



Aan Energies Private Limited



green power | clean water

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INTRODUCTION

Aan Energies Private Limited (AEPL), a business enterprise focusing on green energy and clean water, is actively pursuing its business interests in delivering utility scale & commercial power projects, and industrial & commercial water treatment systems (softening plant, de-mineralizing plant, reverse osmosis plants, effluent treatment plant and sewage treatment plant).

AEPL is currently developing various projects with a total capacity of about 200 KLD water treatment systems. Our experience includes projects from commercial – large and small scale, municipal, educational and utility-scale customers.

AEPL is seeking to enhance its reach and develop new bases in the following energy domains: (a) Water and Wastewater Treatment, (b) Solar Power, (c) Wind Energy, and (d) Energy Efficiency and Sustainability. AEPL develops, builds, finances, operates and maintains turnkey projects of above mentioned projects for our customers. Currently AEPL is promoting businesses in India and look forward to expanding its operations worldwide.

Water and Wastewater Treatment



Water is the prime resource essential for survival of human life on earth. All ecosystems and habitats owe their existence to water. While 67% of the planet earth is geographically covered by water, fresh water is only 2.7% of it. Industrial activities and urban growth has increased the strain on fresh water. Hence, Sustainable water management throughout the world is fast becoming a necessity with the looming crisis over water resources threatening the security and livelihood of our ecosystem. Governments across the world are making the provision for clean water to their people by allocating large scale budgets and subsidy programmes.

AEPL believes India require a wide range of water and wastewater treatment systems in order to tackle the above challenges. As a leader in supply of water purification and wastewater treatment systems, with a focus on water reuse and Zero Liquid Discharge, AEPL is uniquely positioned to offer complete range of integrated water and wastewater management solutions.

AEPL has a dedicated team of engineers, technicians and administrators, who have a long history of treating water supplies and wastewater effluents, and are trained in their respective fields to provide superior quality products and unmatched customer services. With our vast experience in the water industry, we can offer a wide variety of systems and solutions to combat the ever increasing pure water demand for drinking and industrial applications, and can address environmental concerns related to sewage and effluent water treatment.

The company is committed to using its collective knowledge, experience and expertise to develop products, systems and services, which come from on-going R&D of process and control, manufacturing technology and colloidal chemistry. AEPL is providing most reliable and cost effective products that meet clients' satisfaction. With offices, representative and dealers' presence in all parts of the country, AEPL can meet its clients' requirements competitively and efficiently.

AEPL provides water treatment systems/ products on EPC, BOO and BOOT basis for the following:

- ◆ Arsenic, fluoride, iron & nitrate removal water treatment systems (with/without solar powered system)
- ◆ Reverse osmosis (RO) water treatment system
- ◆ Potable and industrial process water systems
- ◆ Sewage and effluent water treatment systems including zero liquid discharge

Reverse Osmosis Plant

The natural phenomena of the passage of low concentrated solute towards the high concentrated through a semi permeable membrane is called Osmosis. Reversing this principle by applying pressure on the high concentrated side and passing the solute (here water) through the semi permeable synthetic membrane is called Reverse Osmosis (RO).



Knowing the quality standards, experience and sourcing capabilities allow us to bring in best-in-class products with latest technology right to the doorstep of our customers. Our range of products is suitable for potable water plants, industrial requirements, hospitals, institutions, canteens, hotels and restaurants.

The standard models are available from 250 liters of treated water per hour up to 10,000 liters per hour. We have the tailor made RO systems up to 300,000 liters per hour capacity. The recovery of these RO systems ranges from 15–70% depending on raw water quality and the quality requirement of treated water.

Softener Plant

The presence of scale forming salts of Calcium and Magnesium in water is called as hard water. Removing or replacing these salts to non-scale forming salts is called the process of softening. We employ the ion exchange method using the synthetic polystyrene resins to replace the Calcium and Magnesium salts in to non-scale forming Sodium salts, which are soft while heating.

We manufacture the softener according to clients' requirements. Few of the applications are (a) boiler feed water, (b) laundry applications in hotels and hospitals, (c) cooling tower make-up water for air conditioning and power plants, and (d) soft drinks and other drinks manufacturing plants.

The standard models are available both in FRP (fibre reinforced plastic) and MSEP (mild steel epoxy painted) from 250 liters per hour of treated soft water up to 1,000,000 liters per hour.

Demineralization Plant

Demineralization (DM) produces the water free of minerals (i.e., dissolved solids). Two types of DM plants are available commercially, i.e. two bed demineralizer and mixed bed demineralizer.

Two Bed Demineralizer: Two bed demineralizer plants comprise Cation and Anion exchange columns operating in series. The Cation column converts all dissolved solids in raw water to acids. These acids are then removed as the water passes through the Anion column. When exhausted, the Cation exchange resin is regenerated with acid and the anion exchange resin with alkali.

A degasser tower is incorporated between the Cation and Anion columns to remove the carbonic acid formed due to breakdown of alkalinity by Cation exchange. In degasser tower, low pressure air is introduced at the bottom of the tower, which scrubs out CO₂ from the water sprayed down on a column of packing in the tower.



Mixed Bed Demineralizer: In a mixed bed plant Cation exchange resin and the strong base Anion exchange resins are mixed together. Water passing through this column comes in to contact with these materials repeatedly and is thus subject to an almost infinite number of demineralizing stages. By this method, demineralized water of extreme purity is produced, that cannot be produced by any other commercial process. The applications of these plants are where the treated water quality is critical, like high pressure boilers in power generation, pure and high pressure steam required in sugar factory and in the process of IV fluid manufacturing, etc.

AEPL has capacity to supply both two bed demineralizer and mixed bed demineralizer plants in all sizes from small portable units for laboratories to large multiple installations for power stations and fertilizers factory.

Effluent Treatment Plant

Unprecedented growth of industries especially of chemicals and allied products has resulted in degradation of environment. It has largely contributed to air, water, and noise pollution, which in turn adversely affects the human health, animals and vegetation. Each industrial effluent has different characteristics because of their process and

chemicals used in the process. AEPL can economically design and supply effluent treatment plants for the following industries irrespective of the characteristics of effluent and the quantity discharged.

- ◆ Metallurgical industries (Zinc, Lead, Copper, Aluminum and Steel)
- ◆ Pulp and Paper
- ◆ Pesticides and insecticides
- ◆ Refineries
- ◆ Fertilizers
- ◆ Paints and dyes
- ◆ Leather tanning
- ◆ Rayon and textiles
- ◆ Basic drugs and pharmaceuticals
- ◆ Sodium and potassium cyanide
- ◆ Foundry
- ◆ Storage batteries
- ◆ Acids and alkalis
- ◆ Plastic and synthetic rubber
- ◆ Cement and asbestos
- ◆ Fermentation industry
- ◆ Electroplating industry.



Sewage Treatment Plant

Domestic wastewater from kitchen, bathroom and toilet harm the environment heavily. Particularly, chemical oxygen demand (COD), biological oxygen demand (BOD) and suspended matters present in the wastewater will kill the aquatic life, when discharged without treatment. AEPL has developed sewage treatment plants (STP) in packaged models as well as customary civil construction models ranging from 5 KLD up to 500 KLD. Higher capacity plants are supplied mostly with civil construction. We supply STP for residential apartments, hotels, restaurants, resorts and industries.

Other Water Treatment Systems

Fluoride Removal: Fluoride is essential for our body up a level of 1 mg/l in drinking water. When its concentration goes beyond this level, it affects our body. The disease called 'fluorosis' is caused mainly due to excess fluoride in drinking water. The crippling of hands and legs, deformity in bone and joints, loss of teeth and coloring of teeth are the common causes by this disease. In southern India, the following areas are found to be having high fluoride content in the ground water:

- ◆ Dharmapuri and Krishnagiri districts of Tamilnadu.
- ◆ Kolar, Chikkabellapur, Tumkur and Davangere districts of Karnataka.
- ◆ Chittoor, Anadapur, Nalgonda and Kadappa districts of Andhra Pradesh.

To treat the fluorides, two methods are predominantly followed. These are,

Activated Alumina Process: The water to be treated is passed through a column of activated alumina. The fluoride is adsorbed by the media. The process goes on till the activation presents in the system. Upon exhaustion, the media is regenerated with acid and alkali, and now it is ready for further use.

Reverse Osmosis Method: During the process of RO, the fluoride salts are rejected along with other salts. Several hundred plants are working successfully across the country for removing fluoride content from water.

Iron Removal: The coastal belt of whole India and few places of hilly track are affected by iron in the ground water. Iron content also affects the life of human beings, particularly the blood hemoglobin. Common treatment for removal of iron is the oxidation and precipitation method. The BIRM (back-washable iron removal media) media filters are very effective in removing the iron. We employ MnO_2 as well as green sand to remove iron content in water.

Arsenic Removal: Arsenic poisoning or arsenicosis is caused by the ingestion, absorption or inhalation of dangerous levels of arsenic. Arsenic is a natural semi-metallic chemical that is found all over the world in groundwater. East India, particularly West Bengal, eastern states and northern hilly track are affected by arsenic content. Arsenic poisoning



can cause major health complications if not treated, including death. Activated alumina process, coagulation method, and china clay adsorption method are commonly employed for removing Arsenic content from drinking water. However, RO systems give the best results in removing Arsenic.

STRATEGIC ALLIANCES

AEPL, depending on the nature of project, used to have need based alliances with manufacturers and contractors.

Few of our current alliances are as follows:

- ◆ Oriental Enterprises, Mizoram
- ◆ Solana Enterprises, Tamilnadu
- ◆ Hydrolysis, Tamilnadu
- ◆ Sri Sai Manasa Nature Tech Private Limited, Andhra Pradesh
- ◆ Conergy Energy Systems (India) Private Limited, Karnataka
- ◆ Enzen Global Solutions Private Limited, Karnataka.

MANAGEMENT

We, at AEPL, believe that the skills and passion of our people are critical in everything we do. Our multi-cultural team consists of Chemical Engineers, Mechanical Engineers, Electrical Engineers, Civil Engineers, Project Managers, Science Graduates and Economists. The key management comprises following members:

M Rajkumar

Rajkumar is a Post-Graduate Engineer in Power Systems. He has served at various levels in Semi-Government, Private and Public Sector organizations. He has about 20 years of professional experience and was involved in design and development of a wide array of power projects and water systems across India. He has involved in design, engineering and execution of several megawatt scale solar power projects and solar based water treatment plants viz. iron removal, arsenic removal, fluoride removal and mini rural water supply scheme for drought affected areas in the States of Bihar, Rajasthan and Tamilnadu. He was also involved in successful implementation of India's first SPV Market Development Programme under World Bank Line of Credit.

He has involved in design and execution of several medium and large scale water treatment projects funded by bi-lateral and multi-lateral agencies such as World Bank, ADB & KfW. He has published several papers in the field of renewable energy and extensively travelled across Asia and Europe. He has managed and lead engineering and design works for projects (solar, biomass and water treatment system) valued more than Rs 200 billion, all within the service sectors that AEPL offers.

Companies Worked

- ◆ Indian Renewable Energy Development Agency Limited (A Govt. of India Enterprise)
- ◆ Engineers India Limited (A Government of India Enterprise)
- ◆ EMMVEE Solar Systems Private Limited (A Joint Venture of EMMVEE, India & SolarCAP AS, Denmark)
- ◆ Tata Consulting Engineers Limited
- ◆ Punj Lloyd Delta Renewables Private Limited (A subsidiary of Punj Lloyd Limited)
- ◆ M/s Intergen Energy Limited (JV of Indogrec, UK & Pacific Export Import AZ, Dubai)

V Ramachandran

V Ramachandran is a Chemical Engineer and has acquired his Master of Technology in Energy Conservation and Management. He is a Certified Energy Auditor by the Bureau of Energy Efficiency (BEE), and is specialized in process design of power plant, energy audits and water conservation studies. He has about fifteen (15) years of experience in this field. He has conducted energy audits and water conservation studies for more than 50 industries like power plant, chemical industries, textile, cement, etc. He has published several articles and papers on energy conservation and waste heat recovery systems. He has visited Sweden, Maldives, Bangladesh and South Africa as part of his business.

Companies Worked

- ◆ Tata Consulting Engineers Limited (TCE)–Bangalore
- ◆ The Energy and Resources Institute (TERI)–New Delhi
- ◆ APITCO Limited–Hyderabad
- ◆ Chemprojects Consulting Engineers Pvt. Ltd.–New Delhi

V Thangaraj

Thangaraj is a Chemical Engineer and has about 35 years of experience in both R&D and design engineering of water and wastewater treatment systems in leading Indian industries. He was instrumental in research and development of 'multi-directional filters'—an advanced version of PSF and up-flow filters, and 'iodine releasing resin'—for removal of bacterial contamination in potable water at Ion Exchange (India) Limited. He has implemented several water and wastewater treatment systems for multifarious industries as well as other domestic water requirements.

Companies Worked

- ◆ Ion Exchange (India) Limited
- ◆ Ion Exchange Services Limited
- ◆ Trivikram Equipments & Services
- ◆ Aquaplus Technologies



B Premkumar

Premkumar is a graduate in Mathematics and has started his career with Ion Exchange Limited as sales and marketing executive of water and wastewater treatment systems. Now, he has about Sixteen years of rich experience in process management and operation, sales, marketing, collection and team management. He has attended several technical conferences related to design and optimization of water and waste water treatment systems. Providing on-time services with superior quality and keeping customer relationship management on top-priority are the key strengths, which helps Mr Premkumar in attaining success in his professional career.

Companies Worked

- ◆ Abhra Water Tech Private Limited (Pentair Group), Chennai
- ◆ Green World Enviro Tech, Chennai
- ◆ ABS Enviro Tech India Private Limited, Chennai
- ◆ Selvamani Exports & Imports India Private Limited, Chennai
- ◆ Fontus Water Limited, Chennai
- ◆ Ion Exchange Limited, Chennai

PROJECTS EXECUTED BY AEPL TEAM

- ◆ Design, supply and installation of 40 nos. of 500 l/h Reverse Osmosis (RO) Plants for various Government Schools in Salem under Panchayat Union Scheme.
- ◆ Design, engineering and supply of 500 l/h RO Plant for Brooks Enviro Tech, Chennai.
- ◆ Design, engineering, supply, installation and commissioning of 1000 l/h RO Plant at Pandian Heart Institute, Madurai
- ◆ Design, engineering, supply, installation and commissioning of 1000 l/h RO Plant at Sathyam Grand Resorts & Hotels, Chennai
- ◆ Design, engineering, supply, installation and commissioning of 1000 l/h RO Plant at Andavar Modern Rice Mill, Vikrawandi.
- ◆ Design, engineering, supply, installation and commissioning of 1000 l/h RO Plant and 500 l/h DM Plant at Pandian Heart Institute, Madurai
- ◆ Design, fabrication, supply and supervision of MS softener of 7 t/h capacity for Veasons Energy Systems Pvt. Ltd., Trichy
- ◆ Servicing of existing softener plant and supply of 1000 litre capacity water tank at HRS Building, Highways Research Station, Highways Department, Chennai.
- ◆ Design, supply and installation of 1000 l/h softener plant at Kovilpatti
- ◆ Design, engineering, supply, installation and commissioning of 2 KLD Effluent Treatment Plant (ETP) at GoodRite Products, Chennai
- ◆ Design, engineering, supply, installation and commissioning of 40 KLD ETP at Pragathi Broiler Farms, Chennai
- ◆ Design, engineering, supply, installation and commissioning of 2 KLD Sewage Treatment Plant (STP) at DNV International Academy, Dharmapuri
- ◆ Installed a 700 KLD textile effluent recycling system with conventional ETP and RO combination for Aurora Textile Processing Mills Private Limited at Tirupur.
- ◆ Conducted a study for colour removal of textile dyeing effluent using nano-filtration and silica reduction by chemical addition method at Reliance Textile Processing Private Limited, Tirupur.
- ◆ Erection and commissioning of recycling plant for car washing effluent and removal of oil and grease using ultra filtration at Bajaj Auto Limited, Chennai.
- ◆ Design, supply, erection and commissioning of water treatment plant and effluent treatment plant at Hindustan Motors Thiruvallore.
- ◆ Detailed engineering, erection, commission, operation and maintenance of effluent and sewage water treatment and recycling plants at Hyundai Motors Limited, Sriperumpudur.
- ◆ Design, fabrication, erection and commissioning of imported coolant oil effluent treatment plant at Rane Engine Valve Limited, Viralmalai.
- ◆ Design, supply, erection, testing and commissioning of 280 KLD STP for Shree Rajarajeswari Medical College, Bangalore, Karnataka.

OFFICE LOCATIONS

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