

The Revolutionary **DRY MINERAL SEPARATION**

Sepro-tech DDS

(Dry Density Separator)



Dry Coal Washery
Coal Gasification Plants
Power Plants
Ferro Alloy Plants
Steel Plants
DRI Plants
Mines

Enhancing Mineral Separation with **Dry Separation Technology**



Above photograph indicates a particular model, the accessories, spare parts & design of actual machine can be different. Design & dimension can be change due to continue development process

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Revolutionizing Separation: Dry, Efficient, and Eco-Friendly.

We are proud to introduce ourselves as pioneers in the development of indigenously designed "Dry Separation Technology." Our company, an ISO 9001:2015 certified entity, has been a trusted presence in the market since 2007, serving the Steel, Power, and Mining sectors under the registered trademark of "Sepro-tech Engineers®."

Our commitment to the environment and cost-efficiency drives our innovative approach, as our technology is centered around dry separation processes. We have already applied for a patent for this groundbreaking technology, and it's noteworthy that the same technology has been registered for design protection.

Our dry, eco-friendly, and cost-effective technology is designed for the beneficiation of various minerals and ores, including Coal, Iron Ore, Manganese Ore, Chromite Ore, Slag, and the separation of metals from ferrous and non-ferrous alloys such as Silico-manganese,

Ferro-manganese, Ferro-chrome, Stainless Steel, and Barytes.

At the heart of our technology is the Sepro-tech DDS, an Air-based "Dry Density Separator" that can also be likened to "Dense Medium Separation (DMS)." It harnesses the differences in material density among liberated particles as the core separation mechanism. What makes it environmentally friendly is the sole use of air for floatation and stratification, eliminating the need for water, liquid, or chemicals in the separation process.

The Sepro-tech DDS boasts an impressive operational range, accommodating densities from a minimum of 0.1 Tons/m³ to a maximum of 8 Tons/m³ and material sizes ranging from 0 mm to 100 mm. Notably, this "Dry Density Separation" technology significantly reduces separation costs.

In summary, our pioneering Dry Separation Technology is a testament to our commitment to eco-friendly and cost-effective solutions for mineral and ore beneficiation across various sectors.

Sepro-tech DDS: Redefining Separation Accuracy

Sepro-tech DDS, a Dry Density Separator Equipment, redefines the way materials are separated, using atmospheric air as its medium. This innovative technology is at the forefront of dry density separation.

The process begins with ROM materials, crushed and screened to the required sizes, which are then fed directly into Sepro-tech DDS. This equipment expertly segregates the materials into distinct densities, guided by carefully set parameters.

Operating on the principle of "Relative Density," Sepro-tech DDS excels at separating liberated material fractions with varying densities. The heart of this Density Separator lies in its inclined Vibrating Stratification Deck. Within its chambers, positive air pressure and air pulses are meticulously

generated, forcing their way up through the Stratification Deck and the material bed. This air flow effectively suspends the materials in a stratified floatation state.

The Stratification Deck's precise movements create a symphony of Air Pulsations. Lighter materials in the upper strata are carried away with each air pulse, finding their way to the Low-Density outlet. Meanwhile, heavier materials in the lower strata ascend up-hill along the inclined vibrating Stratification Deck, ultimately being discharged from the High-Density outlet.

In essence, Sepro-tech DDS sets the stage for efficient, dry density separation, offering a sustainable and effective solution for a wide range of applications.

Automated Sepro-tech DDS is Precision in Every Parameter at Your Fingertips. Effortless Control, Exceptional Precision

Achieving optimal separation is an art, and Sepro-tech DDS masters it through precise automation. Our technology adjusts four critical parameters with ease, responding to factors like Relative Density, Mineralogy, Liberation, feed size, and LD/HD Yield:

A) Air Pressure B) VIV Degree
C) Deck Inclination D) Deck Vibration

These parameters are fine-tuned either manually or automatically, ensuring a tailored approach to every separation process. The key to this efficiency lies in our Human-Machine Interface (HMI) paired with a PLC-based controller. This combination guarantees not only accuracy but also enhanced efficiency, enabling sensitive performance adjustments.

Safety and reliability are paramount, and our control panel reflects that commitment. Equipped with advanced electrical protections, it safeguards drives, sounds alarms when necessary, and facilitates preventive maintenance and diagnostic systems.

Furthermore, our equipment goes the extra mile with features such as an Automatic Lubrication System, Vibration Analyzer, and Bearing Condition Monitor. Together, these elements ensure seamless operation and optimal performance, making Sepro-tech DDS the pinnacle of automated separation technology."

The **VTD** (Velocity to Density Converter) Sensor

Device is an essential component & Heart of the Sepro-tech DDS.

Basic Working Principle VTD: The terminal velocity of the air at the suction end of the impeller is directly correlated with the density of the material being processed.

The VTD performs a crucial function by detecting this terminal velocity and converting it into an electrical signal. This electrical signal is pre-calibrated to match the density of a specific material. Subsequently, the signal undergoes processing with the assistance of a PLC (Programmable Logic Controller) for further operational stages.

The PLC continuously compares the received signals with the cut-off point specified by the user or operator. This comparison results in a two-point PID (Proportional-Integral-Derivative) control system:

1. Modulation of Impeller: One aspect of the control system is responsible for modulating the impeller's operation.

2. Modulation of VIV Damper: The other aspect of the control system regulates the modulation of the VIV (Variable-Inlet Vane) Damper.

These modulations are implemented within a closed-loop PID control system, precisely fine-tuning to the cut-off point to achieve accurate and efficient separation of materials.

FEATURES

Efficiency, Eco-Friendly, and More: The Features that Set Sepro-tech DDS Apart



100% Indigenous Engineering with Unparalleled Separation Efficiency.



Completely Dry Process, No Water or Liquids Required.



Environmentally Friendly, Non-Polluting Technology.



Proven Performance in Dusty, Corrosive, and Abrasive Environments.



Easy Operation and Low Maintenance



Cost-Effective and Efficient Solution.



Modular Design for Scalability.



Throughput Capacities Ranging from 100 TPD to 7000 TPD.



Operates in Density Range of Minimum 0.1 Tons/ m³. to Maximum 8 Tons/m³.



Flexible Input Size Range, between 0 to 100 mm.



Utilizes Ambient Air.



Simple Retrofitting, Dismantling, Transportation, and Installation.



Capability to operate in the rainy season



Achieves Up to 95% Accuracy in Performance.

Seapro-tech DDS demonstrates its adaptability and efficiency across diverse applications, contributing to improved material quality and resource utilization.

Seapro-tech DDS operates within a density range from 0.1 gm/cc to 8 gm/cc, with a minimum separable density difference of 0.1 gm/cc. It effectively handles material sizes ranging from 0 mm to 100 mm, with different models available.

The Seapro-tech DDS finds valuable applications in various fields:

› **Dry Coal Washery:**

- Removes heavy contamination (Shells, Pyrites, Stones) from coal.
- Reduces Ash and Sulphur content, enhancing the quality of non-coking & coking coal (resulting in increased Fc & GCV).

› **Iron Ore Beneficiation:**

- Separates contamination such as Laterite, Quartz, Ochre, and BHQ from Iron Ore.

› **Chromite Ore Beneficiation:**

- Effectively separates low-density contamination like Limonite from Chromite Ore.

› **Manganese Ore Beneficiation:**

- Separates low-density contamination including Quartz, Stone, and bound materials from Manganese Ore.

› **Metal Separation from Slag:**

- Serves as an alternative to water-based jigging in metal recovery plants.
- Facilitates dry separation technology to recover ferrous and nonferrous metals (e.g., Ferro-Chrome, Ferro-Silicon, Ferro-Manganese, Silico-Manganese, Stainless Steel) from slag.
- Ensures the recovered metal is of prime quality without oxidation or discoloration.

› **Dolochar/Char Separation:**

- Separates contamination from Dolochar, a by-product of the DRI (Direct Reduced Iron) process.
- The resulting clear char is used as a fuel for power plants.

› **Barytes Concentration:**

- Recovers high-density Baryte (up to 4.5 gm/cc, A Grade) from a mixture of all grades or lower grades (B, C, D, etc.).









SEPRO-TECH DDS MODELS

Sr.	Models	Feed Range	Feed Sizes	Throughput TPH by Minerals / Ores					
				Mn	Fe	BASO4	Cr	COAL	Metal-Slag
1	Sepro-tech DDS -3-P4-HYD-100	6mm to -100mm	+6mm to -25mm	22.5	20	X	22.5	20	X
			+25mm to -50mm	25	22.5	X	25	25	X
			+50mm to -75mm	30	25	X	X	30 to 40	X
			+75mm to -100mm	X	X	X	X	40 to 50	X
2	Sepro-tech DDS -2-P4-HYD-60	5mm to -75mm	+5mm to -25mm	15	12.5	12.5 to 14	15	X	X
			+25mm to -50mm	18	15	14 to 16	17.5	X	X
			+50mm to -75mm	20	17.5	X	18	X	X
3	Sepro-tech DDS-2-P4-HYD-50	5mm to -50mm	+5mm to -25mm	12.5	12.5	X	10	X	X
			+25mm to -50mm	15	15	X	12.5	X	X
4	Sepro-tech DDS-2-P3-HYD-50	8mm to -75mm	+8mm to -25mm	X	12.5	X	X	10 to 12.5	X
			+25mm to -50mm	X	15	X	X	12.5 to 15	X
			+50mm to -75mm	X	X	X	X	15 to 20	X
5	Sepro-tech DDS-2-P3-GB-50	8mm to -60mm	+8mm to -25mm	X	12.5	X	X	8 to 10	X
			+25mm to -50mm	X	15	X	X	10 to 12	X
			+25mm to -60mm	X	X	X	X	12 to 15	X
6	Sepro-tech DDS-2- P3-HYD-30	8mm to -40mm	+8mm to -25mm	X	10	X	X	8 to 12.5	12.5 to 15
			+25mm to -40mm	X	12.5	X	X	X	X
7	Sepro-tech DDS-2- P3-GB-30	8mm to -40mm	+8mm to -25mm	X	X	X	X	8 to 12.5	10 to 12.5
			+25mm to -40mm	X	12.5	X	X	X	X
8	Sepro-tech DDS-1- P3-GB-20	5mm to -30mm	+5mm to -15mm	X	X	X	X	8 to 9	X
			+15mm to -30mm	X	X	X	X	8 to 9	X
9	Sepro-tech DDS-1-P3-GB-15	+3mm to -18mm	+3mm to -18mm	7.5	7.5	X	7.5	X	7.5
10	Sepro-tech DDS-1-P2-DD-15	+2mm to -10mm	+2mm to -10mm	5	5	X	5	X	5
11	Sepro-tech DDS-1- P2-DD-12.5	0 to -2mm	0 to -2mm	3	3	X	3	X	3

Sr	Model Details	Body Type	Setting Parameters	Drive Type	DRIVE POWER
1	Sepro-tech DDS	1	P2	DD	12.5 OR 15
2	Sepro-tech DDS	2	P3	GB	15 OR 20 OR 30 OR 50
3	Sepro-tech DDS	3	P4	HYD	30 OR 50 OR 60 OR 100

Above are some of the models & applications of Sepro-tech DDS. However, Sepro-tech DDS equipment have a wide range of application and can separate any Minerals, Ore, Material with separable difference of 0.1 gm/cc.

APPLICATION

	Mn	Manganese Ore Beneficiation
	Fe	Iron Ore Beneficiation
	BASO4	Barites Mineral Separation
	Cr	Chromite Ore Beneficiation
	Coal	DRY COAL WASHARY
	Coal	Offline Plants / Stand alone Plants
	Coal	Ferro Alloy Plants Coal Yards
	Coal	DRI PLANTS - online installation
	Metal Slag	Metal Recovery Plants [MRP's] Metal-Slag section
	X	Not Applicable

Throughput capacity are tentative and may deviate depends upon

- Bulk Density / Specific Gravity
- Moisture content
- Feed Size
- % of HD & LD Portion
- Cutoff point
- Liberation of separable material
- Efficiency 90%
- % Yield



Scalability and Technology Integration: Sepro-tech DDS Plant Options

The Sepro-tech DDS system offers flexibility through modularity, allowing the addition of multiple modules to achieve higher throughput capacities. This adaptability is especially useful when optimizing efficiency in cases of narrow density differences between materials to be separated within the size range of 0 mm to 100 mm.

The equipment's robust design empowers it to excel in demanding environments, including those characterized by dust, corrosion, and abrasion, while remaining exceptionally efficient and user-friendly.

With the modular nature of Sepro-tech DDS, capacity enhancement is easily attainable. Plant throughput capacities ranging from 100 TPD to 7000 TPD can be effortlessly realized.

These Dry Density Separation plants are not

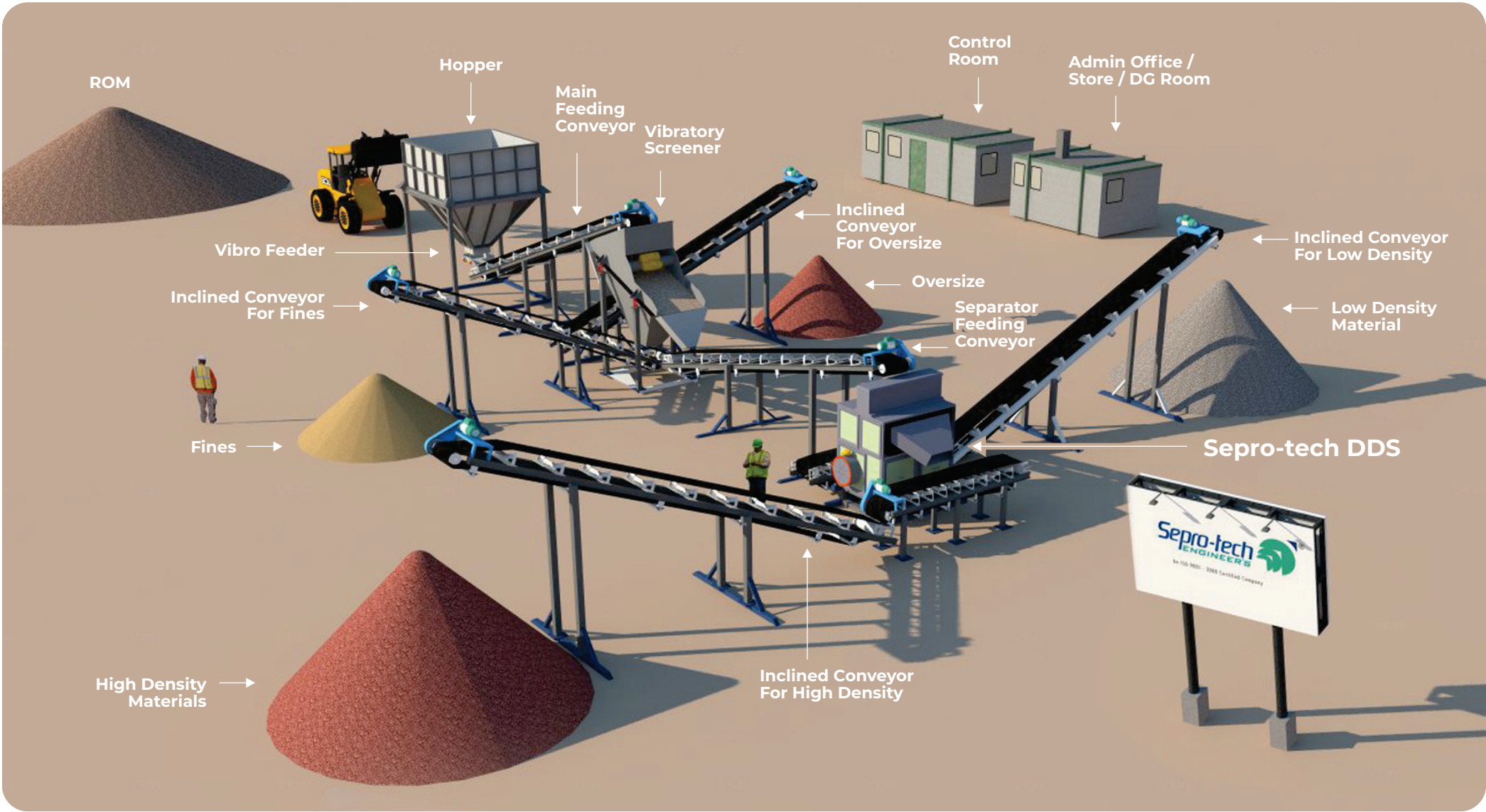
only efficient but also incorporate modern technologies, including IoT and Industrial SCADA systems. Customers have the option to further enhance plant performance and accuracy with features like online density meters, mineral analysis, and volume analysis, all customized to meet specific requirements.

Cutting-edge technology, including iCloud, mobile apps, and data logging, facilitates report generation for effective management and decision-making.

Sepro-tech Engineers Pvt. Ltd. leverages its expertise to execute complete plants, turnkey projects, AMC (Annual Maintenance Contracts), and O&M (operation and maintenance) services for plants and projects, ensuring optimal performance and longevity."

SCHEMATIC
LAYOUT

Plant Layout Made Simple. With the inherent modularity of Sepro-tech DDS, expanding the plant's throughput capacities becomes a straightforward process. Where achieving the desired capacity is well within reach. The modular design ensures a seamless layout, allowing to scale up and optimize plant operations with ease."





Sepro-tech Engineers Pvt. Ltd.

Work-I

Plot No. E-17, MIDC Gokul Shirgaon
Dist.-Kolhapur - 416234. Maharashtra, BHARAT

Works-II

Plot No. D-66, MIDC Gokul Shirgaon
Dist.-Kolhapur - 416234. Maharashtra, BHARAT

Works-III

Sr. No. 35/1A/1, MIDC Shirol
Dist.-Kolhapur - 416122, BHARAT

Head Office

A 404, Gulmohar Residency,
Nagala Park, Kolhapur – 416003, BHARAT

Cell: +91 90 1111 0999

E-Mail: office.seprotech@gmail.com

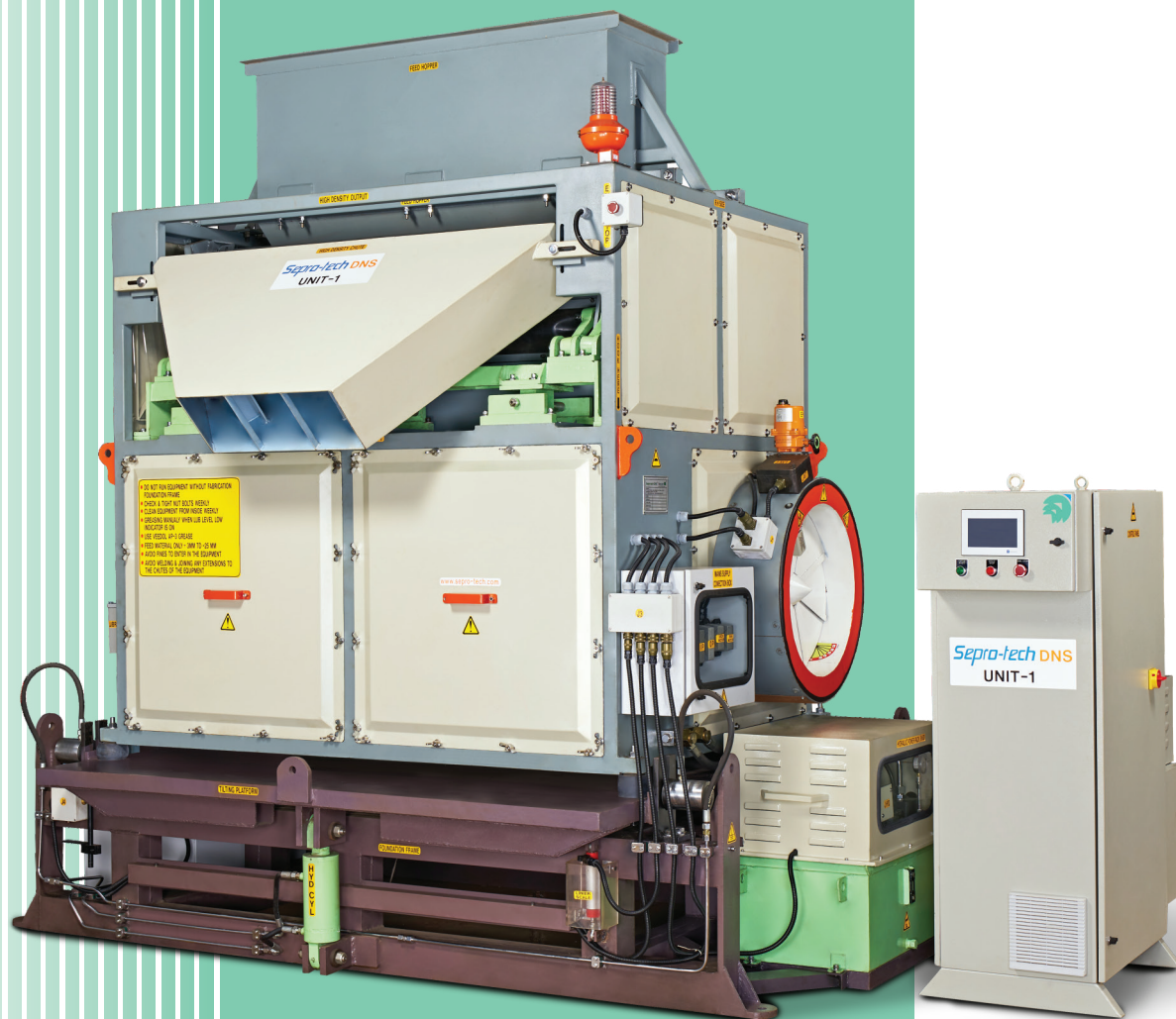
Web: www.sepro-tech.com

Branch Office- Kolkata

C 401, Shreshta Garden,
Rajarhat Main Road
Kolkata - 700136, BHARAT

E-Mail: Info@sepro-tech.com

Web: www.sepro-tech.com



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