



# **Tigernix Wastewater Reuse Solution**

**Cross-domain Operational Vigilance  
Suite** for Wastewater Recycling

# Introduction

## Integrity Surveillance Pod for Wholesome Wastewater Recycling Oversight

Integrating Industry 4.0 cyber-physical systems with centralised network governance, this advanced cloud-based asset orchestration platform revolutionises wastewater reuse across its lifecycle. It navigates complex processes—from cutting-edge treatment innovations to intelligent distribution control with algorithmic precision, ensuring optimal operational output, full regulatory compliance, and enhanced environmental custodianship. Its embedded AI analytics, Digital Twin, and IoT-driven autonomous responsiveness empower reuse basins and ancillary infrastructures to sustainably adapt to evolving ecological and legislative landscapes.



Wastewater Reuse Insight  
Aggregator via AI, IoT and Digital  
Twin Powers

@ Tigernix Smart Wastewater Solutions

## Industry 4.0 Capabilities We Offer

- GIS
- IoT
- AR & VR
- Predictive & Prescriptive Analytics
- 5G
- Cloud Computing
- Robotic Automation
- Digital Twin
- Simulation
- Big Data

# Why Choose Tigernix?

With a commitment to digital supremacy, Tigernix harmonises wastewater recycling methodologies, assets, protocols, inflow data, and system lifecycle metrics through a centralised Industry 4.0-driven ecosystem. This next-generation platform supplants traditional latency with anticipatory, data-centric efficiency, ensuring unparalleled operational stability, predictive asset care, and sustainable long-term preservation—all displayed on a unified digital dashboard.



The Best Digital Wastewater Reuse Distribution Optimiser

# Robust Features of Tigernix Wastewater Reuse Solution

## Integrated Asset Data Analytics and Simulations

- Real-Time Hydraulic Network Optimisation
- Predictive Water Demand Forecasting
- Geospatial Data Fusion Algorithms

## CBM and Predictive Maintenance Engines

- Predictive ROI Forecasting Models
- Dynamic Risk Assessment AI Models
- ML-Driven Automated Budget Analysers

## AI and IoT-Driven Infrastructure Intelligence

- Autonomous Infrastructure Health Monitoring
- Contextualised Predictive Maintenance Models
- AI-Driven Energy-Consumption Modelling

## Financial Capital Allocation Intelligence Platform

- Predictive ROI Forecasting Models
- AI-Driven Dynamic Risk Assessment Algorithms
- Automated Budget Allocation Optimisation

## Treatment Process Simulations via Digital Twin

- Multivariable Dynamic Process Modelling
- Autonomous Process Optimisation Algorithms
- Real-Time Anomaly Detection via Simulations

## Integrated Water Distribution and Storage Mapping

- Real-Time Hydraulic Modelling and GIS Mapping
- Sensor-Based Dynamic Pressure Optimisation
- Predictive Flow Forecasting Models



Intelligent Performance  
Tracking



Predictive Downtime  
Prevention



GIS-Enabled  
Environmental



Smart Resource  
Optimisation

# System Capabilities

## Integrated SCADA System

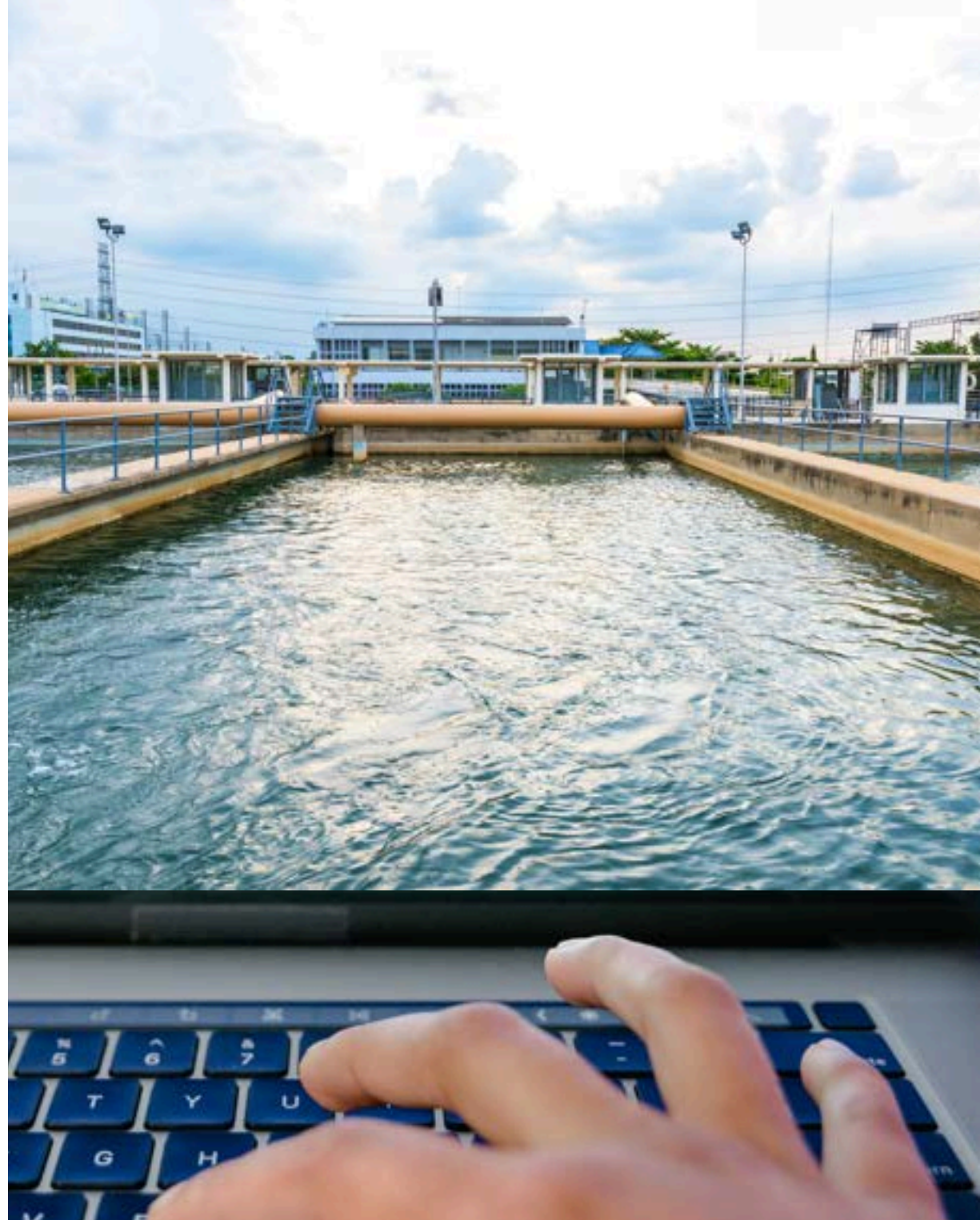
Employing IoT sensors, digital twin simulations, and edge computing, its integrated SCADA system provides real-time operational oversight, predictive analytics, and automated control for optimised wastewater recycling processes.

## Autonomous Asset Performance Diagnostics

Utilising AI-driven diagnostics, IIoT sensors, and machine learning algorithms, the system autonomously analyses asset performance, identifying failures and inefficiencies and suggesting corrective actions to extend the reuse asset lifecycles.

## Water Quality Prediction Models

Employing AI, big data analytics, and real-time sensor networks, the system predicts water quality outcomes, optimising treatment processes and ensuring compliance with environmental standards for safe water reuse.





# System Capabilities

## IoT-Driven Predictive Maintenance

Through IIoT sensors, AI algorithms, and predictive analytics, the system continuously monitors equipment health, forecasts maintenance needs and prevents failures by scheduling repairs based on real-time data insights.

## Asset Lifecycle Cost Optimisation Tools

Its embedded Digital Twin modelling, cloud-based analytics, and AI optimisation tools evaluate asset performance, cost projections, and maintenance cycles, facilitating the efficient allocation of resources across the asset lifecycle.

## Sensor-Based Leak Detection and Localisation Grid

We employ IoT sensors, machine learning, and drone surveillance to detect and localise leaks within the infrastructure, preventing water loss and reducing operational disruptions by pinpointing exact leak sources.

# System Capabilities

## Autonomous Chemical Dosage Control

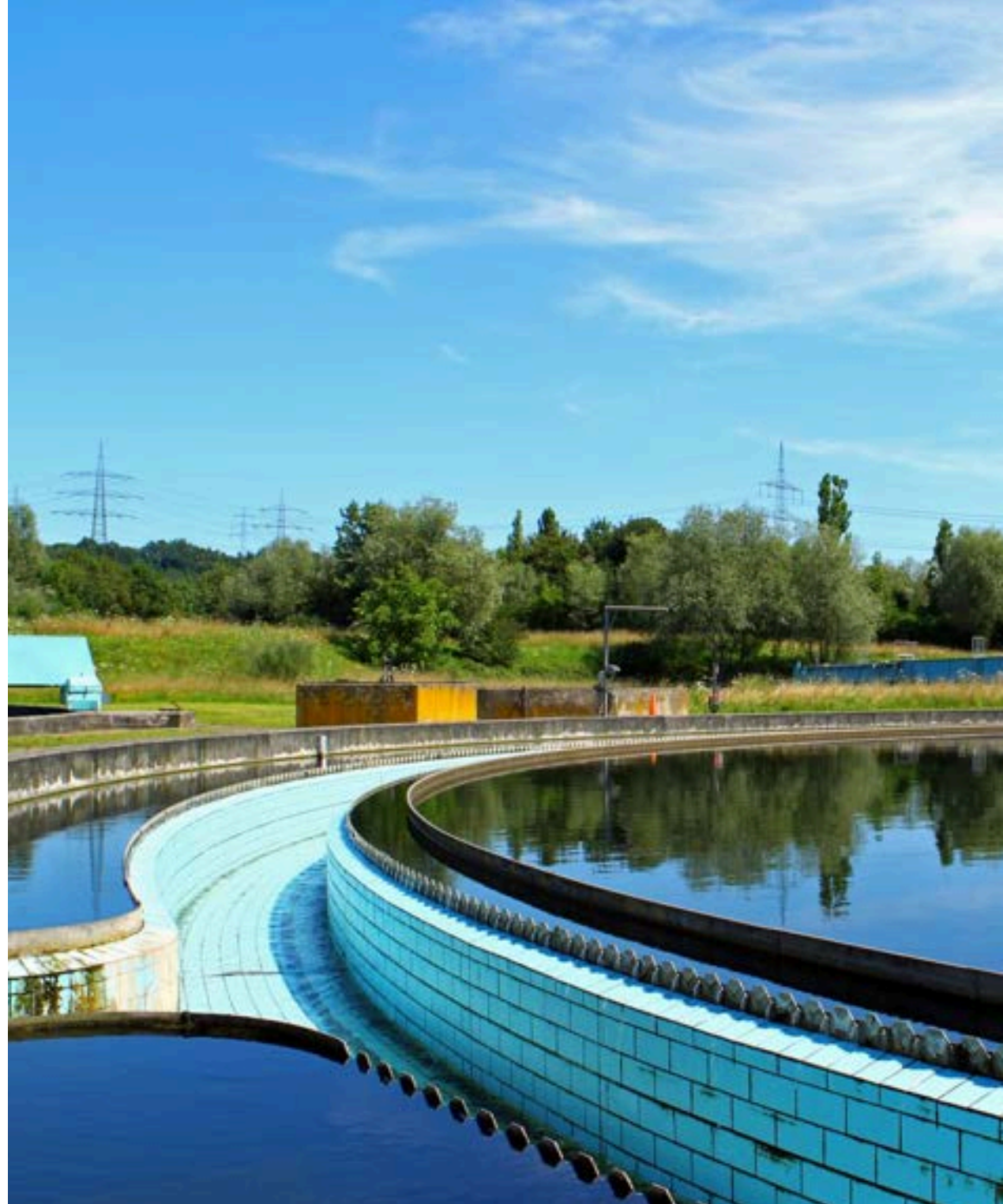
The system's AI algorithms and IoT sensors dynamically adjust chemical dosages based on real-time water quality data, enhancing treatment efficiency while ensuring the optimal balance of chemicals in wastewater reuse processes.

## Water Reuse Efficiency Modeling

We utilise simulation models, AI, and big data analytics to optimise water reuse strategies by predicting future demand, adjusting system operations, and maximising reuse rates while minimising energy costs.

## Real-Time Decision Support Protocols

Our decision support system integrates AI, IoT, and cloud computing to deliver real-time insights, predictions, and automated recommendations, enabling data-driven decision-making for efficient recycled water management.





# System Capabilities

## Waste-to-Energy Process Monitoring

By integrating IIoT sensors, AI, and data analytics, Tigernix system monitors waste-to-energy processes, optimising biogas production and energy recovery, and ensuring sustainability across the wastewater reuse cycle.

## Cross-Asset Data Analytics

Our solution employs AI, cloud computing, and big data analytics to unify data from various assets, enabling predictive insights and performance optimisation across the entire wastewater treatment and reuse infrastructure.

## Automated Sludge Management Mechanism

Utilising digital twin technology, IoT sensors, and AI, the system automates sludge management, optimising dewatering, storage, and disposal processes, and ensuring efficient resource recovery while minimising environmental impact.

# Key Challenges & Solutions

Tigernix Wastewater Reuse Solution integrates AI, IoT sensors, Digital Twin modeling, and predictive maintenance to enhance recycled water infrastructure resilience, ensuring over a decade of energy-efficient, adaptive performance. The platform employs GIS mapping and AI-driven 3D modeling to enable precise environmental impact assessments, optimize infrastructure planning, and facilitate real-time, data-driven decisions for sustainable resource management.



## GIS Mapping and 3D Modelling for Environmental Impact

Since we offer GIS Mapping and 3D Modelling capabilities, powered by AI, IoT sensors, and digital twins, it is possible to overcome traditional wastewater reuse constraints by enabling precise environmental impact assessments, optimising infrastructure planning, and facilitating real-time decision-making for sustainable resource management and risk mitigation with visual clarity.



## Boosted Infrastructure Resilience for Over a Decade

With the integration of AI, IoT sensors, Digital Twin modelling, and predictive maintenance systems, the platform boosts the resilience of recycled water storage infrastructure, ensuring a decade of efficient, adaptive performance, energy optimisation, and proactive response to emerging operational and environmental challenges.



# Key Challenges & Solutions

By integrating AI-based predictive analytics, IoT telemetry, Digital Twin models, and intelligent dashboards, modern wastewater reuse platforms enable precise risk identification and real-time performance tracking, empowering data-driven investment decisions and operational management. These smart systems leverage AI-driven forecasting and IoT-enabled asset intelligence to detect anomalies and predict potential downtimes up to 72 hours in advance, facilitating proactive maintenance and minimising disruptions.



## Smart Investment Protocols

Through the integration of AI-based predictive analytics, IoT telemetry, Digital Twin models, and intelligent dashboards, the platform facilitates accurate risk identification and performance tracking, providing real-time operational insights that support effective, data-driven decision-making in wastewater reuse and recycling investments.



## Advanced Anomaly Detection

Through AI-based forecasting, IoT-driven asset intelligence, and continuous Digital Twin surveillance, the system identifies potential downtimes 72 hours in advance, driving proactive maintenance, reducing disruptions, and preserving uninterrupted performance in wastewater reuse ecosystems.

# CONTACT TIGERNIX



## Singapore (Headquarters)



21, Woodlands Close,  
#05-47 Primz Bizhub  
Singapore 737854



+(65) 6760 6647  
+(65) 6760 6012  
+(65) 6762 9293  
+(65) 6760 6022



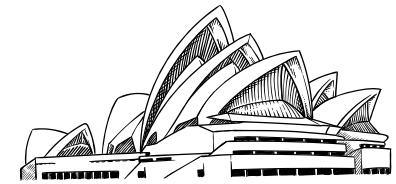
## Indonesia



Komp. Tanah Mas Blok E No.  
13-14, Sei Panas, Batam  
(Samping Bank Riau Kepri)  
Indonesia



+(62) 7784 60373



## Australia



Level 14, 167 Eagle  
Street, Brisbane,  
Queensland 4000,  
Australia



+(61) 7 3012 6312



[www.tigernix.com](http://www.tigernix.com)



+(65) 6760 6647



[info@tigernix.com](mailto:info@tigernix.com)