

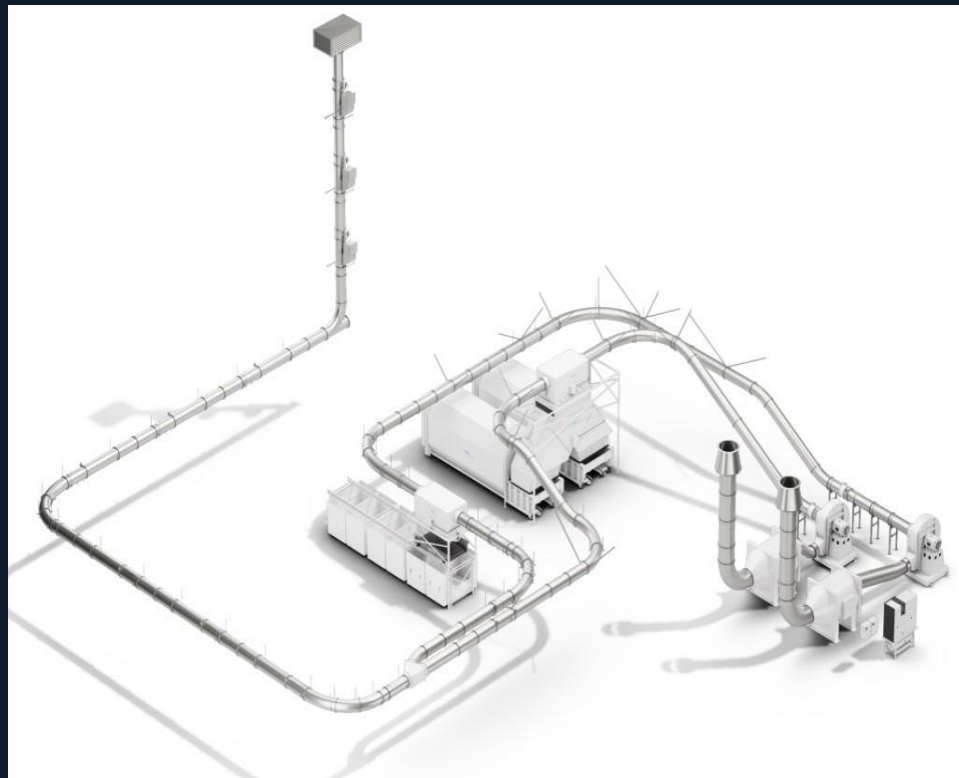


PAWTS

**Pneumatic Automatic Waste
Transportation Systems**

"THE FUTURE OF WASTE UN-HANDLING"

**Memios Green
Innovations India
Private Limited**



GeM
Government
e Marketplace



We Are

- **Subsidiary Of Memios Environmental Technologies LLC, North Carolina, USA,**
Experts in Pneumatic Automatic Waste Transportation Systems (PAWTS) Since 1999
- **Memios started its Fabrication of all Parts & components in India since 2017 and exporting globally under Make in India**
- **Best for Hospitals, Airports, Office Complexes, Condominiums & Railway Stations Etc..**

Waste Management, Reimagined

We are specialized in Pneumatic System to transport Trash and Soiled Linen from collection points to Disposal Area through concealed Stainless-Steel Pipe network — eliminating cross contamination, infection risk, manual handling, and operational waste exposure.

Pneumatic Systems

Zero-Touch Disposal

LEED Certified

Make in India

Global Exports

Hygienic Infrastructure

"Hygienic environments engineered by design, not by chance."

01

Make in India

Components fabricated in Gurgaon, supplied globally — aligned with India's national manufacturing vision.

02

Sustainability

Low energy use, minimal carbon footprint, and multi-stream waste transport in a single system.

03

LEED Certification

Systems earn LEED points for Indoor Environmental Quality immediately upon installation.

04

Client Value

Reduced operational costs, clean environments, and ROI within five to six years.

05

Zero Exposure

Eliminates all manual waste handling — protecting workers and residents from infection risks.

06

Export & Trade

889+ shipments to 15 buyers across the Globe. India-made, globally trusted.

Introductory Video



Honourable PM of India being briefed on Pneumatic Automatic Waste Transportation System of Memios Environmental Technologies



Projects Executed in India

Landmark installations across premier Indian institutions





Sports Injury Centre Hospital — Safdarjung



Why Automation?



Waste handling the traditional way poses mounting challenges.

Manpower and its compliances -increase each year

Operational costs rises unpredictable year-by-year

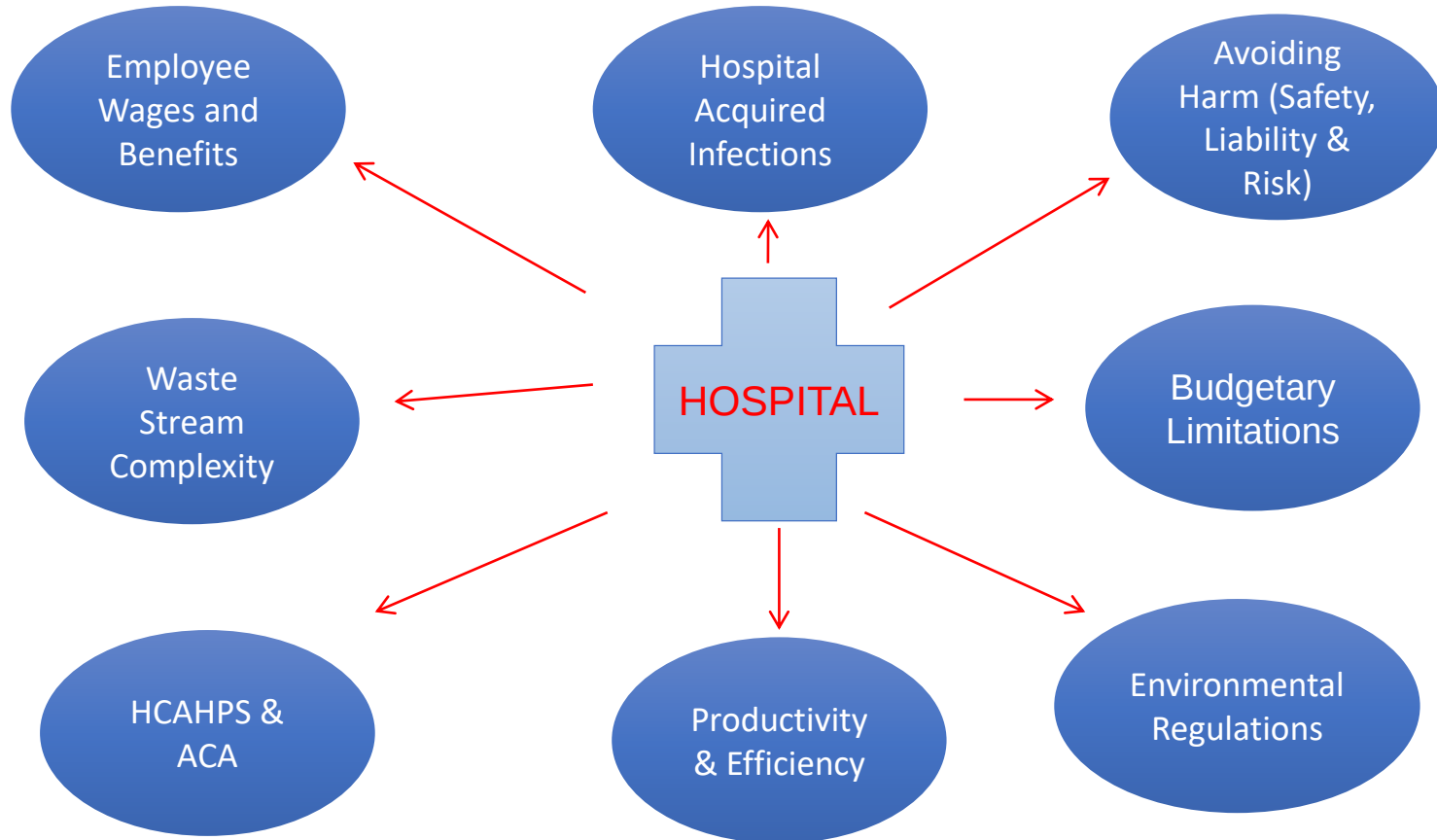
Cross contamination and infection risk, - greater danger for Inmates, patients, staff and visitors

Ugly and odorous trash carts will clutter hallways and clog elevators

Patient satisfaction will increasingly drive consumer preference

Millions of Rupees wasted on manual waste handling

Hospital Soiled Linen & Solid Waste — Challenges and Dangers



System For Automatic Clearing of Dustbins



Users simply dispose of trash and recyclables in the conveniently located receptacles along Station platforms. The System automatically transports the trash receptacles' contents to compactors away from the Station platforms at amazingly high speed.

Remote Collection

Facility away from Platforms housing system components and sorting equipment

2

Tube Network

Waste is removed pneumatically overhead

1

Receptacles

Located along the tube network connecting all Platforms

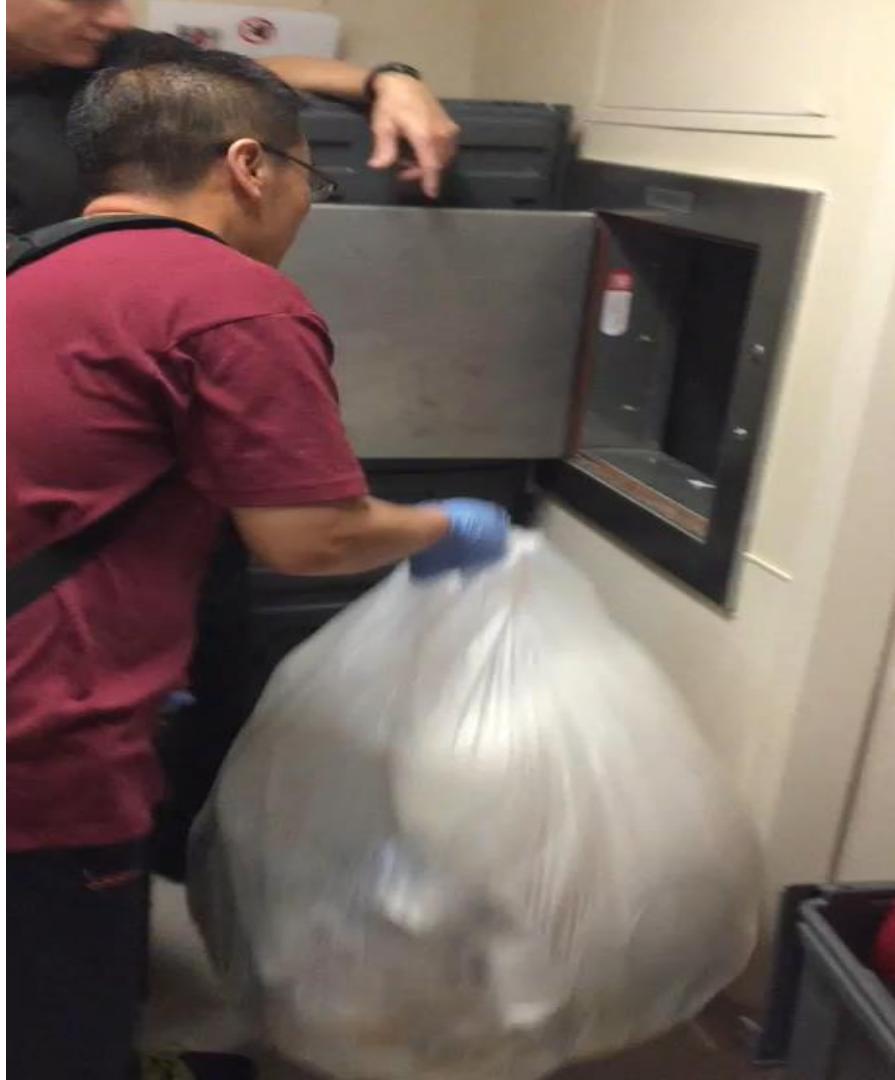
3

TOTAL PROJECT TUBE NETWORK

~8,000 meters serving nine platforms.
Over 80% of components made in India.











Pneumatic Automated Waste Transportation System (PAWTS) for Hospitals

*A Next-Generation Solution for Hygienic, Touchless, and Cost-Effective Hospital Waste
Management*

Hospitals generate significant volumes of biomedical waste, soiled linen, recyclables, and general refuse daily. Traditional waste handling methods — such as open bins, manual trolleys, and human transportation through patient corridors and elevators — pose serious risks including Hospital-Acquired Infections (HAIs), occupational hazards, unpleasant odors, and regulatory non-compliance.

With the rapid expansion of India's healthcare sector and increasing patient expectations, there is a critical need for a modern, automated, and hygienic waste management solution that completely eliminates human contact with contaminated materials.

The Solutions of PAWTS — Five Seamless Stages



A fully enclosed, pipe-based network using high-velocity air streams to transport waste and soiled linen to a centralized collection area — eliminating manual handling.

Remove

Waste is deposited into sealed indoor receptacles on each floor, ensuring zero human contact with contaminated material.

Separate

Users select the waste type (biomedical, recyclable, general, linen) via a digital interface, enabling automated segregation at source.

Transport

High-speed air (up to 70 mph) propels waste through sealed 18–20 inch stainless steel pipes to a central collection hub.

Collect

Waste is received in designated collectors within seconds; soiled linen is automatically routed to the laundry staging area.

Monitor

An integrated control system tracks usage, throughput, and system performance in real time through analytics dashboards.

Key Challenges Addressed



Hospital-Acquired Infections (HAIs):

Eliminates human contact with contaminated waste, significantly reducing cross-contamination risks across wards, ICUs, and operation theatres.

Occupational Safety & Liability:

Minimizes staff exposure to hazardous waste, sharps, and pathogens, thereby reducing injuries and insurance claims.

Regulatory Compliance:

Supports BMW Rules 2016, NABH standards, and Swachh Bharat initiatives through automated segregation and traceability.

Corridor Congestion & Aesthetics:

Removes waste trolleys from patient areas and elevators, improving cleanliness and patient experience.

Labor Dependency & Costs:

Reduces reliance on manual labour, lowering operational costs and improving efficiency.

Benefits for Hospitals



Benefit Area	Impact
Infection Control	Near-zero human exposure to waste; sealed pipes prevent airborne contamination and pest infestation.
Operational Efficiency	Waste removed in seconds vs. hours with manual trolley runs. Throughput monitored via real-time dashboards.
Labour Savings	Significant reduction in housekeeping FTEs for waste transport; staff redeployed to patient-care activities.
Patient Satisfaction	Cleaner corridors, zero odour, reduced noise — directly boosts HCAHPS / patient feedback scores.
Sustainability	Automated segregation improves recycling rates; energy-efficient single-fan system with minimal power consumption.
Data & Analytics	Usage metrics, waste volume tracking, and predictive maintenance alerts for continuous process improvement.

5-6 yrs

Return on
Investment

70+ yrs

System
Lifespan

1 Fan

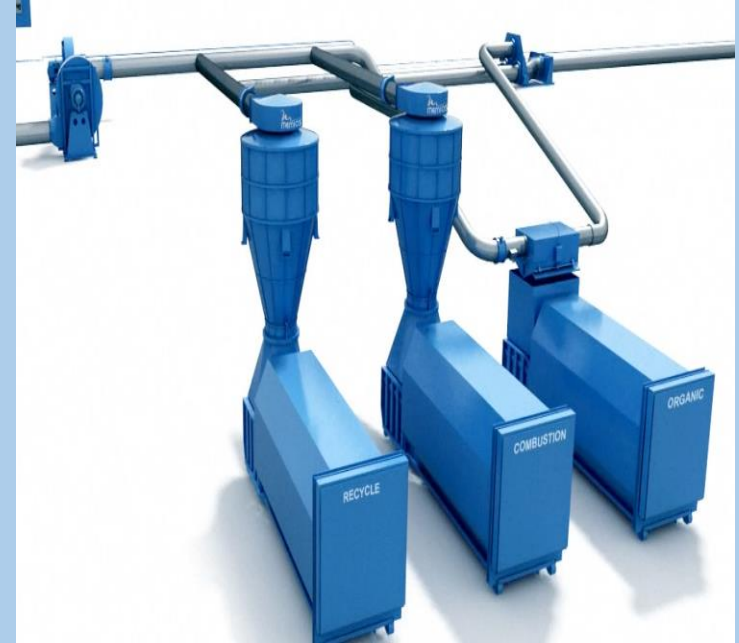
VFD-Controlled
High-Efficiency

- ROI within five to six years through reduced labor, lower infection-related costs, and improved efficiency
- System lifespan exceeding 70 years with durable stainless-steel pipelines and minimal maintenance
- Lower energy consumption with a single high-efficiency Variable Frequency Drive controlled fan
- Reduced insurance and liability costs due to fewer workplace injuries and infection incidents
- Optimized space utilization by eliminating decentralized waste storage areas

The Future of Waste Un-Handling

Memios partners with hospital administration, architects and engineers to develop energy efficient and operationally effective systems that provide financial, environmental and socially sustainable long-term benefits. Clean Stream Systems feature unparalleled simplicity, reliability, efficiency, and longevity guaranteed to provide 25-35 years of uncomplicated operational excellence. Return On Investment (ROI) is typically less than six years. Every system is warranted to meet the highest operational performance standards. Ongoing support, 365 days a year, ensures timely maintenance, support and exceptional service.

MET strives to reduce inefficiencies in all facets of their business to mitigate unnecessary environmental impact, deliver uncompromising value, and make our World cleaner and safer for future generations.



Introducing CleanStream — Fully Automated Waste Removal Solutions

MEMIOS Environmental Technologies (MET) provide facilities with a 21st century solution to address global complexities and challenges of on-site municipal solid waste management. The MET Clean Stream solution replaces manual inefficiencies and minimizes risks by automating the removal, transport, and collection of trash, recyclables, organics and soiled linens from the human environment without the need for human intervention.

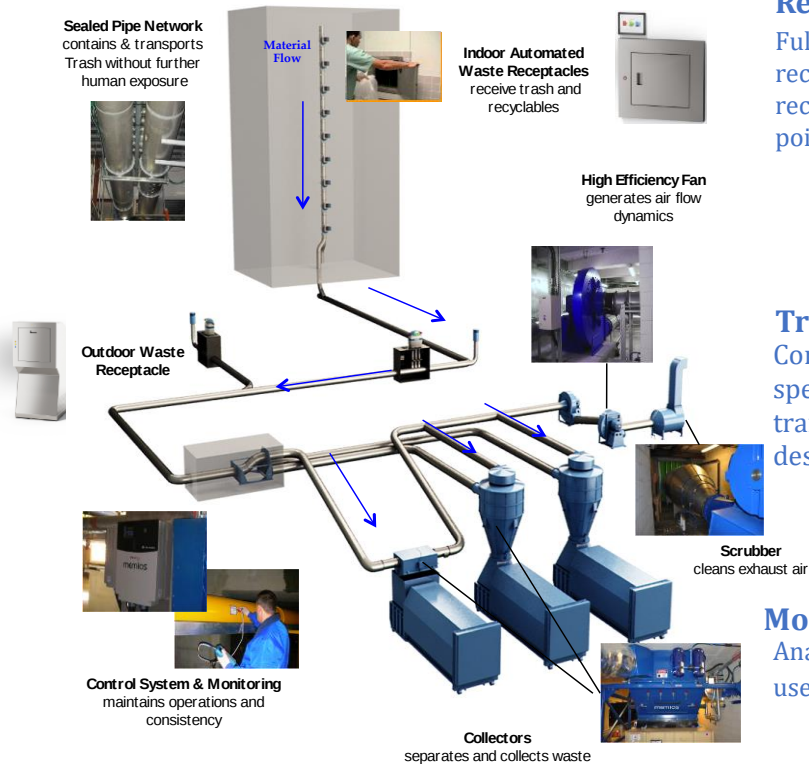


MODERN PLUMBING SYSTEM FOR TRASH AND RECYCLABLES

Proven and reliable results return value by:

- ✓ **Eliminating labor resources**
- ✓ **Lowering operational costs**
- ✓ **Reducing safety and contamination risks**
- ✓ **Enhancing residential owner satisfaction**
- ✓ **Improving health & hygiene of the human environment**

System Overview



Remove

Fully automated secure load station receptacles safely contain trash, recyclables and soiled linen at its point of origin.



Separate

User interface allows worker to quickly and easily source segregate trash, organics and/or recyclables with one touch.(soiled linen uses separate pathway)

Transport

Completely sealed pipes use high speed air to safely and rapidly transport materials to their designated collection containers.

Collect

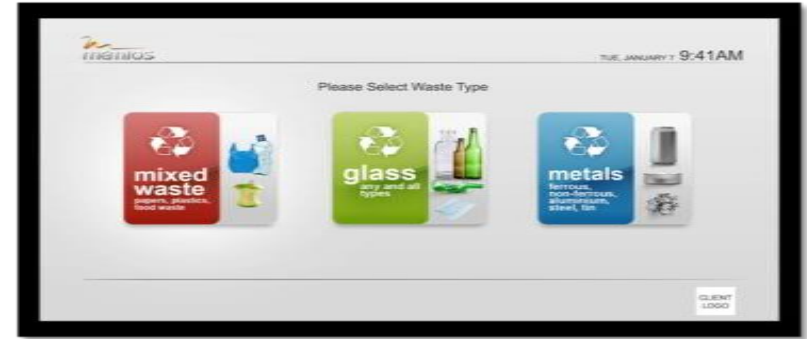
Materials arrive in seconds to their destination point without human intervention or risk of cross contamination

Monitor And Report

Analytics monitor and report system users, times, and values.

Clean Stream User Interface

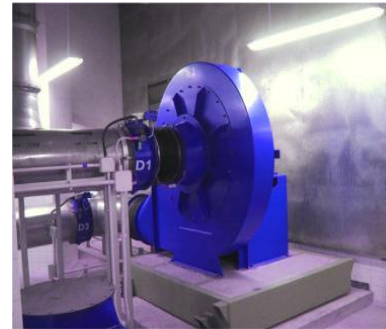
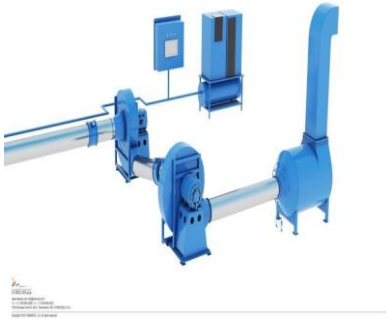
- User activates the system and selects the waste fraction (trash, glass, metal, paper, plastic)
- Interactive display may include: System status, instructions, commands, feedback, advertising
- User interface options available: Keypad, Digital, Proximity and RFID



Main Operating Components

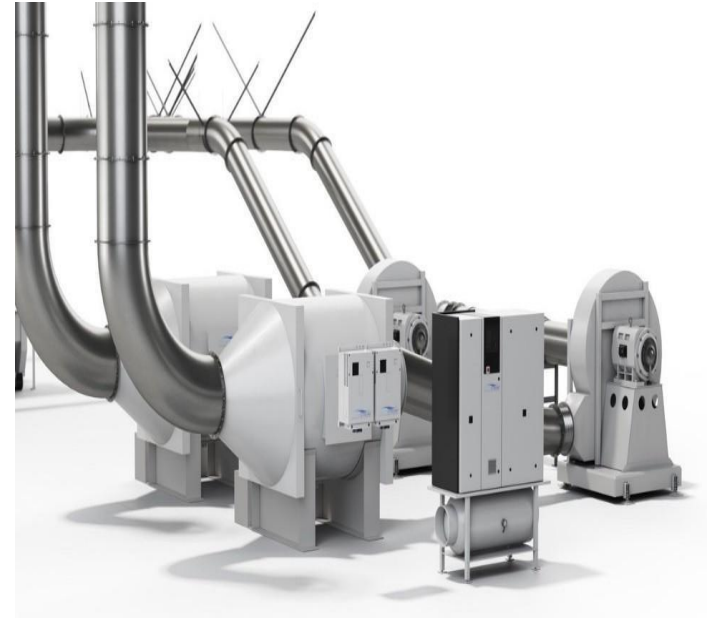


- Main system operating components will fit into a space of approximately 750 sq ft depending upon configuration (about the size of a commercial shipping container).
- Location is normally on the ground or basement level in an environmentally controlled area protected from the elements.



Fan — Variable Frequency Drive System

- Memios fans are custom designed for each application. Fan blade design and direct drive motor pairing are specific to each system providing optimal performance with power reserve to meet high demand loads.
- Our fans incorporate Variable Frequency Drives (VFD) allowing our system to spool up and down to reduce wear on mechanical components and operate to peak efficiency — this reduces total operational cost.



Exhaust Scrubbers & Compressed Air System



Exhaust Scrubbers

Clean Stream Exhaust Scrubbers are designed to allow the system to operate at peak efficiency. Memios scrubbers use a mist of recirculated water to remove particles from the exhaust stream. By eliminating traditional filters there is no need to clean exhaust screens and no filters to replace. Our scrubbers improve air flow and reduce maintenance and operational cost.



Compressed Air System

Memios Compressed Air Systems provides power to operate all system valves and dampers. Replacing traditional electric actuators and motors with compressed air cylinders and actuators improves reliability and operational efficiency.

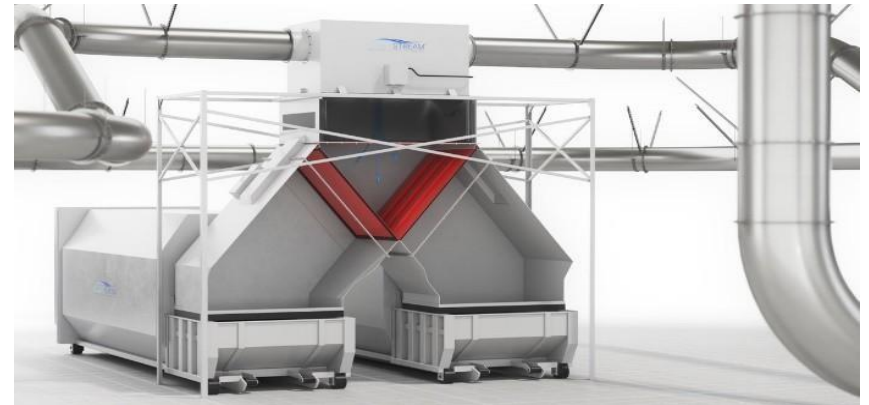
Trash Collectors

Memios trash collectors are designed to be modular and scalable to meet any space or system requirements. Our proprietary non-stick coatings prevent build-up and keep the system running at maximum efficiency. Capable of handling multiple waste streams and high demand volumes.



Outdoor Load Station

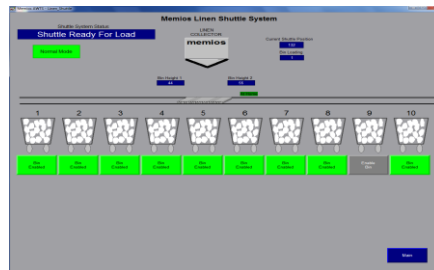
Memios outdoor load stations are designed to be durable all-weather outdoor trash receptacles. These stations connect directly to your Clean Stream system.



Transportation — Light-Weight Piping Network



- Soiled linen may be delivered directly to the on-site laundry or to a central collection area.
- Linen shuttle automatically loads laundry carts in a central staging area.
- Automated system and LED display monitors and displays critical metrics.



System for Transportation

- Key Design features of the Memios-PAWTS System is the use of light-weight piping locally manufactured provides significantly lower initial costs.
- Because of it's light weight nature and superior strength, the PAWTS System piping can be installed in almost any location where space is available without special equipment or structural modifications.

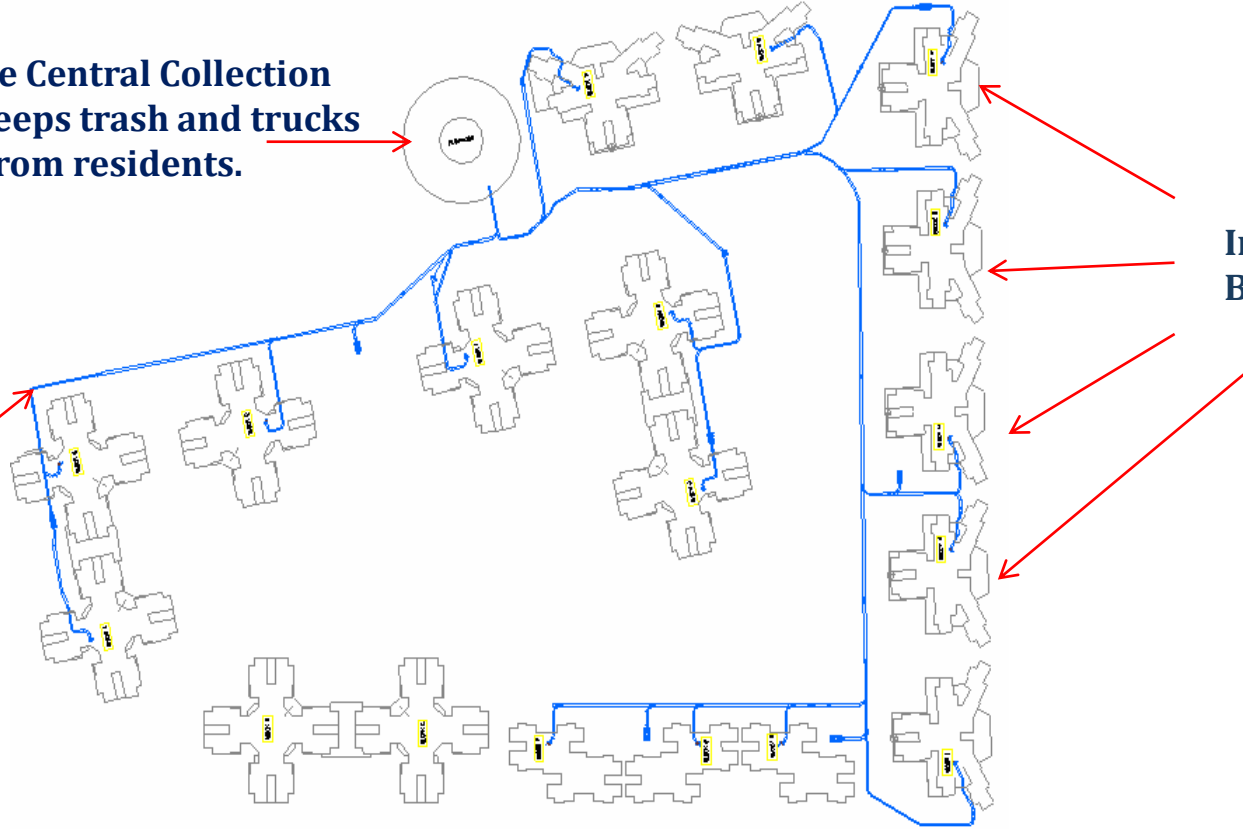


Layout of PAWTS

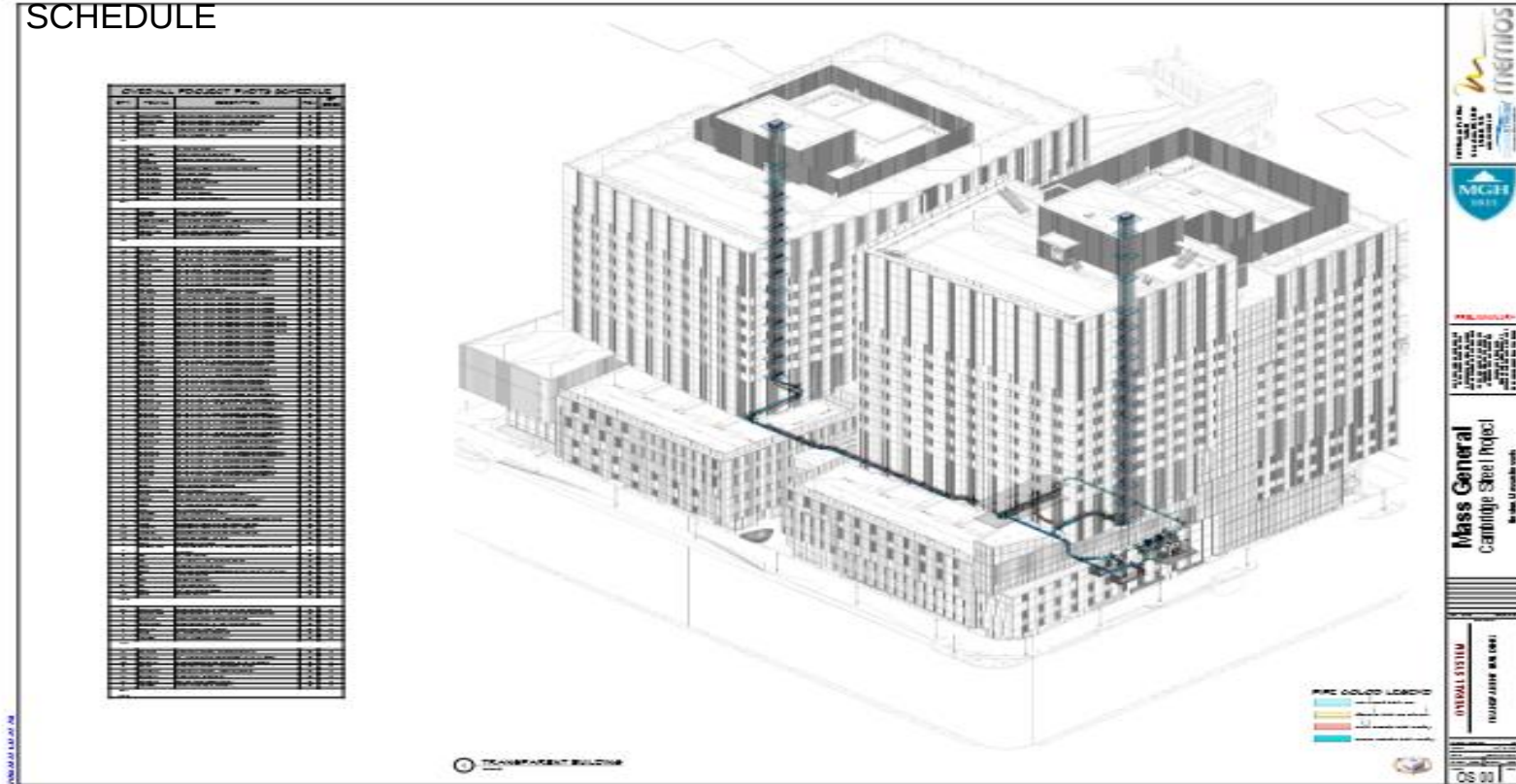
Remote Central Collection area keeps trash and trucks away from residents.

Independent Blocks

Piping allows trash to be deposited in each building on each floor, then transported through underground passages to a remote area away from buildings and residents.



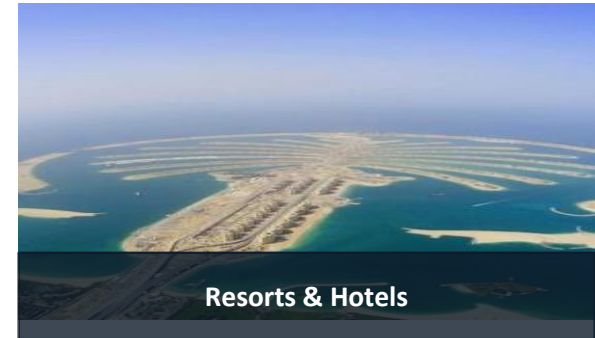
OVERALL PROJECT SCHEDULE







Applications



International Clients

- Improved system performance
- User accountability
- Lower operating costs



Duke University Hospital



Jackson Miami Towers



M D Anderson Cancer Centre



Gold Suite Towers Korea

Competitive Analysis — CleanStream vs. Others

Items	CLEANSTREAM	Others
Fans	• 1 high-pressure system fan • High efficiency aerodynamic design • Minimal space & footprint • Variable speed direct frequency drive motor • Reserve emergency power	• Multiple fans required • Old design – no change in 30 yrs • Larger space requirements • Higher power consumption • Shaft driven motor – higher maintenance costs
Collectors	• Special inlet/screen design – no material pass-through • No moving parts • Lowest maintenance costs	• Improper inlet design – allows residual material pass-through • Complicated moving parts require manual cleaning • Higher ongoing maintenance costs

Competitive Analysis — CleanStream vs. Others (Contd.)



Items	CLEANSTREAM	Others
Scrubbers	• Smart design – self-cleaning screens • High performance – no effect on system velocities	• Bag/charcoal filters – manual replacement required • Particulate build-up reduces velocities throughout system
Ventilate Mode	• Keeps pipes dry and odor free • No odors or organic build-up • No chemicals or pipe cleaning augers required	• Uses water and chemicals • Odor and residual material build-up • Unknown bacteria kill rate • Chemicals and augers required for disinfection
Overall System	• Fully pneumatic load stations • Dilute phase conveyance – centralized high-speed air stream • Volume based – algorithm based technology • Velocity Driven – 1,500 to 3,500 RPM (Continuous phase)	• Gravity/pneumatic load stations • Dense phase conveyance – turbulent air flow • Time based material removal • Vacuum driven – 3,500 RPM (Batch Phase)

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Thank You.
