

# THE AQUATRON

## **The Technology**

The AquaTron is the result of over twenty years of research, development, testing and practical experience. Using the principles of the activated sludge biological process, it essentially combines all advanced biological treatment processes into one vessel. The resulting compact, modular system takes up significantly less space and contains very few moving parts. The result? Highly affordable wastewater treatment plants with low maintenance and operating costs.

The AquaTron technology has no inherent capacity limits and is used in a wide range of applications. Plants serving the domestic and municipal sectors or treating industrial, food processing and agricultural wastewater have been designed and are in successful operation since 1985.

## **Features**

Proprietary AquaTron technology incorporates three (3) innovative features that increase its efficiency and reduces cost:

### 1. Sludge Blanket Clarifier/Filtration (SBCF)

Sedimentation is the most commonly used separation technique today. Its low specific rate of separation makes it slow and inefficient, requiring large tanks and other equipment. SBCF technology has a substantially higher specific rate of separation, using sludge blanket filtration in a prism or cone shaped clarifier. Unlike conventional clarifiers, the influent enters at the top and flows downward then upwards. As the cross sectional area increases, the up-flow velocity decreases and the activated sludge flocs forms a sludge blanket. Influent to the clarifier must flow through the sludge blanket, which acts as a filter to remove suspended particles with settling velocities that are too low to be removed by settling alone.

### 2. High Sludge Concentration

Most traditional plants operate at low or medium sludge concentrations. AquaTron plants operate at high concentrations, enhancing the efficiency of upflow sludge blanket filtration and creating conditions that increase the number of microbial cells searching for 'food' – organic matter in the incoming wastewater. By keeping the

biomass hungry or “superactivated”, the nutrient-deficient microbial cells ‘feed’ on a wider range of available organic material, including some previously considered non-biodegradable.

### 3. All Processes Integrated into One Reactor

Most conventional technologies carry out aeration, nitrification, denitrification, clarification and sludge stabilization in a number of dedicated vessels. By contrast, the AquaTron technology can carry out all these processes inside one compact reactor, substantially reducing equipment size and costs.

## **The Process**

The operation of an AquaTron plant is simple and self-regulating. Wastewater enters the anoxic compartment of the bioreactor where it mixes with activated sludge recycled from the bottom of the clarifier. Agitated and completely mixed, the mixed liquor eventually underflows into the bioreactor’s aerobic compartment.

After aeration, a stream of the mixed liquor enters the clarifier where sludge flocs and water are separated by sludge blanket filtration.

After separation, clear water overflows into a collection trough at the top of the clarifier and is discharged from the system.

To complete the internal circulation loop, activated sludge collecting at the bottom of the clarifier is recycled back to the bioreactor’s aeration and/or anoxic compartment or goes to the aerobic sludge digestion tank for further reduction, storage and stabilization.

## **Benefits**

**Reduced capital cost:** Single integrated bioreactor concept reduces auxiliary equipment and land space requirements.

**Reduced operating and maintenance costs:** The compact design, minimal amount of moving parts, modularity of construction and self-regulating hydraulics result in reduced supervision requirements, contributing to lower operating and maintenance costs.

**High treatment efficiency:** Treatment includes biological reduction of nitrogen and phosphorus with reductions of BOD<sub>5</sub> and TSS to less than 30 mg/l.

Stabilized sludge with less excess: Low microbiological loading produces significantly less sludge, extends its age and also stabilizes it. Excess sludge is further destroyed and conditioned in the Aerobic Sludge Holding/Digestion tank.

No odor: Aerobic conditions throughout the bioreactor and extended sludge age dramatically reduce the potential for odor. Plants can be located in the vicinity of populated areas without any adverse effect.

Hydraulic flexibility: AquaTron technology accommodates high peak flows and flow swings in a self-regulating manner – the higher the flow, the higher sludge flocs rise and the larger the filtration area becomes.

Modular and flexible design: Ensures that plants meeting current needs can be quickly expanded if and when growth demands. The AquaTron can easily be converted to other biological processes such as an SBR at a latter date if additional nutrient removal is required. A variety of construction materials are used and plant components can even be retrofitted into existing tanks.

Improved sludge dewatering: Extended sludge age also improves its structure and mechanical dewatering characteristics.

## **The Company**

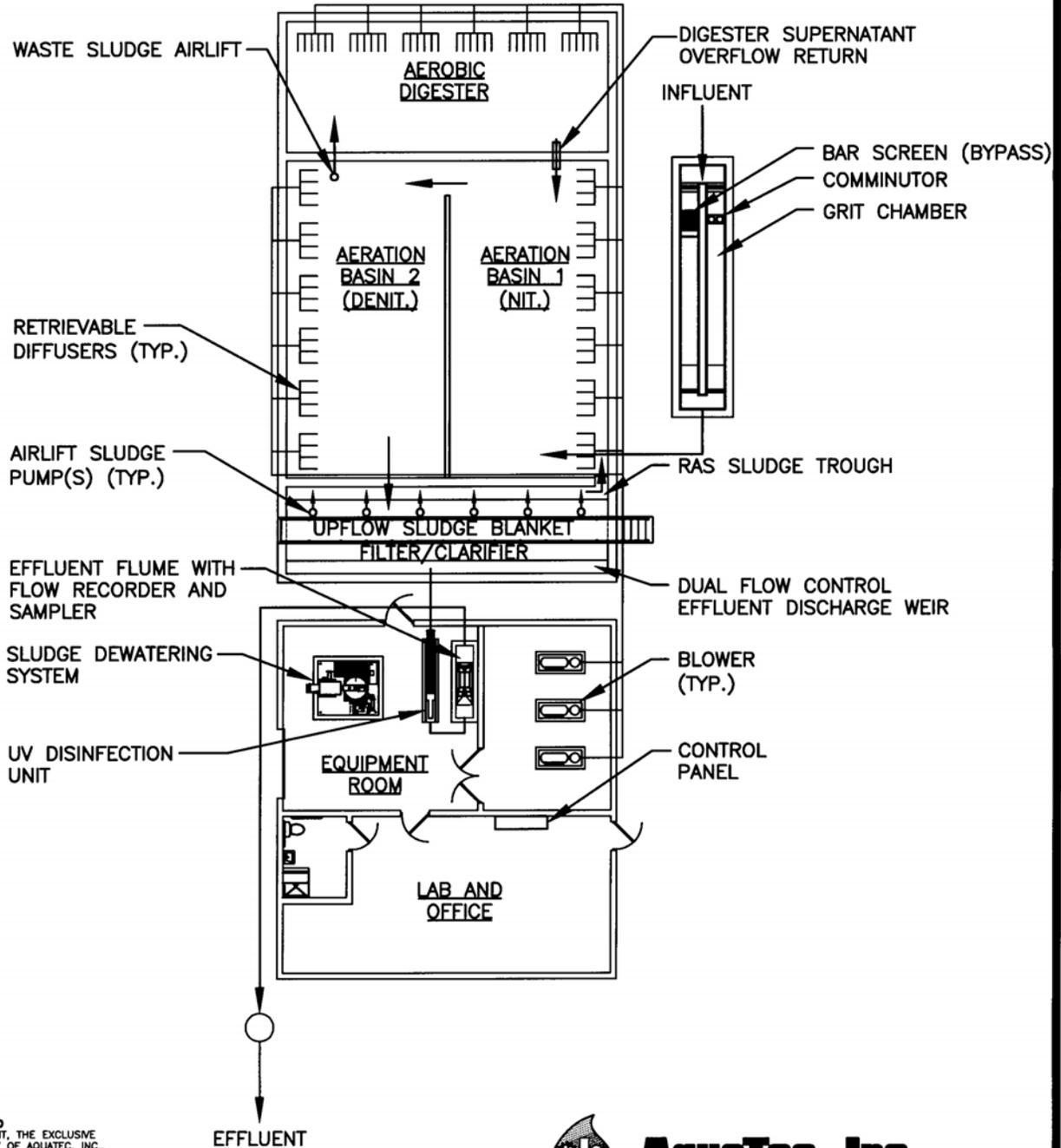
AquaTec, Inc. is an independent technology and engineering company specializing in state-of-the-art wastewater treatment technologies. The company provides customers with technical services, equipment, process systems and complete design/build treatment plants.

## **The Best**

AquaTec has established an impressive reputation for its AquaTron process. Ruggedly designed, simple and highly cost-effective, it is making a significant impact on the wastewater treatment industry. In 1985 the first AquaTron was installed to treat an industrial wastewater flow of 1.0 MGD with an influent BOD = 1,500-2,000 mg/l in a 90' diameter tank. The AquaTron consistently met a 30/30 mg/l BOD/TSS effluent requirement and the industrial company has installed five (5) similar additional units at various plant sites.

Call us today for more information: (800) 654-1500 or e-mail: [rjraqua@aol.com](mailto:rjraqua@aol.com).

# AQUATRON BNR SYSTEM



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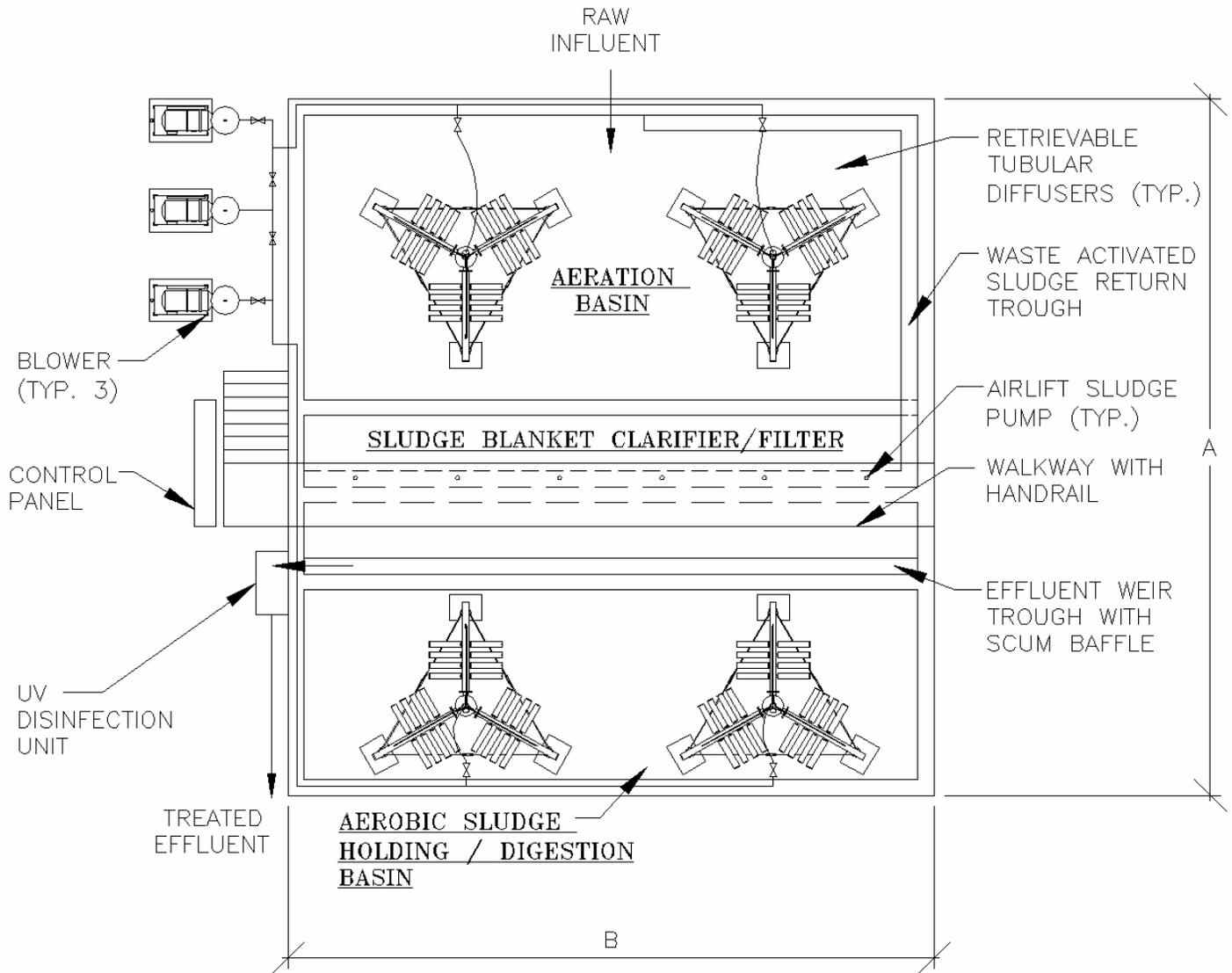
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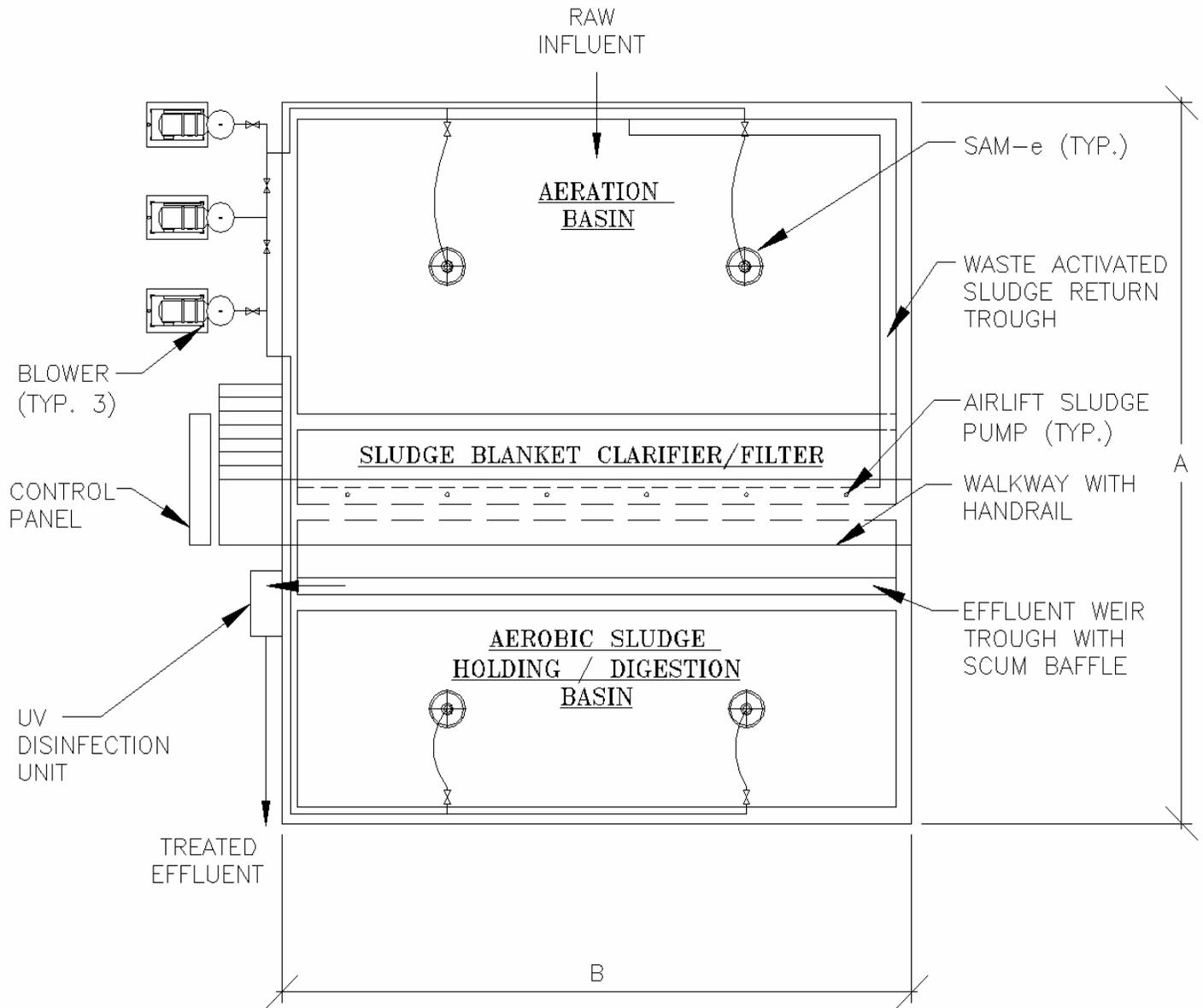
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