A holistic water and wastewater treatment company, Veolia Water Solutions & Technologies South Africa (VWS South Africa) offers a full range of services, from turnkey contracting for large and small projects, to speciality chemicals for the industrial and municipal markets.

With offices in South Africa, Botswana and Namibia, the company is the leading expert in the design, construction, commissioning and operation of water and wastewater treatment plants in Africa, offering a full range of operational contracts including technical assistance, full outsourcing and financing of projects.

Recognised worldwide for its water treatment expertise, VWS South Africa has the knowledge and resources to reduce costs and environmental impact.

VWS South Africa endorses the Black Economic Empowerment (BEE) initiative and assists in uplifting previously disadvantaged South Africans through its BEE associate, Malutsa. This company specialises in the engineering, procurement and construction of plants, as well as in services such as membrane cleaning, plant refurbishment, maintenance, chemicals and consumables supply.

Expanding its sub-Saharan Africa reach, VWS South Africa has also acquired Namibian-based water treatment and equipment supplier, Aqua Services & Engineering (ASE)—the developer of the sophisticated sewage trickling-filter technology.
Design and Build

This division manages the design, installation and commissioning of large-scale custom-engineered water and wastewater treatment plants on a turnkey basis.

VWS South Africa boasts a full complement of project managers, process, mechanical and ECI (electrical, control and instrumentation) engineers, and handles all quality, safety, health and environmental issues during the design and execution of projects, as well as conducting feasibility and pilot studies during the development phase.

Engineered Systems

Engineered Systems’ project methodology enables the implementation of projects in the shortest possible time period at lower capital costs by utilising modular standard process and equipment designs for water and wastewater applications.

The packaged offerings by this division require little maintenance, are easy to transport and therefore ideal for remote locations, and are additionally simple to install and commission on-site.

Operations

Adopting a flexible approach in tailor-making operational solutions to satisfy all client requirements, this division has the capacity to operate and maintain water and wastewater treatment plants of all sizes on a continuous basis.

From the convenience of technical support to the advantages of outsourcing, operational contract options include:

Technical assistance

Plant maintenance assessment, technical recommendations and execution of maintenance, as well as spares supply

Operation without maintenance

Manpower for the day-to-day operation of water treatment plants, without maintenance, spares and consumables
Planned maintenance without operation
Scheduled maintenance visits and timely replacement of spares and consumables, without on-site presence

Operation and maintenance
Full operational and maintenance support

Build, own, operate
Choice between a build, own, operate (BOO) contract, under which VWS South Africa finances the plant installation and acts as a water utility, and a build, own, operate, transfer (BOOT) contract, which is similar to the BOO contract, but includes the transfer of the plant to the client after a fixed period

Services
The Services division ensures the operational efficiency of water treatment plants countrywide through a range of services

Consumables
The Consumables division ensures minimal down time and maximum cost savings with contracts for on-site preventive and responsive maintenance, technical support and the supply of spare parts and consumables; sand, gravel and other filtration media; ion exchange resin; activated carbon; reverse osmosis, nanofiltration, ultrafiltration and microfiltration membranes and spares; softeners; Rapide demineralisation units; standard membrane products and continuous deionisation (CDI) units

Chemicals
Ensuring optimum efficiency and safety of operations, the ISO-certified Hydrex™ range of speciality chemicals is suitable for various industries and includes boiler and cooling water treatment chemicals, flocculants and polymers, chain lubricants, industrial maintenance, as well as sanitising chemicals
**TECHNICAL CAPABILITIES**

**Desalination**
Desalination is an effective technique that can be used to provide potable or process water from sea or brackish water, to reduce project costs and lessen dependence on municipal water sources.

Utilising global expertise and energy efficient technology, VWS South Africa employs membrane technology or the thermal process in sea water desalination, which is a priority area of research and development for its international parent company.

**Process Water Production**
Utilising advanced, patented filtration technology, specialised membrane and deionisation technology, as well as disinfection and SABS-certified, trademarked chemicals, VWS South Africa supplies process water treatment to a variety of industrial markets, specifically catering to the food and beverage, and ultrapure water markets with packaged and standard solutions.

**Boiler Water Treatment**
VWS South Africa assists in the control of the scaling and corrosive conditions prevalent in most boiler water systems in order to ensure internal boiler integrity and safe operation at cost-effective parameters are maintained.

**Pharmaceutical Process Water and Steam**
Within the pharmaceutical industry, water is most commonly used in liquid form, not only as an ingredient in numerous formulations, but also as a cleaning agent. The production of purified water, highly purified water, pyrogen-free water and WFI to international pharmaceutical standards is widely recognised as a critical process.

VWS South Africa’s unparalleled technological experience delivers complete solutions that not only meet, but exceed these standards.
**Food and Beverage Process Water**

The presence of VWS South Africa in the food and beverage industry extends beyond the designing and building of water treatment plants. The company has the experience necessary to meet the stringent industry standards when it comes to the use of process water, ensuring the best quality for product consistency.

**Effluent and High Organic Load Effluent Treatment**

By using conventional anaerobic and aerobic technology, as well as out-packaged, patented membrane bioreactors and other leading technology, VWS South Africa is able to offer clients effluent treatment options with significantly smaller footprints than conventional solutions, and with greater efficiency relating to the removal of COD/BOD, turbidity and TSS. Additionally, the inclusion of membrane and thermal technology ensures an optimum recovery of water from waste for potential reuse or recycling.

**Zero Liquid Effluent Discharge Plants**

Continually striving to deliver cost-effective, environmentally sound water treatment solutions, VWS South Africa specialises in supplying zero liquid discharge (ZLD) plants whereby all components, water and waste, are recovered for reuse.

ZLD employs custom-designed evaporation and crystallisation technology to decrease costs, optimise the industrial water cycle, enhance the consistency of water supply and quality, reduce dependence and use of municipal water sources, ensure better compliance with stringent legislative and environmental regulations, and contribute to sustainability.

**Water Reuse**

Water can be recovered from effluent or municipal wastewater and upgraded to a quality that enables it to be reused as process water or even as a potable water source. VWS South Africa combines a wide range of technologies to optimise the potential recovery of water from waste, thereby limiting a client’s reliance on treated municipal water sources or the need to discharge effluent, thus saving the client the costs associated with this process.
INDUSTRIAL APPLICATIONS

AUTOMOTIVE

VWS South Africa meets the needs of the automotive industry to supply demineralised or reverse osmosis permeate water for surface treatment. The company also manages the treatment of oil-water emulsions using membranes or evaporation techniques, as well as the treatment of factory waste including recycling methods that aim to achieve ZLD.

PROJECT SUCCESS

BMW

A turnkey automated wastewater blending station

Requirements

BMW required a blending station to recover wastewater from four different wastewater streams in order to achieve its aim of being a zero discharge factory in the future.

Solution

The automated wastewater blending station, microfiltration and reverse osmosis plant was designed, constructed and commissioned by VWS South Africa to produce 20m³/hour of reusable water and supplements an existing RO plant and permeate storage with UV circulation.

Key technologies

Micro-filtration • Reverse osmosis • UV filtration

ENERGY

An integrated approach to power generation projects ensures short lead times, minimum risk and proactive service. VWS South Africa develops solutions that comply with environmental legislation, while assisting in the generation of the maximum amount of energy from the minimum amount of resources. The company specialises in boiler feed water and cooling water production, water chemical conditioning and effluent treatment and reuse. After-sales service includes preventative and corrective maintenance, as well as remote monitoring and control.

PROJECT SUCCESS

Eskom Arnot Power Station Mpumalanga

A R20 million retrofit project of a Multiflo® sedimentation plant

Requirements

Eskom required a plant to remove sedimentation from blowdown water created in the station’s cooling towers.

Solution

VWS South Africa supplied the Multiflo® system for removing hardness, alkalinity and turbidity from blowdown water by using a number of optimised processes. The patented Multiflo® system features unique settling characteristics, high rise rates and short retention times; all of which allow for clarifier designs up to twenty times smaller than conventional sludge blanket clarifiers, with footprints that are five times smaller than classic lamella or dissolved air flotation clarifiers.

Key technologies

Clarification
FOOD AND BEVERAGE

Utilising treatment technology that meets the strictest disinfection and purification specifications, VWS South Africa ensures the consistent production of superior quality water and effectively manages health risks through holistic preventative solutions. Through multimedia filtration, nanofiltration, activated carbon filtration and UV disinfection, the company addresses the key industry concerns of water as a food ingredient, water for industrial use, treatments of effluents, grease, sludge and recycling.

PROJECT SUCCESS
BEVERAGE FACILITY PROCESS WATER TREATMENT

REQUIREMENTS
The project requirement was a treatment plant that produces specific water qualities for a high-profile beverage facility.

SOLUTION
The treatment system provided by VWS South Africa achieves the required water quality by utilising a series of specifically arranged unit operations, comprising multimedia filtration, carbon filtration, membrane treatment, cartridge filtration and UV disinfection. A unique aspect of the facility is the special arrangement of the membrane treatment facility to maximise water recovery.

KEY TECHNOLOGIES
Multimedia filtration • Carbon filtration • Cartridge filtration • UV disinfection

PHARMACEUTICAL

Utilising specific treatment technology, VWS South Africa manages the production of purified water, highly purified water, pyrogen-free water and water for injection (WFI), which is mainly used as an ingredient in formulations. The company not only ensures that the water meets all international pharmaceutical standards, but also aims to improve manufacturing efficiency and reduce costs, without compromising on quality.

PROJECT SUCCESS
PHARMACEUTICAL HIGH PURITY WATER SYSTEM

REQUIREMENTS
A top pharmaceutical client in South Africa required a treatment process that would produce high quality water for pharmaceutical production.

SOLUTION
The water treatment system comprises pre-treatment and the renowned Orion™ package unit, developed by international sister company Veolia Water Solutions & Technologies. The scope of the project included the design, supply, installation and validation of the treatment system, as well as the hot and cold water distribution loops.

KEY TECHNOLOGIES
Reverse osmosis • Electrodeionisation •
INDUSTRIAL APPLICATIONS

MINING
A specialist in the treatment of potable, process and wastewater for mining applications, VWS South Africa delivers customised water management systems that focus on improved performance, environmental compliance and long-term cost-effectiveness. The company’s mining sector offering includes microfiltration and desalination systems, complex mineral processing solutions and pre-engineered packaged plants.

ACID MINE DRAINAGE
VWS South Africa has the technology, experience, and references for effective Acid Mine Drainage (AMD) water treatment. In addition to the patented Veolia AMDRO™ process, VWS South Africa can offer alternative processes. By combining these unique technologies, our process solutions will generate high quality wastewater with minimum pre-treatment requirements, as well as low operational and maintenance costs.

PROJECT SUCCESS
ANGLOGOLD ASHANTI PROJECT - GHANA
The installation of innovative Actiflo™ clarification plants was the first of its kind on the African continent

REQUIREMENTS
An effective means to improve the quality of process water to allow reuse of the treated water in the metallurgical process at the company’s Obuasi mine was the main requirement of the project.

SOLUTION
VWS South Africa provided and commissioned three Actiflo™ clarification plants, six sectional tanks, as well as various dosing systems. The company also supplied the mine with consumable chemicals on an ongoing basis.

KEY TECHNOLOGIES
Clarification

PLATINUM MINE SEWAGE TREATMENT PLANT

REQUIREMENTS
The company contracted VWS South Africa to provide a sewage treatment plant for 2,000 employees at a mining facility.
The treatment system supplied utilises the new generation trickling filter technology, developed by VWS South Africa. This technology offers many advantages over alternative treatments, including simplified operation, robustness and most importantly, low operating and maintenance costs.

**Key technologies**

Trickling filter technology

### Small Scale Projects

#### Copper Mine Drinking Water Plant

**Solution**

VWS South Africa supplied a fully containerised potable water system, comprising clarification, sand and carbon filtration and disinfection. The plant was delivered as a ‘plug and play’ unit to simplify installation and commissioning.

**Key technologies**

Clarification • Sand filtration • Carbon filtration

### Pulp and Paper

Addressing the industry issues of continuous production, improved competitiveness and compliance with strict environmental regulations, VWS South Africa offers a range of solutions that includes raw water, boiler feed water, black liquor and effluent treatments, process water production, fibre recovery and water recycling.

### Project Success

#### Mondi Chloride Removal Plant - Richards Bay

Valued at over R21 million, this project included the design, manufacture, construction verification and commissioning of the plant.

**Requirements**

The Mondi Richards Bay Mill needed a chloride removal plant due to elevated levels of chloride and potassium in the mill’s recovery cycle.

**Solution**

The supplied plant, which utilises a chloride removal processes (CRP™), dissolved precipitator ash, which is the ideal stage in the recovery loop to effectively purge potassium and chloride, thereby increasing the sticky ash temperature and increasing boiler availability.

**Key technologies**

Dissolution • Crystallisation
INDUSTRIAL APPLICATIONS

STEEL

The company’s primary metals industry expertise encompasses all stages of the water treatment cycle. From the production of cooling water, boiler feed water and high-quality process water, to the treatment of waste and effluents, smoke and dust, as well as sludge, VWS South Africa assists the industry in optimising resource management.

PROJECT SUCCESS

ARCELORMITTAL STEEL PROJECT - VANDERBIJLPARK

The project was valued at over R200 million, with the water treatment plant valued at R100 million

REQUIREMENTS

ArcelorMittal Steel required the building of a new water treatment plant, the upgrading of an existing terminal effluent treatment plant and central effluent treatment plant, the separating of storm water and process water blowdown systems, as well as the redesigning of water applications in the plant to cater for the newly reclaimed water.

SOLUTION

A fully-commissioned water treatment plant, delivering complete water treatment solutions that are beneficial to both the environment and the client, was handed over by VWS South Africa. The project was executed on a turnkey basis, the scope of which included basic design, detailed engineering, project management, procurement, construction, commissioning and testing.

KEY TECHNOLOGIES

Clarification • Media filtration • Reverse osmosis • Evaporation • Crystallisation

OIL AND GAS

VWS South Africa provides the oil and gas industry with high-quality demineralised, process or drinking water through innovative sea and groundwater treatments. The company further handles the treatment of produced water to eliminate pollutants for reuse or environmental discharge and delivers integrated and packaged plants on skids. Onshore and offshore water treatment, effluent treatment and pre-treatment, and process water production form part of the company’s expertise.
**Project Success**

**Sasol Landlord Project - Secunda**

Initiated to assist Sasol in securing additional water for use in its Project Turbo – a multibillion rand fuels enhancement and polymers expansion project.

**Requirements**

Sasol Limited initiated Project Turbo to ensure compliance with new clean-fuel specifications, which required South African refineries to supply 100% unleaded petrol. The project required 20 000 m³/day of water with various quality specifications.

**Solution**

VWS South Africa designed, constructed and commissioned a water treatment plant to remove the high concentration of salt and hardness from the cooling tower blowdown water.

**Key technologies**

- Clarification •
- Softening •
- Ultrafiltration •
- Reverse osmosis •
- Ion exchange •

**Municipal Market**

As part of its full range of services, Veolia Water Solutions & Technologies South Africa also offers turnkey contracting for large and small projects for the municipal market.

Please review our Municipal Market brochure for more information.
COMPANY STRUCTURE