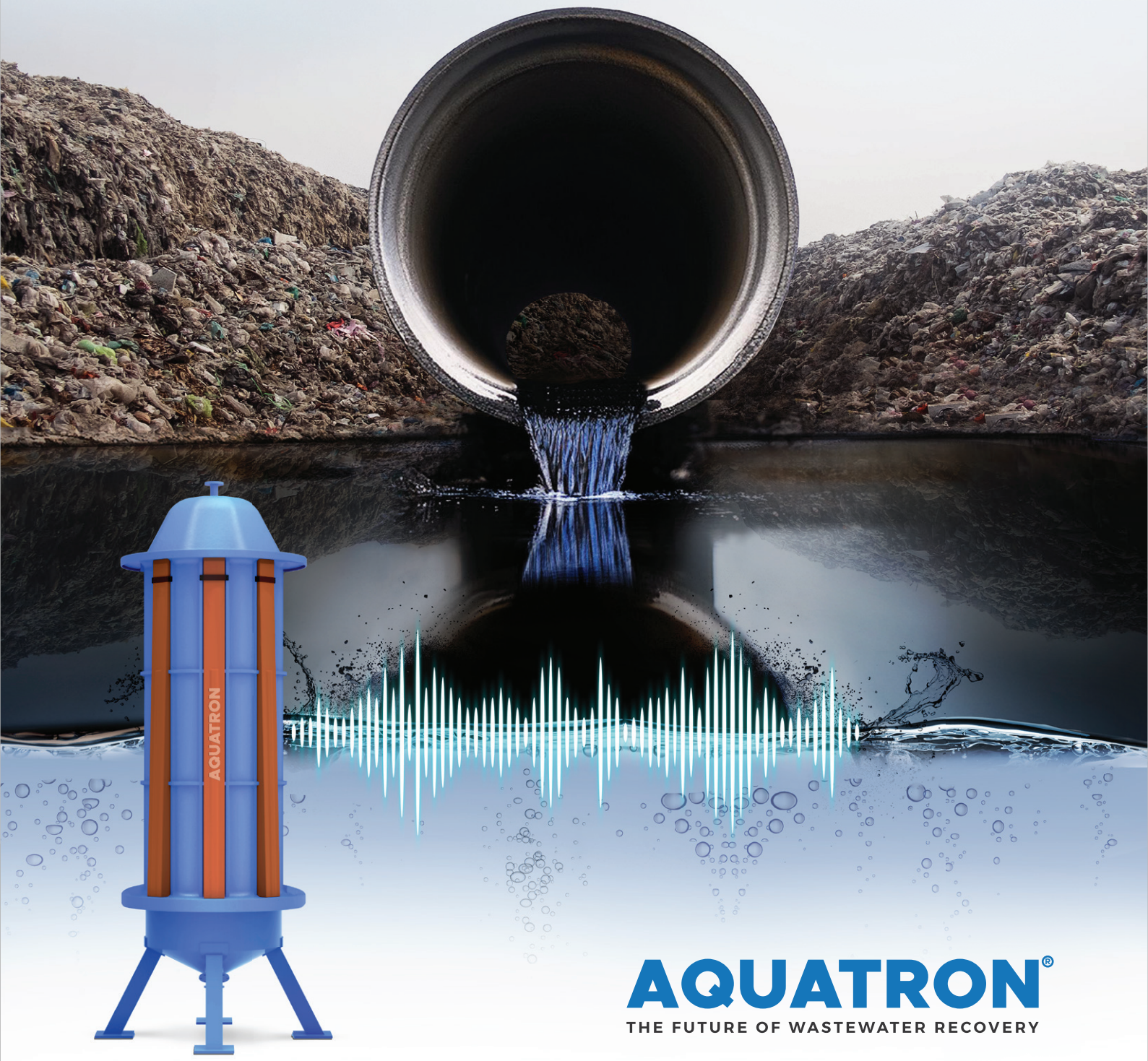
Livprotec
RESTORING EARTH'S HEALTH

# LEACHATE TO REUSABLE WATER

ARGUABLY THE ONLY WATER RECOVERY TECHNOLOGY FOR LEACHATE




**AQUATRON®**

THE FUTURE OF WASTEWATER RECOVERY

## INCREASE IN POPULATION LEADS TO AN INCREASE IN WASTE GENERATION

The increasing global population has led to an inevitable surge in waste generation. Around 50% of the municipal solid waste which is an assortment of household waste to industrial and medical waste, still gets disposed of in landfills and open dumpsites. As cities expand, these dumpsites, originally located outside urban areas, are now within the city limits, posing threat to the health and living conditions of residents.

## LEACHATE ADVERSELY AFFECTS HUMAN HEALTH AND THE ENVIRONMENT

As the waste in landfills undergoes decomposition, the inherent water present in the waste, along with rainwater percolation through the waste, generates a toxic liquid known as leachate. It comprises organic matter, inorganic chemicals, heavy metals, xenobiotic compounds etc.

The leachate, amalgamation of different wastes, has the potential to disrupt the environmental equilibrium. The potential risk factors associated with leachate are:

- Demineralisation of soil
- Alteration of soil's porosity, pH, and saline levels
- Accumulation of heavy metals in soil
- Groundwater contamination due to leachate infiltration
- Eutrophication and toxicity to aquatic life
- Health risks such as increased susceptibility to cancer, cardiovascular and kidney diseases

# AQUATRON®

# ARGUABLY THE ONLY WATER RECOVERY TECHNOLOGY FOR LEACHATE

AQUATRON uses the patented water recovery technology to convert the leachate of variable composition to clean water of reusable standards. It uses the principles of physics to achieve Zero Liquid Discharge (ZLD) and Zero Discharge of Hazardous Chemicals (ZDHC).

This achievement is realised without relying on chemical, biological processes, reverse osmosis (RO), or evaporator technologies. Through this disruptive technology, the leachate undergoes treatment that systematically eliminates heavy metals, hazardous toxins, facilitates the recovery of valuable raw materials and clean water to the reuse standards - all in a sustainable manner, at a low Total Cost of Ownership (TCO).

## LEVERAGING THE PRINCIPLES OF MOLECULAR PHYSICS TO TREAT LEACHATE

AQUATRON uses the patented Fine Particle Shortwave Thrombotic Agglomeration Reaction (FPSTAR) technology that uses the principles of physics, specifically, the principle of shortwave resonance.

Every element in the periodic table possesses a specific frequency of disassociation (SFoD) at which they disassociate from the compounds to a stable elemental state. Once the leachate is bombarded with SFoDs corresponding to the elements present in it, they disassociate from the dissolved compounds and form non-toxic stable elements. These elements are then agglomerated via Van der Waals forces and can potentially be recovered as raw materials.
The clean water is obtained after filtering through the advanced filtration system.

## AQUATRON'S PROMISING RESULTS ON LEACHATE TREATMENT

The general characteristics of leachate treated and the results obtained are outlined below:

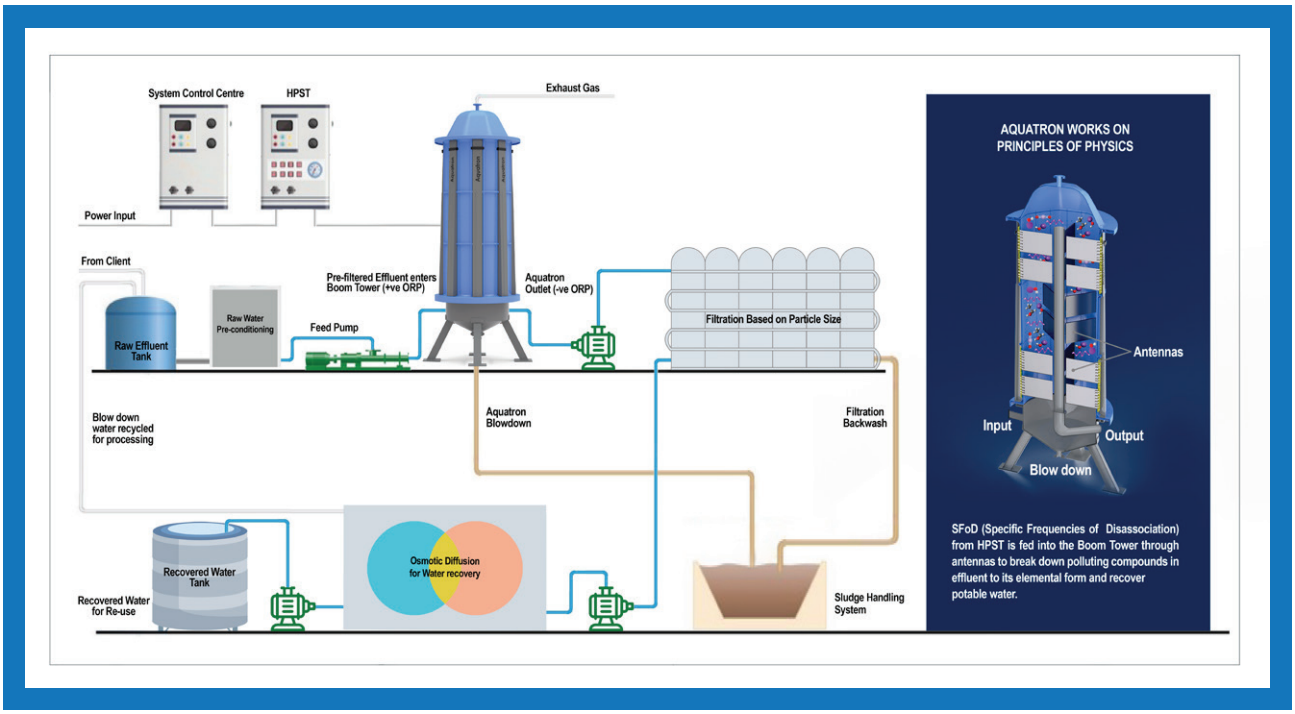
| PARAMETERS | RAW LEACHATE | AQUATRON+RFOD PERMEATE (Final treated water) |
|---|---|---|
| pH | 6 - 7.5 | 8.5 - 9 |
| TDS | 20000 - 25000 | 150 - 200 |
| TSS | 300 - 700 | 1 - 5 |
| Ammonical Nitrogen as N | 750 - 1250 | 8 - 12 |
| Kjeldahl Nitrogen as N | 1000 - 1500 | 1 - 10 |
| BOD | 2500 - 3000 | BDL |
| Lead | 0.5 - 2 | BDL |
| Zinc | 0.15 - 3 | BDL |
| Nickel | 0.1 - 0.6 | BDL |
| Fluoride as F | 0.2 - 0.6 | 0.01 - 0.05 |
| Chloride as Cl | 3500 - 4500 | 30 - 60 |

P.S. Please note that only the major parameters are showcased here. A complete report based on IS 10500:2012 standards was conducted, and the treated water was found to adhere to the mentioned standards.

## TEN ADVANTAGES OF LEACHATE MANAGEMENT WITH AQUATRON

- One technology for efficient treatment for all leachate types
- Zero Liquid Discharge (ZLD)
- ZDHC — Zero Discharge of Hazardous Chemicals (ZDHC) without evaporators
- Reusable water for agricultural and industrial uses
- Recovery of raw materials from sludge
- Reduced capital expenditure (CapEx) and operational expenditure (OpEx)
- Minimal Total Cost of Ownership (TCO)
- Minimal space requirements for installation
- Modular setup with minimal intervention
- Fully automated plant with SCADA

# TYPICAL AQUATRON PLANT FLOW DIAGRAM




*Creative visualisation of Aquatron Process

# CASE STUDY

A pioneering organisation in India that operates as a waste technology park that processes municipal waste into valuable products.

## Challenge

While managing significant volumes of municipal waste on a daily basis, around 750 metric tons from BBMP alone, the organisation encountered a specific challenge: the formation of leachate from the 20 acre landfill.

Seeking a technology that is both sustainable and cost-effective, aligning with updated environmental policies and regulations, they approached us for a solution.

## Solution

After the initial analysis, an Aquatron Plant of 50 KLD capacity was installed which efficiently processed the formed leachate, yielding reusable water.

The entire operation is automated and requires only one operator to oversee the plant's operations. The water recovery process consumes about 6 to 7 units of electricity for recovery of 1000 litres of water. And, the sludge generated in the purpose is repurposed as fertiliser, contributing to the reduction of sludge disposal costs.

Using Aquatron FPSTAR technology, they effectively converted the toxic leachate into reusable water, making a noteworthy impact on environmental conservation, adhering to policies and protocols, and reducing cost requirements for the company.

# AQUATRON. BROUGHT TO YOU BY LIVPROTEC.

- Livprotec is a technology innovations company, focused on arriving at breakthrough solutions in the areas of sustainability. With an inventions-first approach, all our next generation technologies in wastewater, drinking water, and bioenergy have one singular objective - to solve what current technologies fail to do.
- Our solutions and integrated business models uniquely tackle today's complex challenges with unthinkable efficacy and safety. Our technology for water and energy minimises adverse environmental impact while enhancing an organisation's need for profitability. All thanks to the use of high levels of automation that leads to minimal operational cost.
- Backed by three decades of research, the solutions are a result of the application of biomimicry that replicates the sophistication of the science at work in nature, natural processes and materials.
- We are all about paradigm shifts for you, your business and our planet and not mere incremental improvements.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