



Tigernix Wastewater Treatment Solution

Intellectual Asset Management
Assortment of Industry 4.0 Technologies

Introduction

Industry 4.0 Powered Hydrosync Mechanism for Wastewater Treatment

The Tigernix Wastewater Treatment Solution seamlessly amalgamates the most advanced Industry 4.0 frameworks, integrating AI-driven orchestration, sensor-enriched IoT networks, and adaptive Digital Twin simulations into a unified, cloud-based nexus. This sophisticated fusion enables the platform to deliver fully autonomous wastewater processing by utilising hyper-intelligent, real-time synchronisation of complex data flows across all infrastructural components. The result is an adaptive, self-optimising system, ensuring seamless, efficient operations.



Synchronising Dynamic Data Streams for Optimal Wastewater Processing

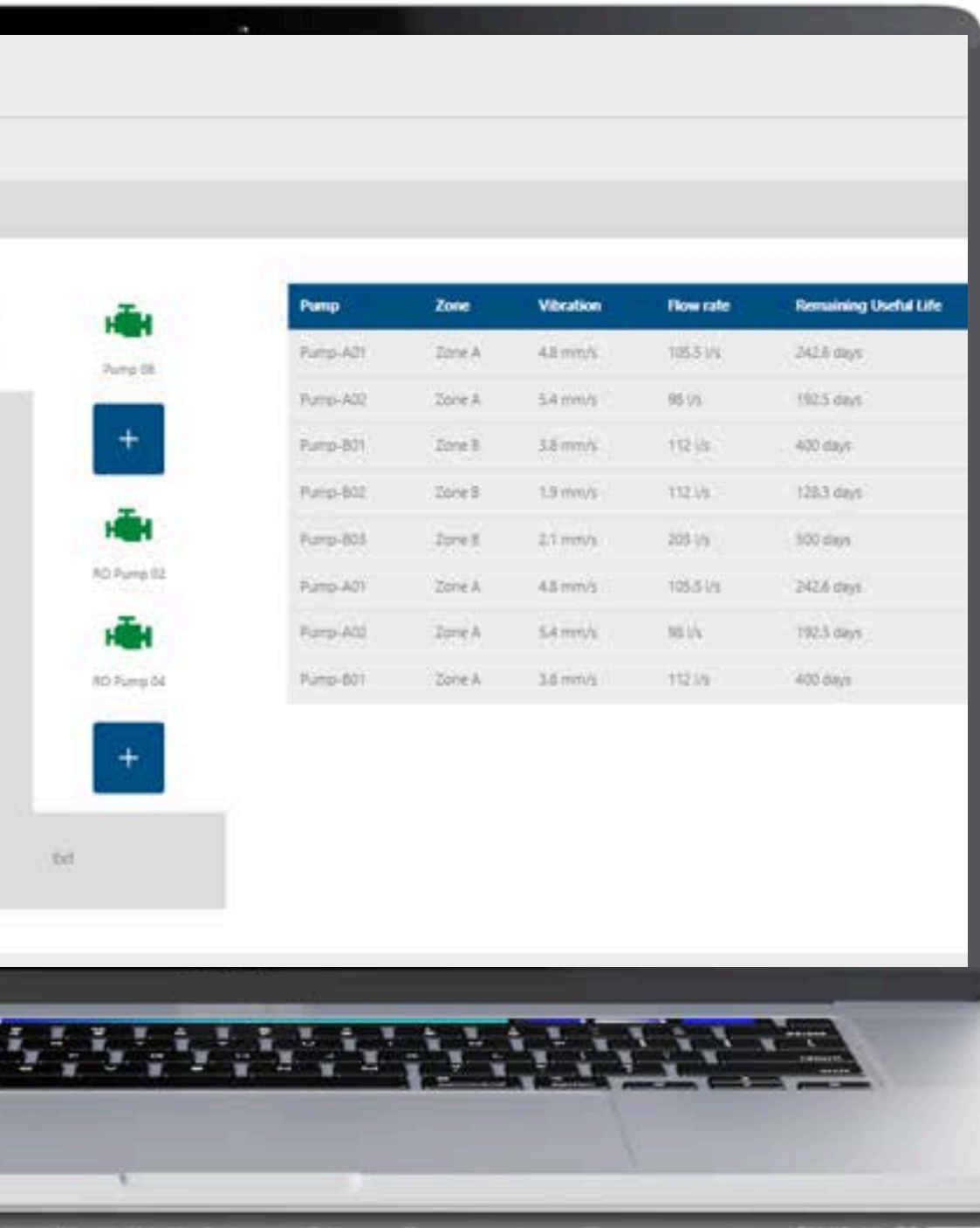
@ Tigernix Smart Wastewater Solutions

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?

Our platform fundamentally reconfigures traditional wastewater systems by integrating state-of-the-art digital twin technology, edge processing capabilities, and AI-powered management frameworks. This seamless integration ensures real-time data exchange, adaptive coordination of operations, and fully autonomous execution of processes, strengthening resilience across complex chemical, biological, and mechanical workflows. By embracing these advanced technologies, our solution accelerates continuous innovation in wastewater treatment.



Reconfigure the Future of
Wastewater Treatment Facilities
with Tigernix

Robust Features of Tigernix Wastewater Treatment Solution

AI-Driven Process Efficiency Maximisers

- Process Optimisation via Real-Time Sensor Fusion
- Predictive AI Modelling for Treatment Adjustment
- Satellite-Aided Environmental Monitoring

Predictive Treatment Dynamics and CRP Modelling Engine

- Flow Forecasting via AI and Predictive Analytics
- IoT-Integrated Treatment Risk Assessment
- CCTV & Drone-Assisted Infrastructure Surveillance

Integrated Proactive Asset Maintenance Blueprint

- IoT-Driven Predictive Maintenance Algorithms
- Digital Twin-Based Lifecycle Analysis
- Radar & Satellite Integration for Asset Tracking

Financial Capital Allocation Intelligence Platform

- AI-Driven Budget Forecasting Engine
- GIS Mapping for Financial Risk Assessment
- Blockchain-Enabled Transparent Capital Management

Water Quality Control & Tank Utilisation Strategiser

- Sensor-Based Adaptive Treatment Algorithms
- Drone-Supported Tank Inspection Tools
- AI-Driven Environmental Quality Analysis

AI-Augmented Treatment Process Simulations

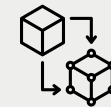
- Sensor-Enhanced Adaptive Process Controllers
- Digital Twin Simulation Process Refinement
- AI-Powered Anomaly Detection Intelligence



Predictive Risk
Management



Energy Optimisation
& Dynamic Resilience



Digital Twin
Simulations



Decade-Spanning
Infrastructure
Resilience

System Capabilities

Predictive Odour Control Systems

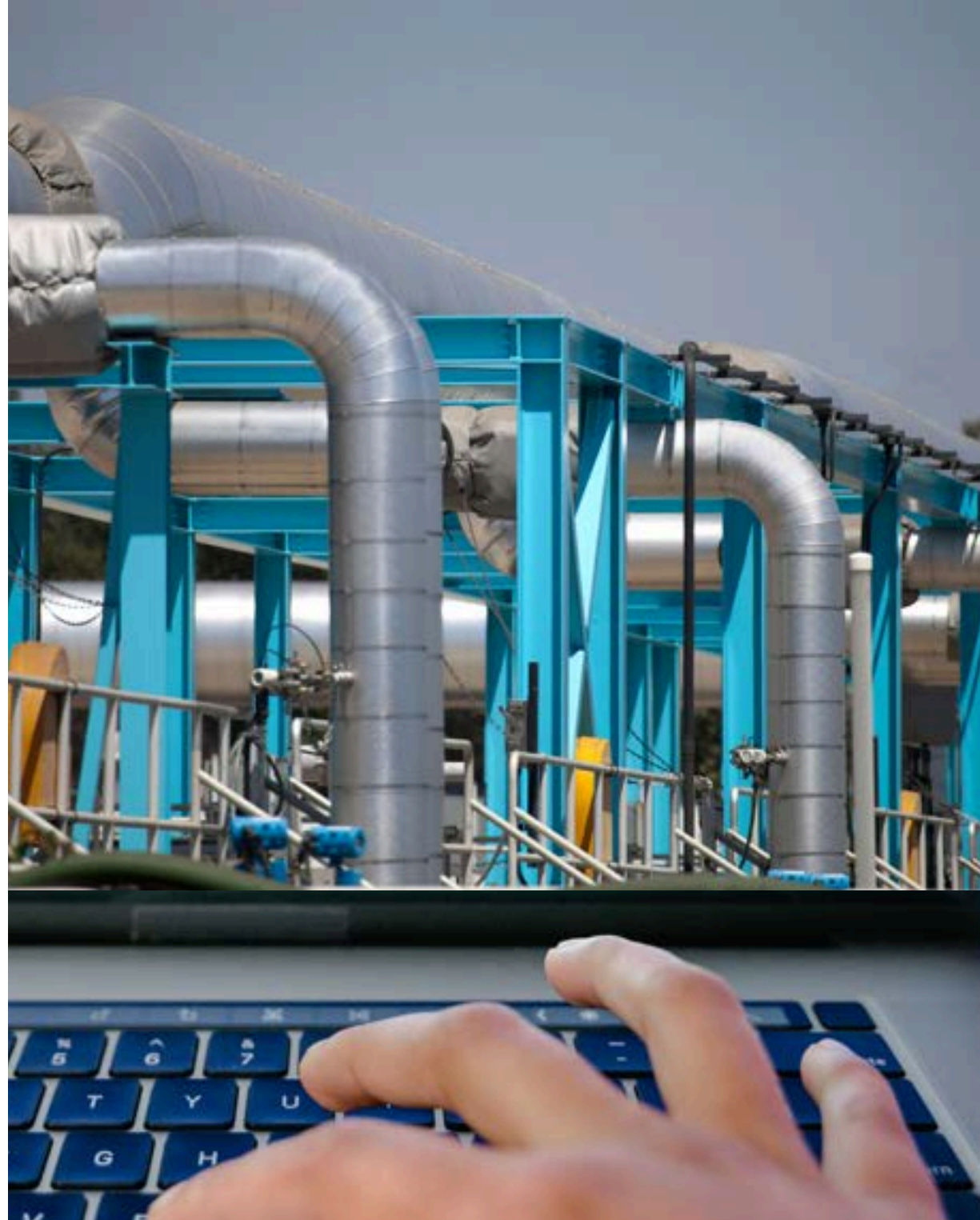
This employs AI, environmental sensors, and GIS dispersion modelling to predict wastewater odour events, enabling proactive mitigation strategies and preserving environmental quality in surrounding communities.

AI-Based Chemical Dosing Module

Analyses incoming wastewater characteristics in real-time using sensor networks and machine learning, dynamically adjusting chemical dosing rates to minimise reagent usage while maximising treatment efficacy.

Anaerobic Digestion Simulators

Our digital platform combines AI-optimised biogas analytics with Digital Twin representations of anaerobic digesters, ensuring maximal methane yield, organic load balance, and sustainable energy recovery.





System Capabilities

Autonomous Sludge and Dewatering Framework

It implements AI and IoT-augmented monitoring tools to optimise sludge thickening, dewatering processes, and cake quality, enhancing operational efficiency and reducing disposal costs.

Satellite-Guided Water Infrastructure Stress Mapping

Integrates satellite imagery, GIS mapping, and radar-based deformation analysis to detect early signs of stress or leakage in large-scale water distribution and treatment systems.

Tank Capacity and Health Surveillance Grid

We employ AI, drones, and real-time sensor networks for tank volume optimisation, structural health monitoring, and proactive maintenance scheduling, extending asset life cycles.

System Capabilities

Smart Stormwater and Overflow Intelligence

Tigernix utilises AI-driven forecasting, satellite data, and radar telemetry to predict storm events, optimise diversion flows, and reduce urban runoff impact on wastewater treatment facilities.

Intelligent Environmental Reporting Engines

The platform couples with IoT-based environmental monitoring, AI-generated compliance analytics, and blockchain-secured data reporting to automate regulatory submissions and enhance ecological accountability.

Autonomous Sedimentation Governance Architecture

Employs AI analytics and sensor telemetry to regulate sedimentation basin performance, ensuring optimal solid-liquid separation and minimising sludge carryover into secondary treatment processes.





System Capabilities

Cognitive Biological Treatment Coordination

Deploying ML models and Digital Twin simulations to orchestrate microbial community dynamics, we ensure maximum biological pollutant degradation and adaptive control of bioreactor environments.

Intelligent Influent Profiling

Tigernix AI-powered system utilises IoT sensors to profile influent variability dynamically, enabling real-time flow balancing, mitigating hydraulic shocks, and optimising downstream biological treatment stability.

Integrated Energy Analytics

Merges AI-enhanced energy forecasting with real-time risk modelling, optimising energy consumption, minimising operational disruptions, and increasing resilience across critical wastewater infrastructure assets.

Key Challenges & Solutions

Modern wastewater treatment platforms integrate AI, IoT sensors, Digital Twins, and predictive analytics to ensure infrastructure resilience for over a decade. These technologies enable proactive maintenance, energy optimisation, and dynamic responses to operational and environmental challenges. AI-driven risk management facilitates instant anomaly detection and disruption prevention, while Digital Twins simulate real-time monitoring and resource allocation, reducing costs and extending asset lifespans.



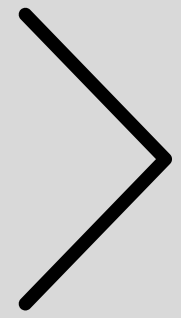
Predictive Risk Management for Instant Response

The platform synergises AI-driven energy consumption forecasting with dynamic, real-time risk assessment models, enabling intelligent optimisation of energy usage, minimising potential operational disruptions, and reinforcing the structural and functional resilience of critical wastewater treatment infrastructure assets across diverse operational scenarios.



Infrastructure Resilience for Over a Decade

Employing AI, IoT sensor grids, Digital Twins, and predictive analytics, the platform fortifies treatment infrastructure resilience, ensuring over a decade of adaptive performance, proactive maintenance, energy optimisation, and dynamic environmental responsiveness against evolving operational, mechanical, and ecological challenges.



Key Challenges & Solutions

Tigernix Wastewater Treatment Solution revolutionises plant operations by integrating AI-powered predictive analytics, IoT telemetry, Digital Twin simulations, and intelligent visualisation dashboards—enabling utilities to pinpoint cost risks and performance anomalies with exceptional clarity and accuracy. The platform’s advanced CRP analysis and real-time monitoring empower operators with crystal-clear operational insights, supporting strategic, data-driven decisions across all treatment infrastructures.



CRP Analysis for Clear Visualisation and Pinpointing

Integrating AI-powered predictive analytics, IoT telemetry, Digital Twin simulations, and intelligent visualisation dashboards, the platform enables precise identification of cost risks and performance anomalies, delivering crystal-clear operational insights and empowering decision-making across wastewater treatment infrastructures.



Alerting Downtime 72 Hours in Advance

This solution uses AI-based predictive maintenance algorithms, IoT-driven asset telemetry, and real-time Digital Twin monitoring. The platform forecasts potential system downtimes 72 hours in advance, enabling proactive interventions, minimising disruptions, and safeguarding continuous wastewater treatment network functionality.

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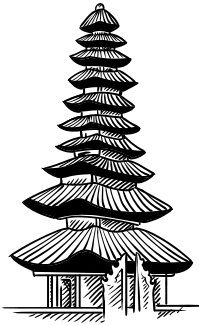
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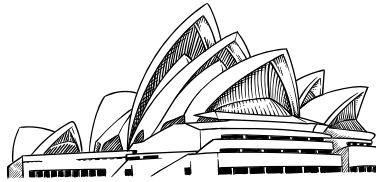
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