



ODOUR CONTROL SYSTEMS

**AQUATEC**



Built under ISO9001  
Quality Management System

Designed to comply with Australian  
Standards

Aquatec's odour control systems offer  
engineered solutions tailored to individual  
project specifications, and operational  
requirements.





## Your odour control partner

At Aquatec, we have over 30 years experience in developing and manufacturing innovative water, wastewater, and odour control solutions. With integrity at our core, our local and global client base is ensured perfection, every time.

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### UNRIVALLED EXPERIENCE

Partnering with government, business, and residential clients we deliver long term water, wastewater and odour control solutions. Our unrivalled experience in providing an end-to-end service for challenging odour and foul air treatment systems means we've become trusted advisors within the industry.

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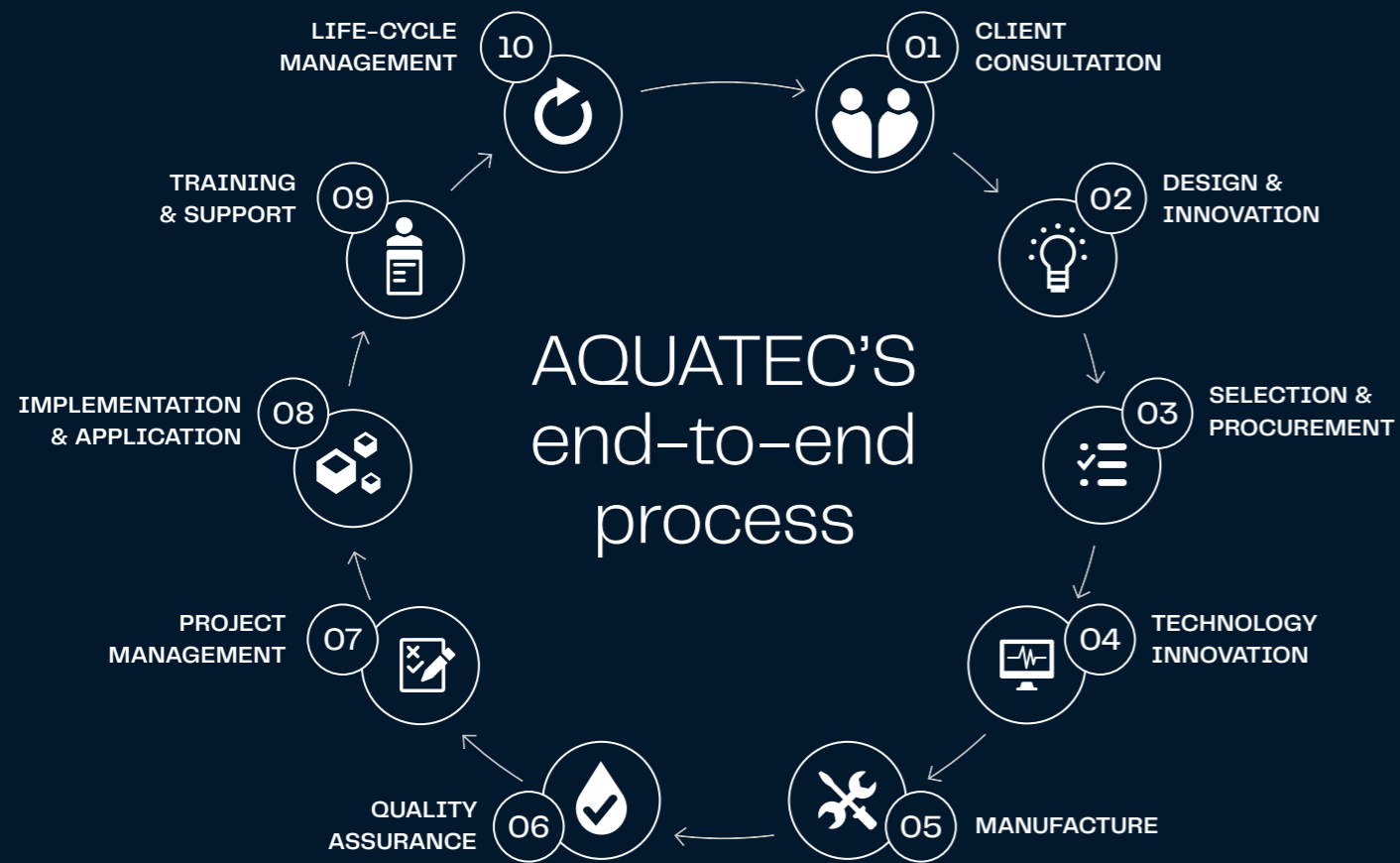
### FOCUSED ON INNOVATION

Through servicing the municipal sector, we ensure that our technologies are ahead of the curve with a continuous focus on innovation and improvement. We are dedicated to our valued clients, to understanding their needs and providing fit-for-purpose solutions. Fundamentally, our business is our people and that's why we continue to invest in our work force and our business. We sustain growth through innovation, collaboration, and excellence, resulting in superior products and services.

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### OUR RANGE

Our customised foul air treatment solutions provide high efficiency, scalable odour and air treatment mitigation options. Our breadth of capabilities includes biological and non-biological technologies with a range of activated carbon, ozone, and chemical scrubbing and dosing systems and biogas scrubbing products. Furthermore, we exemplify this total treatment capability with a range of services that cover foul air characterisation and treated air dispersion modelling.



## Our end-to-end process

Aquatec's end-to-end service model provides a superior level of risk management and quality control.

### DESIGN AND CONSTRUCT

Through collaboration, innovation, and excellence, we embed our designers with your team to ensure seamless cooperation to develop the best solution.

### ODOUR AND EMISSIONS MODELLING

Aquatec provides specialist consulting services to furnish asset owners with odour control and air treatment options that are innovative and comprehensively designed to ensure successful outcomes

This is achieved by:

- Foul air characterisation studies.
- Air dispersion modelling to ensure that the identified solutions will meet the required EPA treated air emission limits, utilising software packages including AERMOD and CALPUFF.
- Enhancing asset owners' reputations by preventing community complaints.



## Biotrickling Filters (BTF)

Designed for infrastructure sewerage pumping stations through wastewater treatment plants across the Australasian wastewater sector.

Hydrogen sulphide ( $H_2S$ ) is the well-known major odour contaminant, and Aquatec stands out with its range of tailored BTFs uniquely designed to reduce  $H_2S$  to meet your specified requirements, often by over 99% (or down to 0.1ppmv). In addition, the presence of  $H_2S$  can lead to issues with health and safety and cause a potential off-site nuisance in the community. Aquatec offers a comprehensive array of biotrickling filters to handle various flows and  $H_2S$  loads. Aquatec's engineering team designs and builds systems for each client's specific project requirements, delivering cost-effective and efficient treatment solutions.

### RECIRCULATING BTF's

Aquatec's recirculating BTF utilises structured and randomly packed media with continually recirculated liquid to maintain a humid environment with a consistent pH. It is intermittently dosed with make-up water, enabling the propagation of resilient autotrophic biomass that ensures a healthy operating environment. This world class technology provides the best return on investment (ROI) due to the long-life, engineered, open-cell foam media and recirculation, which responds exceptionally well to varying inlet  $H_2S$  concentrations.

Key benefits:

- Recirculated BTFs are best selected for applications that have  $H_2S$  as the major odour contaminant

### SINGLE PASS BTF's

Aquatec's single pass BTF solutions utilise a finer grade of random packed media to provide an operating environment that removes  $H_2S$ , reduced sulphur compounds and odour. This is achieved by maintaining a pH gradient environment whereby neutral reclaimed effluent or potable water is introduced at the top of the vessel and becomes more acidic as it trickles down through the media. The resulting propagation of various microbiology allows the removal of  $H_2S$ , reduced sulphur compounds and odour. This solution enables a much smaller site footprint and significantly reduced operational costs.

Key benefits:

- Biological fixed film oxidation via an intermittent wetted matrix
- Two-stage process
- A cost effective and efficient treatment of  $H_2S$  and odour to meet a project requirement, often by more than 99% and 95%, respectively
- Responds well to variations in  $H_2S$  concentrations
- Single pass BTFs are best selected for applications that have a combination of  $H_2S$  and other contaminants to be removed in a smaller footprint
- Reclaimed effluent or tertiary potable water compatible

### BIOGAS PRE-TREATMENT

Biogas emissions provide a valuable potential source of recoverable energy. However, the presence of  $H_2S$  in biogas can restrict its use as it adversely impacts downstream equipment, resulting in Sulphide emissions in thermal combustion of the gas and corrosion of Combined Heat and Power (CHP) equipment significantly impacting their operating life.

# Chemical Scrubbers

Our chemical scrubbers effectively remove many contaminants, including ammonia, hydrogen sulphide, volatile fatty acids and reduced sulphur compounds.

These scrubbing solutions, available in acid, caustic or oxidising agents can function as stand alone pre-treatment of biological or activated filters and post-treatment of RTO, quench vessel and fabric filters.

## APPLICATIONS

Aquatec offers a variety of packed bed wet scrubbers that provide robust and reliable high-efficiency treatment for fluctuating foul air loads. Chemical scrubbers are commonly used for air treatment in applications such as:

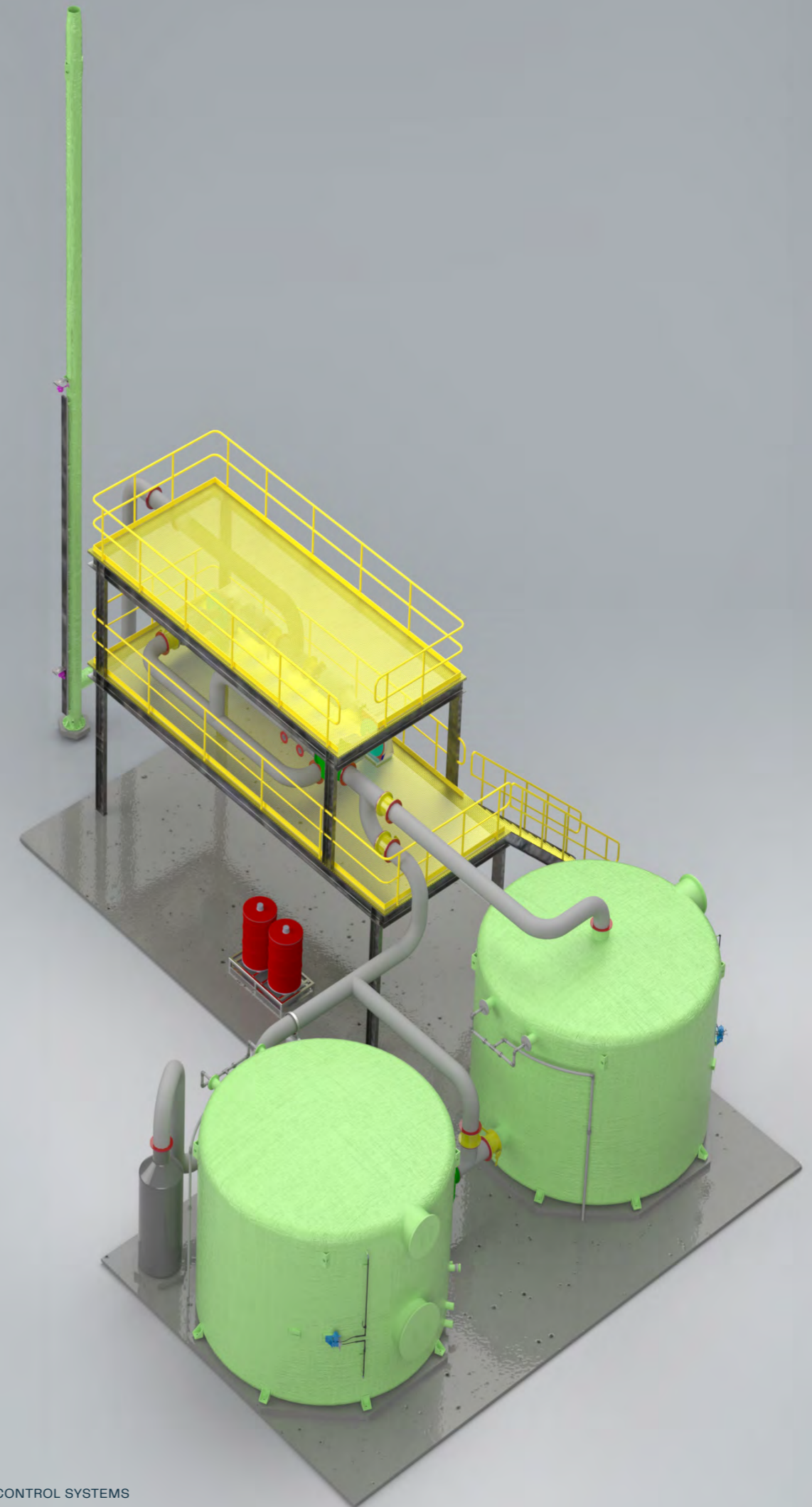
- Removal of hydrogen sulphide, methyl mercaptans, and reduced sulphur compounds from sewerage networks and inlet works
- Ammonia removal from areas where lime treatment of sludge is used
- Ammonia removal in fertilizer production
- Sulphur dioxide removal
- De-sulphuring of anaerobic digester gas/biogas
- De-chlorination of air

## KEY BENEFITS

The contaminants must be readily soluble in water or react with acids, alkalis, or oxidising agents. We offer a wide range of scrubbing liquors including Sodium hydroxide, Sodium hypochlorite, Sulphuric acid and water.

When operational constraints allow for the use of chemicals, these systems realise the following benefits:

- They can provide contaminants removal of >99.9%
- Odour discharge (multi-stage system) is <500 OU on a 99.9%ile basis
- Can cope with a range of acid and alkaline gases
- Have the smallest footprint of all odour control technologies
- Can respond immediately to fluctuating loads
- Does not require any start-up or acclimatisation





## BioFilters

Designed for a more complex range of odour types, Aquatec Biofilters are best suited for medium to large sewerage pumping stations and wastewater treatment plants.

### INORGANIC BIOFILTERS

Aquatec's range of tailored Biofilters designed and built to meet the specific requirements of each project. Biofilters provide a cost effective and efficient treatment while reducing more complex (non-H<sub>2</sub>S) odours from industry, residential and those created from the collection system itself. Using patented inorganic media with a 20-year life expectancy provides the ultimate combination of total odour removal and whole-of-life costs.

The Biofilter utilises randomly packed engineered inorganic media intermittently irrigated with neutral pH water. This process maintains an environment conducive to the propagation of resilient heterotrophic biomass which removes a wider variety of foul air contaminants along with lower levels of H<sub>2</sub>S.

Engineered inorganic media provide the following performance benefits:

- 20-year plus expected media life
- Reduced maintenance intervals and superior performance
- Non-degradable
- Low energy consumption
- Large available surface area
- Predictable performance
- Resistant to changing inlet conditions
- Biofilters are the simplest odour control systems to operate
- Requires the least amount of maintenance (lack of moving parts)
- Engineered inorganic biofilters use a smaller footprint than traditional organic biofilters
- Operating costs are the lowest of any technology

### ORGANIC BIOFILTERS

We design and construct biofilters to meet the specific requirements of each project. We will often select an organic biofilter media to offer an economical yet operationally simple system, yielding the following benefits:

- Reduced operating costs compared to activated carbon and chemical scrubbers
- Elimination of use of the hazardous chemicals
- Virtually maintenance-free
- Media is readily sourced and cheap to replace
- Our end-to-end promise results in a turnkey delivery model that minimises project interfaces.

When an organic media is selected, the resulting blend of organic materials, neutralising compounds, bacteria, and bulking agents are carefully selected to ensure system performance.

The media, in turn, has a low-pressure drop, resulting in energy efficiency and optimal media service life.

Importantly, our organic biofilters handle high concentrations and fluctuating sulphur loads continuously. Achievable outlet H<sub>2</sub>S levels are <0.05 ppm, ensuring a cleaner and safer environment. Compared to other technologies, organic biofilters can be fully customised to mitigate odour problems associated with maintenance hole vents, pump stations, wastewater treatment plant inlet works, and biosolids facilities.

## Activated Carbon Units (ACU)

Designed for low odour applications or for polishing at the end of a biological treatment train, Aquatec's range of custom-built ACUs provide flexibility across the spectrum of foul air treatment from sewerage networks, wastewater treatment plants and biogas.

### STAND ALONE ACTIVATED CARBON UNITS (ACU)

Our stand-alone activated carbon units (ACUs) adsorb a variety of gaseous pollutants, such as H<sub>2</sub>S, mercaptans, dimethyl sulphide, ammonia, amines, mercury, and volatile organic compounds.

The media itself can be granular, non-impregnated acid and base, impregnated, catalytic, doped carbons and activated alumina. In particular, our doped carbon range is environmentally friendly, producing elemental sulphur and is entirely safe for disposal in compost and landfills.

The ACUs are available in a range of sizes to minimise cost and footprint and are offered in several configurations:

- Single bed: simple, cost-effective adsorptive treatment
- Deep single bed: suitable for biogas or high inlet load
- Double bed: doubles the carbon media without increasing footprint or pressure drop

Key benefits:

- >99.9% H<sub>2</sub>S removal efficiency
- High contact time
- Minimal pressure loss through optimised designs
- Available as a turnkey plant
- Pre-heaters for high humidity conditions to maximise filter performance and bed life
- Pre-filters to minimise the risk of blockage
- Excellent option for small/intermittent flows and low to medium inlet loads
- Used for a broad range of odour contaminants

### POLISHING ACTIVATED CARBON UNITS (ACU)

Aquatec's range of tailored ACUs are designed and built to meet specific project requirements, providing cost effective and efficient treatment whilst reducing all types of foul air contaminants.

Polishing ACUs can be combined with a variety of Aquatec suites of technologies, such as biological filters, chemical scrubbers and catalytic iron filters (CIFs). This allows for:

- Pretreatment of high odours
- Extend the life of carbon media by up to five times
- Significantly reduced OPEX costs
- Optimise carbon vessel footprint

These are also available in single bed, deep single bed and double bed configurations.





## Chemical Dosing Units

Aquatec's range of chemical-based odour control technologies prevents the formation of odourous gases, reducing unpleasant odours and minimising corrosive gases extending the life of wastewater assets and infrastructure.

### MAGNESIUM HYDROXIDE LIQUID (MHL)

Magnesium hydroxide liquid (MHL) is one of the most common chemicals used for dosing into wastewater streams. Designed for dosing directly into pump stations and rising mains where there are long detention times, MHL dosing systems control the acidity, or pH, of the wastewater to prevent the transfer of Hydrogen Sulphide from liquid form into airborne gas particles, both at the source and the discharge end of long rising mains.

Key benefits:

- MHL is safe to handle
- Commonly administered through the sewer maintenance hole, pump station or rising main
- Activity of biofilm is also inhibited under the elevated pH conditions, reducing the overall Sulphide production

### FERROUS AND FERRIC CHLORIDE (IRON SALTS)

Dosed directly into a sewer stream, iron salts are a proven technology for Sulphide control in sewer mains with long detention, offering improvement in chemical phosphorus removal. Designed for applying directly into gravity and rising mains where there are long detention times, iron reacts with dissolved Sulphides to form Sulphide precipitates, locking the Sulphide into an insoluble form. This reduces the release of Hydrogen sulphide into the sewer headspace.

Key benefits:

- Iron salts inhibit biofilm activity and can be applied directly into the sewer stream at a maintenance hole or rising main
- Ferrous and Ferric are typically the cheapest form of chemical odour control

### OTHER CHEMICALS

Aquatec offers a wide range of alternative chemical dosing units such as Calcium nitrate, along with other proprietary solutions. Our odour control specialist can take a holistic view of your specific requirements and recommend the best solution for you. Contact Aquatec for more information about chemical dosing odour control units.



## Environmental Social Governance (ESG)

We are committed to taking a sustainable approach to our operations, projects, and business practices to create the best long-term outcomes for our clients, communities, and partners.

We have implemented an Environmental, Social, and Governance (ESG) plan that touches all areas of our business from the way we work, to our governance structure, our people, partners, clients, and the communities where we work.

As a holder of ISO 14001 certification, Aquatec is committed to reducing our impact on the environment and improving sustainability measures in all aspects of our products and services.

We strive to be sustainable leaders, constantly learning better ways to be more efficient. We have applied Key Performance Indicators (KPIs) to ensure that we maintain our focus and contribution to a sustainable future and our impact is positive and productive.

### LIFE CYCLE ASSESSMENT FOR THREE AQUATEC PRODUCTS

As part of our commitment to creating a better future for all, we commissioned a Life Cycle Assessment (LCA) from Independent ALCAS LCA Certified Practitioners, Perspektiv, to provide insights into the impacts of our precast and fibreglass pump stations, maintenance holes, storage vessels and an alternative in-situ concrete systems, along their life cycle stages.

The insights consider the whole value chain, looking into the greenhouse gas emissions hotspots, as well as other life cycle impact categories such as fossil fuel, minerals and metals resource use, water use, particulate matter, ozone depletion, photochemical ozone formation, acidification, eutrophication, human toxicity and eco-toxicity.



At Aquatec, we pride ourselves on continually developing innovative water, wastewater and odour control solutions.

## After Sales Service

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### Maintenance Training

Aquatec's maintenance training caters for existing personnel in need of additional assistance or new personnel unfamiliar with the operational and maintenance requirements of our odour control systems.

### Technical and Product Support

Aquatec's technical and product support service responds to any product or technical enquiry, including recommendations on the safe use of our products.

### Service Warranty

Aquatec are committed to providing full after sales service, support and long term warranty on all components and workmanship.

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