



OVIVOTM
Bringing water to lifeSM

Municipal Potable Water
creating value in water through innovation, creativity and expertise

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A New Global Force in Water

As society and the global economy demand more and more from water, there is a growing requirement for ever more specialist applications to manage clean water, to create specialist process waters, to treat wastewater, to extract energy from wastewater and to champion the reuse of water.

The 2010 merger of Eimco Water Technologies, Enviroquip, Aqua Engineering and Christ Water Technology plus many smaller specialist firms allows Ovivo to offer a unique combination of advanced solutions, probably the most significant application knowledge base in the world and some of the best brains in the business.

Ovivo aims to become the water partner of choice for clients in the public and private sectors and the leading source of water expertise for engineers and consultants across the globe.

For further information, visit ovivowater.com



Ovivo - creating value in water through innovation, creativity and expertise in clean water, process water, wastewater treatment, waste-to-energy and water reuse markets across 5 continents.



Ovivo - bringing water to life



Our Role in your Industry

Water for public supply can be obtained from underground sources (for example, wells sunk into aquifers), or from surface sources such as purpose-built reservoirs or lakes (collecting rainwater run-off or water from streams) and from rivers. The safety of the water is of utmost concern - several million people die each year after consuming contaminated water. The primary aim in water treatment is the elimination of any pathogenic microorganisms present.

Every source of water can be subject to pollution. In the case of underground water, polluted surface water can enter the saturation zone of an aquifer and so lead to its contamination. Pollution can come from waste tip leachate containing heavy metals and organic compounds, farm run-off containing nitrates and pesticides, from industrial wastes and from contaminated land. River water can be affected by farm drainage, sewage works, industrial effluents and run-off water from roads. There is a clear need to maintain the quality of the aquatic environment to ensure that the available water is suitable for treatment for public supply, and that the cost of treatment is kept as low as possible.

Ovivo's water intake technology includes debris screening for intakes, flocculation, sedimentation, filtration, solids handling and dewatering equipment. Our in-house expertise coupled with our portfolio of trusted brands (including Eimco Water Technologies, Brackett Green, Copa,

Enviroquip and Jones+Attwood) enables us to offer excellence in individual items of equipment as well as turnkey solutions as required.

Ovivo's expertise in the global water industry, built up over decades of involvement in world class projects, means that we are ideally placed to make respected recommendations on these issues and to add value wherever possible.



Creating Value



At Ovivo, we are delivering solutions today to meet the water challenges of tomorrow. One area which we can generate further drinking water supplies is in the processing of wastewater.



Potable water Expertise

The Potable Water Process

Raw water is often abstracted from a river and pumped to a reservoir for storage. In the reservoir, the number of fecal bacteria is reduced through natural processes, such as predation by protozoa and ultraviolet radiation from sunlight and a large portion of the suspended solids settle out. The water is then conveyed from the reservoir for treatment. In hilly areas, rainwater can be taken from a storage reservoir made by damming a valley in an upland catchment area or, in other instances, water may be drawn from underground sources.



Water Intakes

Ovivo's Brackett Green's range of raw water intake screens has been used since the beginning of the twentieth century, with some installations having been in continuous service for more than 40 years.

Fish Protection

We offer a complete package to protect aquatic life thanks to our access to the world's leading research in the field of marine and aquatic life protection systems, which are designed to prevent damage or harm to aquatic life at inlets. At Ovivo, we can recommend a range of suitable systems depending on the type of aquatic life present, including acoustic deterrants, stroboscopic light, electric and air bubble systems.

Coarse Screening Raking Machines

For effective removal of a wide variety of debris commonly found at raw water intakes (such as weed, plastic bags, etc.) to larger items such as trees and other urban debris. Our Brackett Bosker® or Bandit™ trash raking equipments offer a complete solution for any location, and can be readily combined with fine screens for a comprehensive intake package.

Fine Screening

The Dual Flow Traveling Band Screen from Ovivo is a proven, reliable solution for fine screening, with typical mesh apertures of 2-10 mm, and is most often deployed at raw abstraction points. Alternative flow patterns (through-flow or centre flow) can also be provided. For larger intakes, or where the

whole life cost of an installation may be a significant consideration, our Single or Double Entry Drum screens are proven best-in-class options.



Sedimentation

Design and manufacture of mechanical systems for sedimentation processing is one of the special strengths of Ovivo. A large portion of our engineering capabilities are devoted to the design of gravity separation equipment, specializing in low-speed, high torque drive mechanisms.

Circular Sludge Thickeners and Clarifiers

For maximum cost-efficiency in standard applications, pre-engineered clarifiers and thickeners are available in two designs - bridge-supported mechanisms for smaller units, and column-supported designs for larger ones. Component clarifiers offer a wide range of available options to facilitate adaptation of the basic mechanisms for several applications.

Ovivo excel in supplying customized sedimentation equipment for special applications. Rectangular basins, large basin diameters, extraordinary torque requirements, high-sludge recycle rates, internal flocculation and unusual feed and sludge discharge arrangements demonstrate the challenges that are routinely overcome by our sedimentation engineers.

Our component sludge thickeners and clarifiers are cost-effectively pre-engineered while customized designs offer the most efficient separation and removal of solids for specialized requirements.

Flocculating Clarifier

Combining flocculation and clarification into a common basin, conventional standard rate flocculating designs combine vertical paddle or turbine flocculation with clarification and are recommended for turbidity and color removal.

Reactor Clarifier

Combining flash mix, flocculation, sedimentation and solids recycle into a common basin, this product is also ideal for use in lime soda softening and removal of organic taste and color. High-rate upflow solids-contact designs recirculate large quantities of previously formed precipitates with large diameter turbines. In softening applications, this recirculation can be up to 15 times the feed rate with slurry density up to 5% by weight.

Rectangular Clarifiers

Mechanisms can be provided to remove solids from rectangular sedimentation basins and are designed for compatibility with our clarifier accessories, including EWT™ Flexklear™ Inclined Plate Separators, which enable enhanced settlement in a compact basin and avoid the cleaning difficulties by using an ingenious mechanism enabling the plates to be dropped to a vertical position for self-cleaning.



Filtration

Clarified water is passed through filters filled with layers of sand and gravel to remove any final traces of floc and precipitated metals such as iron and manganese.

Filter Components

Ovivo understands that filter efficiency is critical for consistent water quality. We supply a number of unique filter components:

CastKleen® Floor - is a cast nozzle filter floor system that requires less installation labor than other systems whilst ensuring a thorough distribution of backwash air and water for effective cleaning.

Scourguard™ Troughs - prevent carry-over of media during backwashing through the use of baffles, ensuring that any sand is retained by the filter.

FlexScour™ Underdrain - is a low profile stainless steel bolt-down system, easily installed and permits simultaneous air and water backwash.

Filters

Quadrakleen® filters are modular, four-cell cluster filter systems designed for simplicity and for continuous filtration and economic operation. The concrete basin is partitioned into four cells clustered around common channels for influent distribution, filtered water collection and backwash collection. Backwash wastewater drains through a central steel collection column. All control valves are operated from a central panel equipped with a Programmable Logic Controller (PLC) for fully automatic operation.

Ultrafiltration

This finer form of filtration removes any final particulates and any potentially harmful small particulate microorganisms and sporophytes from algal blooms to Cryptosporidium. This enables

drinking water to be produced from surface water containing colloids and bacteria, and has become very popular in drinking water production in recent years.



Sludge Handling

Sludge produced from water treatment processes is dependant upon the impurities removed from the water and the process used to produce it. The most suitable dewatering solution will be dependant upon this but will very different for that used in wastewater treatment. Ovivo has excellent knowledge of how to select the most appropriate technology and can offer proprietary solutions from filter presses to linear electro dewatering.

Turnkey Solutions

When it comes to water, being conservative makes good business sense. From an initial evaluation of the best technical solutions, through to commissioning, Ovivo can deliver a combination of water treatment strategies that will save money and substantially reduce the consumption of water in your water processing.

We respect our global environment and recognize that clean water is a limited resource. We utilize the best available technologies and encompass all aspects of water management in our solutions, from intelligent water intake to purification and the return of water back to nature, ready for reuse.

Ovivo is a client-focused solutions provider committed to being the preferred partner to each of our clients, seamlessly bringing together our extensive portfolio, process know-how and project management expertise to provide the most economical and environmentally friendly solutions from conception through to operational support. We utilize the best available technologies, encompassing all aspects of water management.

Using our project management, process, mechanical, electrical and chemical engineering skills, Ovivo's solutions can comprise equipment supply, partnerships and full turnkey contracts. The worldwide experience of our project managers allows us to minimize project risks and deliver our projects on time and on budget.

Whether it is for new equipment, rebuilds, retrofits or upgrades and optimizations, our engineers will work with you to understand your problems, needs and drivers so that we can determine the optimal

Ovivo - Municipal Markets

solution for you. Being strongly disciplined in planning, organization and the management of resources, and with our specialist knowledge of water treatment, Ovivo is consistently able to achieve all project goals and objectives while honoring project constraints.

Starting from evaluation of the technical options, through installation and start up to on-going operational support, we can supply complete process solutions with excellent performance characteristics.

Our integrated solutions include:

- Feasibility Studies.
- Process & Engineering Design.
- Project Management.
- Construction.
- Installation.
- Commissioning.
- Operation & Service.

Following installation and commissioning, our aftermarket team provides a range of on-going operational support contracts from service agreements through process optimization services to full operational and maintenance contracts.

Ovivo Package Solutions

Our package solutions are used in large-sized domestic water treatment plants for urban areas, modular systems for remote regions and container-sized water plants.

By applying the latest technologies, Ovivo offers drinking water plants to turn contaminated water into a drinkable product at any desired quantity and quality to satisfy any client requirements.

Ovivo engineers and professionals know the water treatment business, and whether for new equipment, rebuilds, retrofits, upgrades or optimizations, can support your project in its entirety. Our company combines the latest engineering technologies with a history of process machinery construction stretching back over a century. Our engineers draw on the company's extensive archives of process data to develop new product designs and to refine existing ones.

Dedicated to the water and wastewater treatment industry, Ovivo offers commercial and technological added-value solutions at competitive prices. Our competitive edge lies in our ability to respond quickly to client demands, providing optimal technological solutions when and where you need them most.

As well as components for conventional plants, Ovivo offers solutions to specific potable water problems; our available applications include:

- Deployable.
- Offshore.
- Desalination.

Specific processes, such as the desalination of saline supplies, are dealt with under dedicated brochures.

Case Study Thames Water Utilities, Nitrate Plant, Fognam Down, UK

Brief

Thames Water required the installation of a high rate, low waste, ion exchange nitrate removal plant to reduce nitrate concentrations in the feed waters from two ground water treatment works at Fognam Down and Ashdown Park.

Because the plant is in a remote location without a direct sewer connection, it needed to be fully automatic and to be able to run with only occasional visits from operational staff.

The installation was required to accommodate environmental sensitivity considerations; this aspect (construction of the necessary building) was part of Gleeson's contract with Thames Water.

Solution

The two ground water treatment works supply potable water to customers of Thames Water across their western provinces area, and are located within 1km of each other near the picturesque village of Lambourn in West Berkshire.

Ovivo's Christ Kennicott Water Technology were responsible for the design, supply, shop assembly, site installation and commissioning of a 3.59ML/D (149.6m³/h) Nitrasep[®] Ion Exchange Plant, including all ancillary equipment, electrics and controls. Simple to operate and maintain, the Nitrasep Nitrate Removal Process uses readily available components to produce the smallest possible waste stream volume.

Outcome

All key milestones were achieved, and the installation was successfully completed within the 53 week overall program for supply of fully treated nitrate-reduced water. The low waste stream volumes and highly efficient operation achieved under the process are as a consequence of a fractal distribution system that is effective for both the high feed water flows and low regenerant flows experienced within the plant.

The project was awarded 2nd Prize at the IChemE annual awards ceremony in recognition of its success in improving water supplies using environmental sensitive methods.

Since switch-on of the new plant, it has continued to operate trouble-free and within its operational parameters.

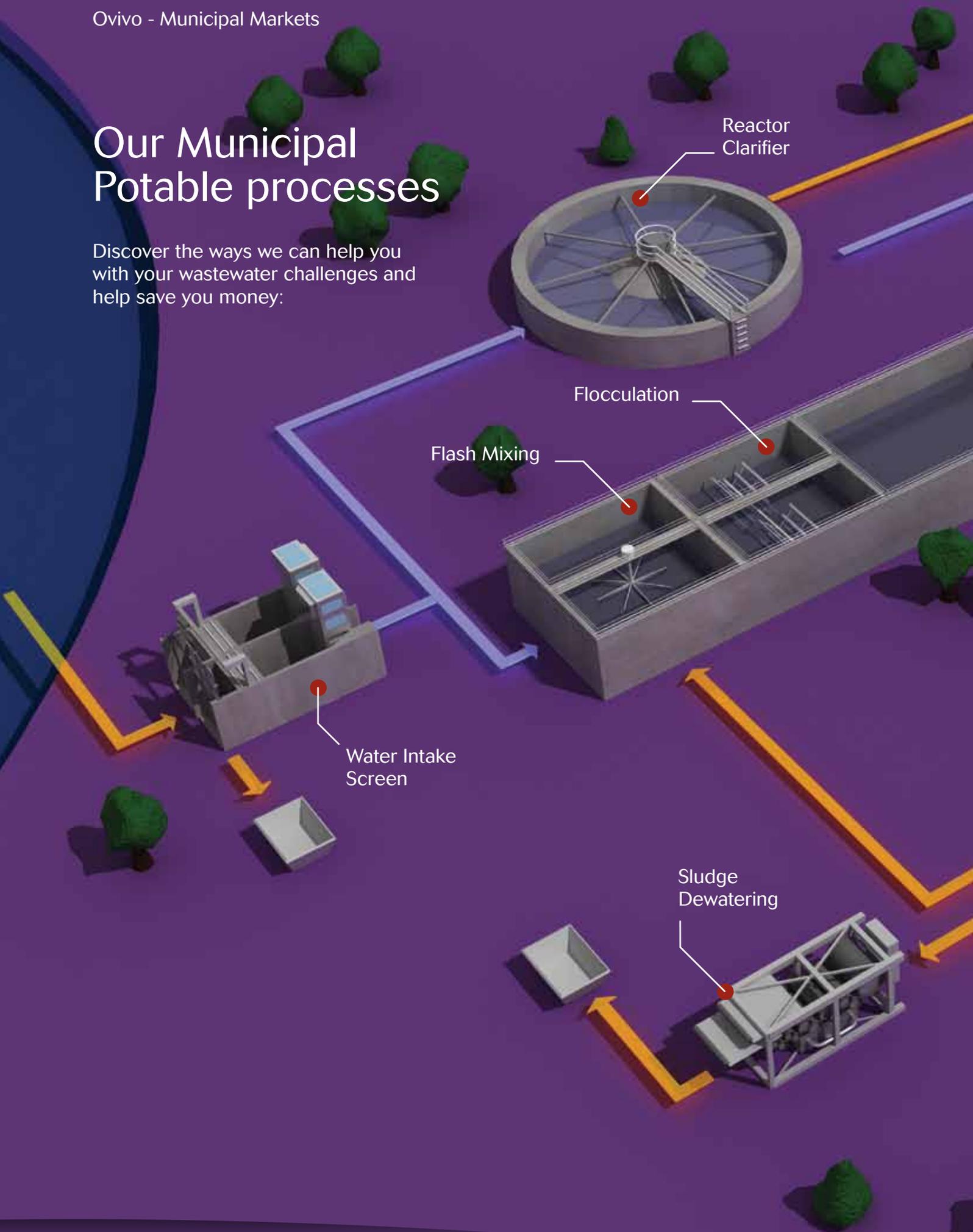


How we created value

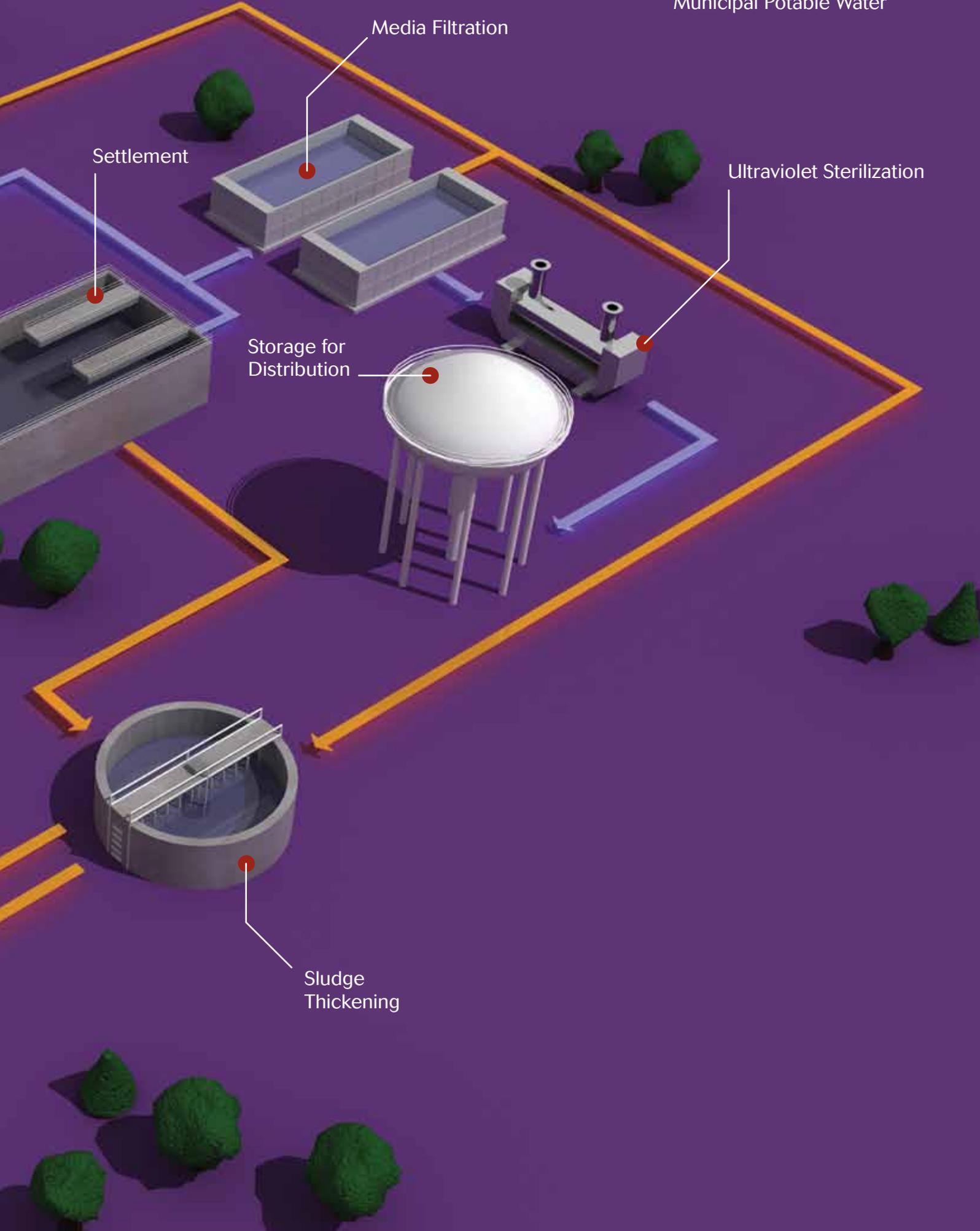
- Nitrate Reduction.
- Reduced waste stream volume.
- Highly efficient operation.

Our Municipal Potable processes

Discover the ways we can help you with your wastewater challenges and help save you money:



Municipal Potable Water



Settlement

Media Filtration

Ultraviolet Sterilization

Storage for Distribution

Sludge Thickening

Case Study Mahasawat Water Treatment Plant Bangkok, Thailand

Brief

Bangkok's continuing drinking water supply shortage has meant that the authorities there needed to seek resolutions to their water supply problems, and so a wide ranging contract was put into effect to meet the identified requirements. Under that contract, the Bangkok authorities placed orders with our competition for the first two phases of the project. However, the client recognized that an Ovivo system was needed in order to assure the final quality of the drinking water supply.

Solution

To assure the quality of the drinking water supply, installation and commissioning of two

63m diameter EWT™ Reactor Clarifier™ Solids-Contact units were installed at the Metropolitan Water Authority's Mahasawat water treatment plant near Bangkok. These were the largest units installed up to that time, necessary because this treatment works constitutes a large-scale drinking water plant serving the city.

Designed and built to provide the most economical solution to precipitation and clarification requirements, the installed Reactor-Clarifier units were able to save considerable amounts of chemicals, compared to competitors' designs.

Outcome

On start-up the Reactor Clarifier Solids-Contact units immediately produced the required treated water quality which was then added into the Bangkok municipal system to ease the drinking water supply shortage.

Flow rate	> 8,000m ³ /hr
Total capacity of the plant	1,260,000m ³ /day

Since switch-on of the new plant, it has continued to operate trouble-free and within its operational parameters.

How we created value

- Innovative design combines flash mixing (flocculation) and settlement in a single tank for efficiency.
- Variable inflow to suit all influent conditions.
- No sludge retention or blockage ensures optimum efficiencies.
- Flexible design to suit individual requirements.
- Unit efficiencies reduce operating costs.
- Due to its high efficiency, the end user has significantly reduced their consumption and associated costs.



Prolonging the efficient life of your assets

Ovivo takes a business-orientated view of total operating costs in water treatment. Each office can draw upon global best practice and in-depth application knowledge to ensure the efficient and effective running of water solutions for potable use.

Ovivo's commitment to clients is total, with experts dedicated to the provision of high quality operational support, maintenance and refurbishment.

Ovivo teams worldwide can test and confirm the operating capabilities of systems via regular inspections, either onsite or remotely. They will inspect water treatment equipment periodically, as specific client service contracts require it.

Your local Ovivo team operates a quality system that conforms to ISO 9001 ensuring that:

- Communicating is as easy as possible.
- Local resources are used wherever possible.
- Costs are kept to a minimum.

Backed by a comprehensive telephone support service and spare part supply agreements, Ovivo's commitment is to develop productive, long-term customer service relationships with every client. Its teams ensure that plants are kept in optimum condition, minimizing downtime for your business and enabling you to operate at optimal efficiency.



Creating Value



Ovivo provides a single source for the supply of spare parts and refurbishment of water plants from clarifiers and sedimentation equipment to filter components including underdrain and media.



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