



PADDLE SLUDGE DRYER

50⁺ Years
Of experience



ABOUT US

Kerone Engineering Solutions Ltd is a global leader in advanced industrial heating, drying, cooling & end to end process engineering solutions. With over five decades of proven expertise, we specialize in designing, manufacturing, and delivering highly customized, cutting-edge systems tailored to the evolving needs of industries worldwide.

Our commitment to engineering excellence, sustainability, digitalization, and technological innovation has positioned us as a trusted partner for businesses across multiple sectors. By integrating Artificial Intelligence (AI), Machine Learning (ML), and Internet of Things (IoT) technologies into our systems, Kerone ensures smarter automation, real-time monitoring, predictive maintenance, and data-driven process optimization—empowering our clients to achieve greater productivity, efficiency, and reliability.



50+

Years of Experience



10,000+

Satisfied Clients



500+

Employee



100+

Experts



50+

Global Presence



50+ Years Manufacturing Excellence



Great Sale Support



Highly Customized Product



Adherence to Standards



Sound Infrastructure



Team of experts Delivering Quality



Timely Delivery



Cost Effective Solutions



INDUSTRIES WE SERVE

- ✓ Food Processing & Agro-Processing
- ✓ Chemicals & Petrochemicals
- ✓ Pharmaceuticals
- ✓ Textiles, Automotive & Aerospace
- ✓ Paper & Packaging
- ✓ Ceramics & Glass
- ✓ Rubber & Plastics
- ✓ Environmental & Waste Management
- ✓ Oil, Gas & Steel Industries



- ✓ Industry Expertise – Over 50 years of global engineering leadership.
- ✓ Custom Solutions – Tailored engineering that meets unique industrial requirements.
- ✓ Global Reach – Trusted by industries across continents with proven reliability.
- ✓ Digital & Smart Systems – AI/ML-powered automation, IoT-based monitoring, and predictive insights.
- ✓ Cutting-Edge Technology – Continuous innovation in heating, drying, and advanced processing.
- ✓ Energy Efficiency – AI-optimized designs for lower energy consumption and sustainability.

QUALITY & COMPLIANCE

At Kerone, quality and compliance are non-negotiable. All our solutions are engineered in adherence to international standards and industry best practices, ensuring maximum safety, durability, reliability, and efficiency. With integrated digital technologies, we enable smarter quality control and compliance tracking across all operations.





Powered by AI/ML & IoT

Paddle Sludge Dryer

A Paddle Sludge Dryer is a highly efficient indirect-contact drying machine specifically designed to handle wet sludge, slurries, and paste-like materials generated from industrial and municipal processes. It operates by passing the material through a jacketed trough equipped with hollow paddle-shaped agitators that rotate slowly, continuously mixing and conveying the sludge while transferring heat from a thermal medium (steam, hot water, or thermal oil) circulating through the paddles and trough walls. This indirect heating mechanism ensures uniform drying without exposing the material to open flame or combustion gases.

The machine features a self-cleaning design where the wedge-shaped paddles create a squeeze-scrubbing action against each other during rotation, preventing material buildup and ensuring consistent heat transfer throughout the process. The result is a compact, energy-efficient drying solution capable of reducing sludge moisture content from as high as 80–85% down to 10% or less, significantly reducing sludge volume for easier handling, transport, or final disposal.

Key Features

- **Indirect Heating Design**
Uses steam, hot water, or thermal oil circulating through hollow paddles and jacket walls — no direct contact with combustion gases, ensuring clean and safe drying.
- **Self-Cleaning Paddle Mechanism**
Wedge-shaped hollow paddles create a mutual scraping action, preventing material adhesion and maintaining consistent heat transfer efficiency.

- **Compact Footprint**

Large heat transfer surface area packed into a small floor space, making it ideal for facilities with limited installation area.

- **Low Energy Consumption**

Thermal efficiency exceeds 80–90% due to indirect heat transfer and minimal exhaust air volume, drastically reducing operating costs.

- **Adjustable Retention Time**

Shaft rotation speed and weir height can be controlled to fine-tune material residence time and final moisture content.

- **Minimal Exhaust Gas Volume**

Produces very little waste gas, simplifying off-gas treatment systems and reducing emission control costs.

Advantages

- **High thermal efficiency**
up to 90%, significantly lower energy bills
- **Volume reduction**
of sludge by 60–80%, lowering disposal costs
- **Low operating temperature**
reduces risk of odor release and material degradation
- **Handles sticky, viscous, and paste-like materials**
that other dryers cannot process
- **Closed-loop system**
minimizes environmental pollution and odor emissions
- **Low maintenance**
due to simple mechanical structure with few moving parts
- **Wide heating medium compatibility**
steam, thermal oil, or hot water

Applications

Industry	Description
Municipal Wastewater	Drying activated sludge and biosolids from sewage treatment plants before landfill, incineration, or fertilizer use
Chemical Industry	Processing chemical reaction residues, filter cakes, and hazardous paste-like byproducts
Pharmaceutical	Drying pharmaceutical sludge and API manufacturing waste while maintaining hygiene standards
Food & Beverage	Drying food processing waste such as starch residue, fish meal, and distillery slops
Paper & Pulp	Dewatering and drying paper sludge and cellulose residues for waste reduction or reuse
Agriculture	Processing organic sludge into bio-fertilizer or soil amendment products
Mining & Metallurgy	Drying mineral concentrates, tailings, and metal hydroxide slurries



Technical Specifications

Parameter	Specification Range	Description
Evaporation Capacity	50 – 3,000 kg/hr	Amount of water removed from sludge per hour
Inlet Moisture Content	40% – 85% (wet basis)	Feed sludge moisture level entering the dryer
Outlet Moisture Content	5% – 30% (adjustable)	Final dried product moisture level
Operating Temperature	80°C – 320°C	Drying temperature depending on material and heating medium
Steam Pressure	0.3 – 0.8 MPa	Typical steam supply pressure for indirect heating
Shaft Rotation Speed	3 – 20 RPM	Adjustable speed controls retention time and mixing intensity
Heat Transfer Area	5 – 1,200 m ²	Total effective heating surface within paddles and jacket
Thermal Efficiency	≥ 80% – 90%	Ratio of heat used for evaporation vs. total heat input
Number of Shafts	Single or Double (Twin)	Double-shaft design is more common for better mixing and self-cleaning
Exhaust Gas Volume	Very Low (closed system)	Minimal off-gas simplifies downstream treatment equipment



THANK YOU

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