - Gonal, Raghavendra Colony, and Vajpayee Layout having 1203 household connections under Ballari Water Supply Project on 13th September, 2017. SPML Infra is proposed to complete phase -1 (28 Zone) having 50,253 connections of the city area by April 2018.

Media Buzz

Interview of SPML Infra Chairman, Mr. Subhash Sethi published in prominent industry magazines, EPC World, August 2017, special issue on Infrastructure in Maharashtra and an article published in Indian Infrastructure, August 2017 issue covering 3 years of development in water and waste management sector under several development schemes initiated by govt. of India.

"Maharashtra is on the cusp of growth"

SUBHASH SETHI, Chairman, SPML Infra Limited shares with Garima Pant on how his organization is looking forward to be part of the development plan to realize the vision of Maharashtra government

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Ambitious Targets

But some roadblocks remain to be addressed

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SPML INFRA ANNUAL REPORT 2016-17

SPML Infra Annual Report 2016-17 highlighting recent successes of organization – financial and sectoral. The report also highlights the remarkable achievements of completing a number of water and power projects; a number of prestigious awards company has received in past years; several technology led initiatives among others.

Paradigm shift

SPML

SPML Infra Limited

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MODERN TECHNOLOGY FOR WASTEWATER TREATMENT

Traditional methods of wastewater treatment are being increasingly challenged due to identification of more contaminants, increasing industrial activities and ever shrinking fresh water sources. The effectiveness of conventional treatment process has become limited over the last two decades because of new challenges; increased knowledge about the consequences from water pollution have enforced the implementation of much stricter regulations by

authorities expanding the scope of treatment and lowering the maximum contaminant levels set for wastewater discharge. Among them, the most significant are to remove nutrients (nitrogen and phosphorus) and synthetic organic compounds (SOCs) because of their significant impacts on public health and the environment. Wastewater may also carry carcinogens increasing the risk of cancers among vulnerable people who could directly or indirectly come in contact with such wastewater. So, it is pertinent to properly treat wastewater before it runs down the water stream.

With the rapid urbanization in the country, there has been a commensurate increase in the need for water. So, there is an urgent need for treating wastewater using modern technology and recover as much usable water as possible. But the fact is a majority of towns and cities in India have either no sewerage and sewage treatment facilities or the treatment facilities are highly inadequate.

There is a huge gap between wastewater generation and its treatment in India. Even the existing treatment capacity is also not effectively utilized due to inefficient operation and maintenance of existing plants and sewage pumping stations. In a number of cities, the existing treatment capacity remains underutilized while a lot of sewage is discharged without treatment. It is estimated that wastewater from urban centres may cross 120,000 million litres daily (MLD) by 2051 and that rural India will also generate not less than 50,000 MLD. However, wastewater management plans do not address this increasing pace of wastewater generation

The conventional wastewater treatment processes are expensive and require complex operations and maintenance. Due to improper design, poor maintenance, frequent electricity break downs and lack of technical manpower, the facilities constructed to treat wastewater do not function properly and remain closed most of the time.

Aging infrastructure, conventional technologies and microbial or chemical contamination are major threats to public health.

One of the major problems with wastewater treatment methods is that none of the available technologies has a direct economic return. Due to no economic return, local authorities are generally not interested in taking up wastewater treatment.

Innovations in the area of wastewater treatment focus on the principle that wastewater can be a resource. Some of the new technologies being used for wastewater treatment globally to reclaim the resources are:

MEMBRANE FILTRATION

Membrane filtration is essential for advanced water reclamation systems. Micro and ultra-filtration membranes provide excellent pre-treatment to remove a wide range of dissolved contaminants. Membrane bioreactor (MBR) filtration technology is being extensively used for advanced treatment to produce water for reuse by the industries. The treatment with MBR followed by RO and UV treatment is ideal for producing non-potable water.

NANOTECHNOLOGY

Nanotechnology has revolutionized the treatment process that can easily merge with other technologies and modify, endorse and clarify any existing concept. Nanotechnology are being investigated for producing fabrication of membranes from nano materials for decomposition of toxic compounds during the treatment. It will also provide effective segregation of metals, bimetallic nanoparticles, mixed oxides, zeolites and carbon compounds etc from the wastewater.

AUTOMATIC VARIABLE FILTRATION (AVF) TECHNOLOGY

In Automated Variable Filtration (AVF) technology for wastewater treatment, upward flow of influent cleans the downward flow of filter media during the treatment process thus saving on fresh

water used for filter cleaning. In AVF treatment process, two stage series configuration is used to produce very high quality filtrate. This mode is ideal for refining secondary wastewater for reuse.

MICROBIAL FUEL CELLS

Microbial fuel cells is a breakthrough technology where electrical energy could be extracted directly from organic matter present in the waste stream by using electron transfer to capture the energy produced by microorganisms during the wastewater treatment. This technology is still in its development stage and significant advances in process efficiency and economics will be necessary before it could be used widely to produce electrical energy directly from organic matter present in the wastewater.

MBBR Tank at Mira Bhayandar

ADVANCED PHOTO OXIDATION PROCESSES (APOP)

It is a new concept that uses UV-lamps with high energy intensity to eliminate pathogenic microorganisms, endocrine disruptors and other hazardous compounds from wastewater. The principle in the system is that light from ultraviolet lamps is able to destroy inside bacteria and remove chemical substances from wastewater with use of oxidants.

NEW URBAN SANITATION TECHNOLOGY

This technology aims to reuse of energy and minerals with a combination of electro-flocculation (Elflox) and anaerobic digestion in wastewater treatment. Elflox treatment separates the organic pollution from wastewater with electrocoagulation reactor. Anaerobic fermentation technology generates optimum biogas which can be converted into energy for captive utilization.

COKEOVEN (CO) BYPRODUCT TREATMENT

The steel producing plants in India are using this treatment process to recover ammonia from cokeoven liquid. Water pollution problems would be worse if ammonia is not recovered, the most polluting among all the wastes from production units. The two most common processes used for the treatment of cokeoven effluents are trickling filter and activated sludge process.

URINE SEPARATING PROCESS

The development of urine separating toilets and technologies for treating it to produce fertilizer products is a key to managing nutrients with minimal requirements for outside resources, such as additional energy. Producing the same amount of petroleum-based, nitrogen-rich fertilizer takes an enormous amount of energy and non-renewable resources. Urine-separating toilets have already been developed and advanced research is going on to refine it further and use them for wastewater management and creating resources.

With the greater awareness of the need and importance of wastewater treatment among the general public, authorities and policy makers, it is hoped that soon a larger share of wastewater would start getting proper treatment with the help of latest technologies and not just a new source of usable water would be seen on the horizon but also the rivers and lakes in the country would continue to not just support but also help enrich a varied aquatic life.