Saket
Autotech
Innovations Private Limited

www.saketautotech.com

WATER PRESSURIZED SMART TOILET SYSTEM FOR BUS & RAIL

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Plot No. 94, Sector-59 HSIIDC
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Piston-less, Water-Pressurised, IoT-Enabled Toilet System

Engineered for efficiency, hygiene, and smart monitoring, our advanced water pressurised toilet system is designed to meet the evolving needs of modern rail and transport environments.

This **Patent pending system** has been operating successfully in **Indian Railways coaches** for over 7 months, with zero failures or faults reported to date across any component.

Our Toilet System conforms to **EN50155 Standards**.

Technical Specifications:

- Air pressure requirement- 5 L per cycle
- Power Rating- Input Voltage: 220V or 110V AC
- Power Consumption- 1 A per flush

The system is available in **three customizable configurations**, catering to diverse usage requirements.

SS SQUAT TYPE WC

SS URINAL

CLASSIC SS WC

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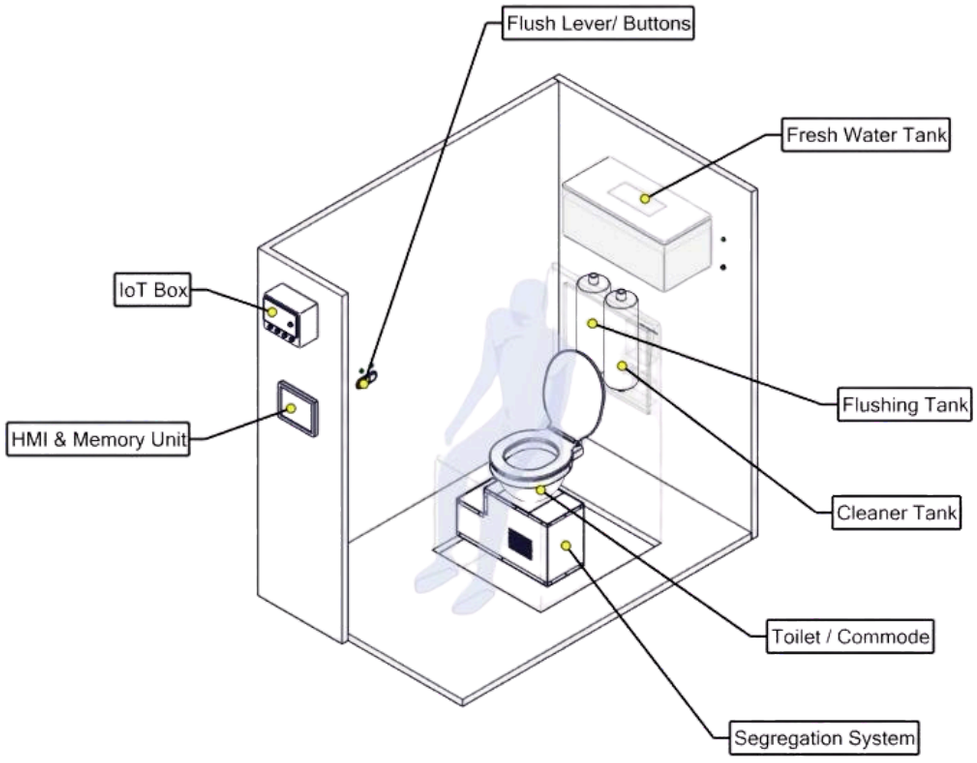
SYSTEM COMPONENTS



Key Features & Functional Overview

1. Overhead Freshwater Tank

- Centralized tank (per coach) stores fresh water.
- Refills individual flush tanks connected to each WC.

2. Water Pressurising System with Flush & Disinfectant Tanks

- Utilizes air pressure to deliver high-pressure flushing.
- Offers dual modes: Full Flush & Half Flush to minimize water usage.
- PLC-controlled system allows water use as low as 300 ml per flush, adjustable via HMI.
- Automatic refilling after each flush.
- Sprays every 6 hours to clean, disinfect, develop anti stick layer and leave a lasting fragrance.
- The cleaner is bio-compatible, safe for bacteria used in waste decomposition.

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3. Segregation Tank

- Proprietary Technology that separates non-biodegradable items (sanitary products, plastics, etc. thrown accidentally into WC) from human waste
- Prevents clogging and damage to the decomposition system.

4. Retention Tank

- Collects bio-waste and uses bacterial action to decompose it into methane, water, and CO_2.
- Controls odour and minimizes disease transmission risks.

5. Smart Sensor Network

- Water Level Sensors
  Measure levels in the freshwater, flush, and cleaner tanks. Alerts users when levels are low.

- Segregation Tank Sensor
  Notifies when non-biodegradable waste reaches capacity.

- IoT Connectivity Sensor
  Indicates whether the system is online or offline.

6. Water Level Indication Module

- External panel display showing real-time status of:
  Freshwater Tank: Full/Empty
  Flush Tank: Full/Empty
  Cleaner Tank: Full/Empty
  Segregation Tank: Full/Empty
  Flush Mode Readiness: Ready/Not Ready
  IoT Status: Online/Offline

7. HMI & Memory Unit

- Stores up to 50,000 flush cycles with timestamps.
- Logs operational faults for diagnostics and maintenance.
- Allows real-time control of:
  Flushing volume
  Cleaner quantity
  Cleaning frequency
- Provides **graphical analytics for water usage** and supports **planning for station-side facilities**.

8. IoT-Based Remote Monitoring

- Transmits sensor data to remote servers.
- Shares location, performance status, and usage trends of each unit.
- Communicates system faults in real-time to the remote maintenance team, enabling swift response and minimising down time.

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Advantages Over Vacuum Toilet Systems

Our Smart water-pressurised toilet system offers several key benefits over conventional vacuum-based technologies:

- **Lower Total Cost of Ownership**
  Operates on pneumatic technology, reducing long-term operational expenses.
- **Water-Efficient Design**
  PLC-controlled flushing uses as little as 300 mL per cycle, conserving water without compromising cleanliness.
- **30% More Cost-Effective**
  Offers significant savings in upfront cost compared to vacuum systems.
- **IoT-Enabled Fault Detection**
  Advanced control panel enables remote monitoring and real-time fault alerts, minimizing downtime.
- **No Vacuum Generator Required**
  Significantly reduces power consumption by operating on centrally available compressed air in the train eliminating the need for a dedicated vacuum generator unit.
- **Simplified, Durable Construction**
  Fewer components mean fewer points of failure–resulting in greater reliability.
- **Clog-Free Performance**
  Fitted with our proprietary segregation tank, designed to prevent clogging and ensure uninterrupted operation.
- **Self-Cleans & Disinfects**
  Automatically sprays cleaner, disinfectant and a pleasant fragrance every 6 hours for hygiene and Odor control.
- **Low Maintenance Requirements**
  Built for long-term use with minimal servicing and easy upkeep.
- **Easy Retrofit**
  Modular design fits seamlessly into existing toilet spaces–no major modifications needed.
- **Technician-Friendly**
  Simple interface and accessible components make it easy to operate and maintain, even with minimal training.

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