



KEIRONE

Complete Engineering Solutions...

About KERONE

KERONE is one of the most admired and valuable company for customer satisfaction.



KERONE has reported annual revenue of \$18 to \$20 Million , increasing year-on-year.



KERONE is possessing employee strength of more than 280 experts continuously putting efforts for happy industrial engineering solutions



KERONE is possessing experience of 48+ years in engineering excellence.

KERONE is having immense expertise in manufacturing and implementing various types of engineering solutions.

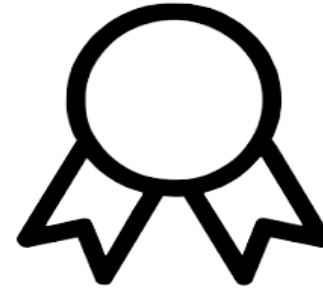
KERONE is possessing employee strength of more than 280 experts continuously putting efforts for happy industrial engineering solutions.





48+

Years Experience



150+

Experts



5000+

Satisfied Clients



280+

Employees

Our Vision and Mission

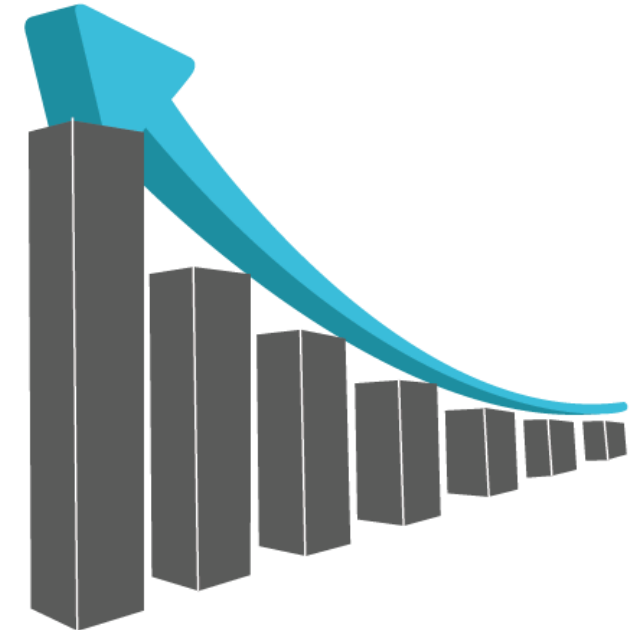


Vision

- Turn into world leader in providing specialized, top-notch quality and ecologically sustainable industrial heating, cooling , drying and engineering solution across the globe.
- To attain global recognition as best of quality and environment friendly engineering solution company.

Mission

- To enhance the value of customer operation through our customer need centric engineering solution.
- We are committed to provide our customers, unique and best in class products in Industrial heating, drying and cooling segment, with strategic tie-up for the technical know-how with renowned leader in the industry specific segment.
- We are company that believes in strong ethics and timely commitment helps to build long term relationship.



Value Propositions



Highly
Customized Product



Sound
Infrastructure



Adherence
to
Standards



Timely
Delivery



Team of experts
Delivering Quality



Cost Effective
Solutions

We are in collaboration with...

Member of AIMCAL



Member of IHEA



Strategic Partners of
Emitech Italy



IRQAO Certified For
Quality



Recognized and Rated by
CRISIL



CRISIL Verified



Member of A.M.P.E.R.E.
(Europe)



ASCB(E) Certification for
Best practice



We are Certified by...

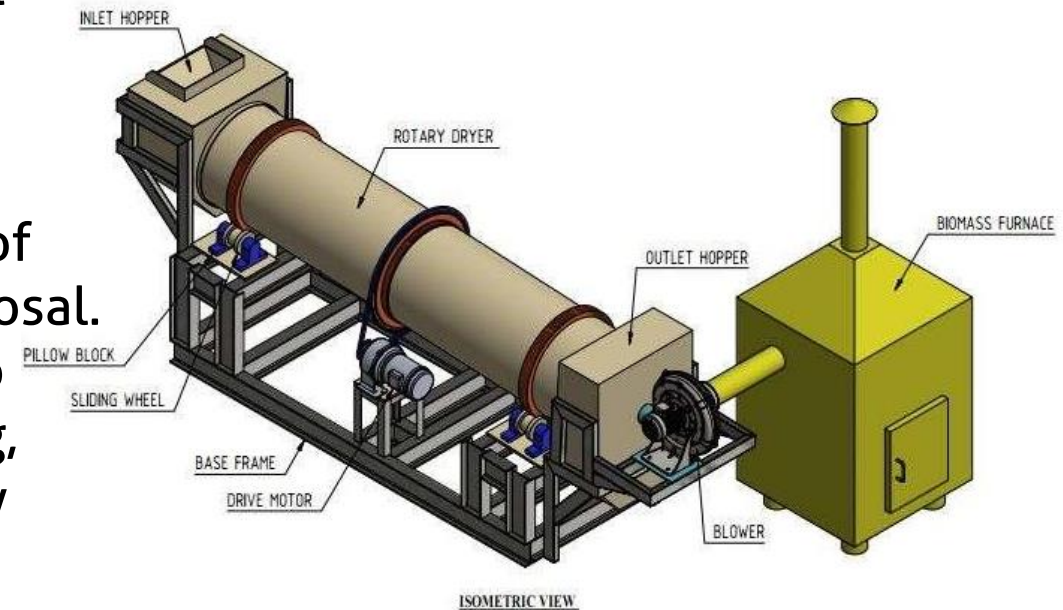


ISO 9001:2008 | ISO 9001:2015 | OHSAS 18001 | EMS 14001

Slag Dryer

Introduction

- Slag dryer is a crucial industrial machine designed to efficiently remove moisture from various types of slag materials, such as iron and steel slag, coal slag, and mineral slag. Slag is a byproduct of various industrial processes, and its high moisture content makes it challenging to handle and transport.
- Slag dryers play a vital role in the metallurgical and mining industries by reducing the moisture content of slag to a level suitable for further processing or disposal. These dryers utilize advanced drying technologies to heat and evaporate the water content within the slag, resulting in a more manageable and environmentally friendly material.
- Their efficiency and effectiveness make them indispensable in improving the overall efficiency of industrial operations while minimizing waste and environmental impact.



What is Slag?

- Slag is a term used to describe the byproduct of certain industrial processes, particularly in the fields of metallurgy, mining, and combustion. It is formed when impurities and non-metallic materials in raw materials like ore or coal are separated and transformed during high-temperature processes.
- The resulting slag can take various forms, ranging from glassy and smooth to granulated or powdery, depending on its composition and cooling method. Slag is often considered waste, but it has proven to be a valuable resource with diverse applications. It can be used in the construction industry as an aggregate in concrete, in cement production, and even in road construction.
- Additionally, its recycling potential contributes to both resource efficiency and environmental sustainability, making slag an important material in various industrial and economic contexts.



Why to Dry Slag?

- Drying slag is a crucial step in many industrial processes for several compelling reasons. Firstly, slag typically contains a significant amount of moisture after being generated during various industrial operations, such as smelting, refining, or combustion. This high moisture content makes it cumbersome to handle, transport, and store, and it can lead to increased transportation costs due to the added weight and volume.
- Moreover, the presence of moisture in slag can hinder further processing and utilization. For instance, wet slag is unsuitable for use in construction materials like concrete, as excess moisture can weaken the material's structural integrity and lead to durability issues. In industries like steelmaking, wet slag can affect the efficiency of downstream processes, such as slag cement production, where moisture content must be controlled for optimal product quality.



Why to Dry Slag?

- By drying slag, its moisture content is significantly reduced, making it easier to handle, transport, and store. This not only streamlines logistics and lowers associated costs but also enhances its suitability for various applications. Dried slag can be efficiently processed into valuable products, including cement, aggregates, and even mineral supplements for agriculture. Additionally, reducing the moisture content of slag contributes to overall resource efficiency, as it minimizes waste and supports sustainable practices in various industrial sectors.



Working Principle

- The working principle of a slag dryer revolves around the process of moisture removal from the slag material. Slag dryers typically employ a direct or indirect heating method to achieve this goal. In the direct heating approach, hot gases, often generated by a combustion chamber or a burner, come into direct contact with the wet slag. As the hot gases pass through or around the slag, they transfer their heat energy to the material, causing the moisture within the slag to evaporate. The evaporated moisture is then carried away by the exhaust gases, leaving behind dried slag.
- Alternatively, indirect heating methods involve the use of a heat exchanger or a heated surface to transfer heat to the slag indirectly. In this approach, the hot gases do not come into direct contact with the wet slag but instead heat a separate medium, such as thermal oil or steam, which, in turn, transfers the heat to the slag material.
- Regardless of the specific heating method employed, the key principle remains the same: the application of heat causes the moisture within the slag to evaporate, reducing its moisture content to a level suitable for the desired application or disposal. This process enhances the usability of the slag, facilitates efficient handling and transportation, and contributes to resource efficiency and sustainability in various industrial contexts.



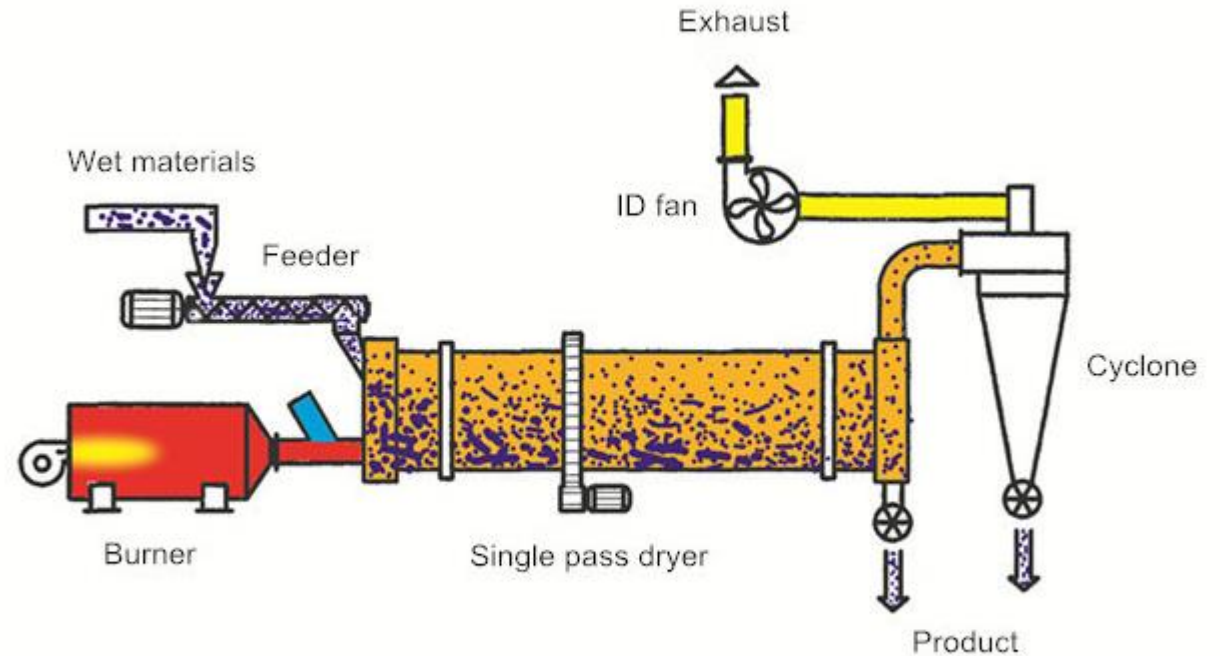
Benefits of Using Slag Dryers

- Using slag dryers offers a range of benefits across different industrial applications. Firstly, slag dryers significantly reduce the moisture content in slag materials, making them more manageable and easier to handle, transport, and store. This reduction in moisture content also improves the suitability of slag for various downstream processes, such as cement production, where precise moisture control is critical for quality and efficiency.
- Additionally, slag dryers promote environmental sustainability by minimizing waste and reducing the environmental impact associated with wet slag disposal. Drying slag reduces its volume, which can result in lower disposal costs and a reduced need for landfill space.
- Moreover, the dried slag can be repurposed effectively. In construction, it can be used as an aggregate in concrete, reducing the demand for natural resources like gravel and sand. In the metallurgical industry, dried slag can be processed into valuable products like slag cement or utilized in road construction. This versatility in slag utilization contributes to resource efficiency and sustainability.
- Furthermore, slag dryers can improve the overall efficiency of industrial processes by enhancing the quality of materials and reducing energy consumption. They enable industries to recover heat energy from the drying process, which can be used for other purposes, leading to energy savings.



Types of Slag Dryers

- Rotary Drum Dryers
- Fluidized Bed Dryers
- Flash Dryers
- Spray Dryers
- Pneumatic Dryers
- Vacuum Dryers



Rotary Drum Dryers

- Rotary drum dryers are widely employed in industrial settings for efficiently drying various materials, including slag. These dryers consist of a rotating drum or cylinder, typically made of stainless steel or other durable materials. Wet slag is introduced into the drum through a feeding mechanism, and as the drum rotates, it tumbles the material while internal lifting flights or paddles lift and drop it.
- hot air or gases are introduced into the drum at one end, where they come into contact with the wet slag. This contact between the hot air or gases and the wet material causes the moisture within the slag to evaporate. The evaporated moisture is carried away by the exhaust gases, leaving behind the dried slag.
- Rotary drum dryers are known for their versatility and efficiency in handling various materials, including slag, due to their large drying surface area and the continuous mixing and agitation of the material. The drum's rotation ensures uniform drying and prevents material from sticking to the drum walls. These dryers are suitable for a wide range of moisture contents and are used extensively in industries like metallurgy, mining, and agriculture, where efficient moisture removal is crucial for further processing or product quality.



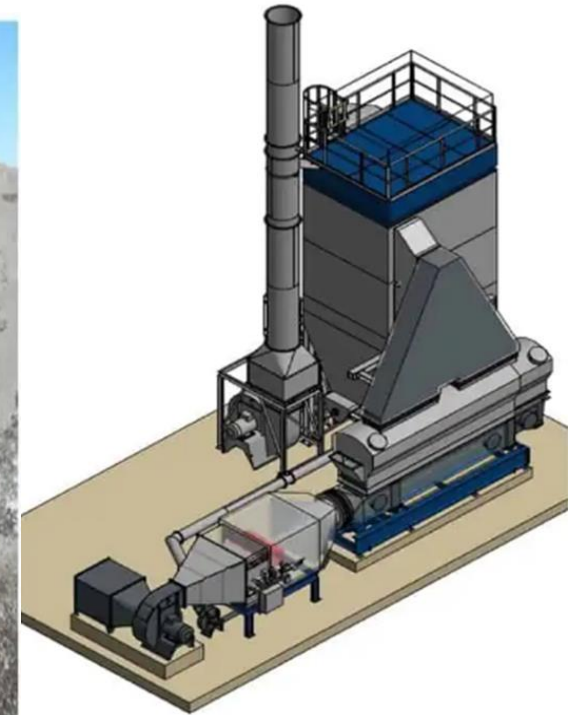
Fluidized Bed Dryers

- Fluidized bed dryers are widely used in industrial applications for drying various materials, including slag. These dryers operate on the principle of fluidization, where a bed of solid particles, such as sand or silica, is maintained in a suspended, fluid-like state by passing a stream of hot air or gases through it. When wet slag is introduced into the fluidized bed, the slag particles become buoyant and mix within the bed due to the upward flow of the gas. This constant agitation and interaction with the hot gas facilitate efficient heat transfer, allowing for rapid moisture removal from the slag.
- One of the key advantages of fluidized bed dryers is their ability to provide uniform and consistent drying. The even distribution of heat throughout the bed ensures that all slag particles are exposed to the same drying conditions, minimizing the risk of overheating or under drying. This results in high-quality, evenly dried slag.
- Fluidized bed dryers are also well-suited for heat-sensitive materials, as they can operate at relatively low temperatures compared to some other drying methods. Moreover, they are efficient in terms of energy consumption, making them a cost-effective choice for industrial processes.





Rotary Drum Dryers



Fluidized Bed Dryers

Flash Dryers

- Flash dryers are highly efficient and rapid drying systems commonly used for drying slag and various other materials. These dryers are characterized by their ability to quickly remove moisture from wet materials. In a flash dryer, wet slag is dispersed or atomized into the drying chamber, where it comes into instant contact with a high-velocity stream of hot air or gases.
- This immediate contact leads to rapid evaporation of moisture, leaving behind dried slag particles. Flash dryers are known for their short residence time, which minimizes the risk of heat damage to sensitive materials. They are especially suitable for heat-sensitive materials and are widely used in industries where fast and efficient drying is essential, such as in the processing of slag into valuable products like slag cement or aggregates.
- Additionally, flash dryers are favored for their ability to produce uniformly dried particles, making them a versatile and popular choice in various industrial applications.



Spray Dryers

- Spray dryers are versatile and efficient drying systems often chosen for drying slag, especially when dealing with slurries or liquid slag materials. These dryers operate on the principle of atomization, where the wet slag is transformed into fine droplets or particles. The process begins by pumping the liquid slag into the dryer, where it is sprayed through a nozzle into a drying chamber. Simultaneously, hot air or gas is introduced into the chamber, creating a high-temperature environment.
- As the wet slag droplets travel through the drying chamber, they are exposed to the hot air or gas, which rapidly evaporates the moisture. The result is the formation of dried powder or granules, depending on the specific application requirements. Spray dryers are favored for their ability to achieve precise control over particle size and moisture content, leading to consistent and high-quality end products.
- One of the significant advantages of using spray dryers for slag drying is their suitability for heat-sensitive materials, as they operate at relatively lower temperatures compared to some other drying methods. Additionally, spray dryers are renowned for their ability to produce fine, uniform particles, making them a preferred choice for industries requiring granulated or powdered slag materials. Their efficiency, adaptability, and capacity to handle various types of slag materials make spray dryers a valuable asset in the industrial drying processes for slag.





Flash Dryers



Spray Dryers



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Pneumatic Dryers

- Pneumatic dryers are a type of industrial drying equipment commonly used for the efficient drying of slag materials. These dryers rely on a high-velocity air stream to convey and remove moisture from the wet slag particles. The process begins by feeding the wet slag into the dryer, where it is pneumatically transported through the system. As the slag particles move through the dryer, they come into contact with the hot air stream, which carries out the drying process by evaporating the moisture within the slag.
- Pneumatic dryers are favored for their ability to provide continuous and uniform drying of slag, making them well-suited for high-capacity operations. They are particularly effective for granulated or powdered slag materials. Additionally, pneumatic dryers offer advantages in terms of energy efficiency, as they can recover and recycle heat from the drying process, reducing overall energy consumption. Their design minimizes material degradation and ensures that the dried slag maintains its desired properties. Pneumatic dryers find applications in various industries where rapid and efficient slag drying is essential, contributing to improved material handling and utilization while reducing waste and environmental impact.



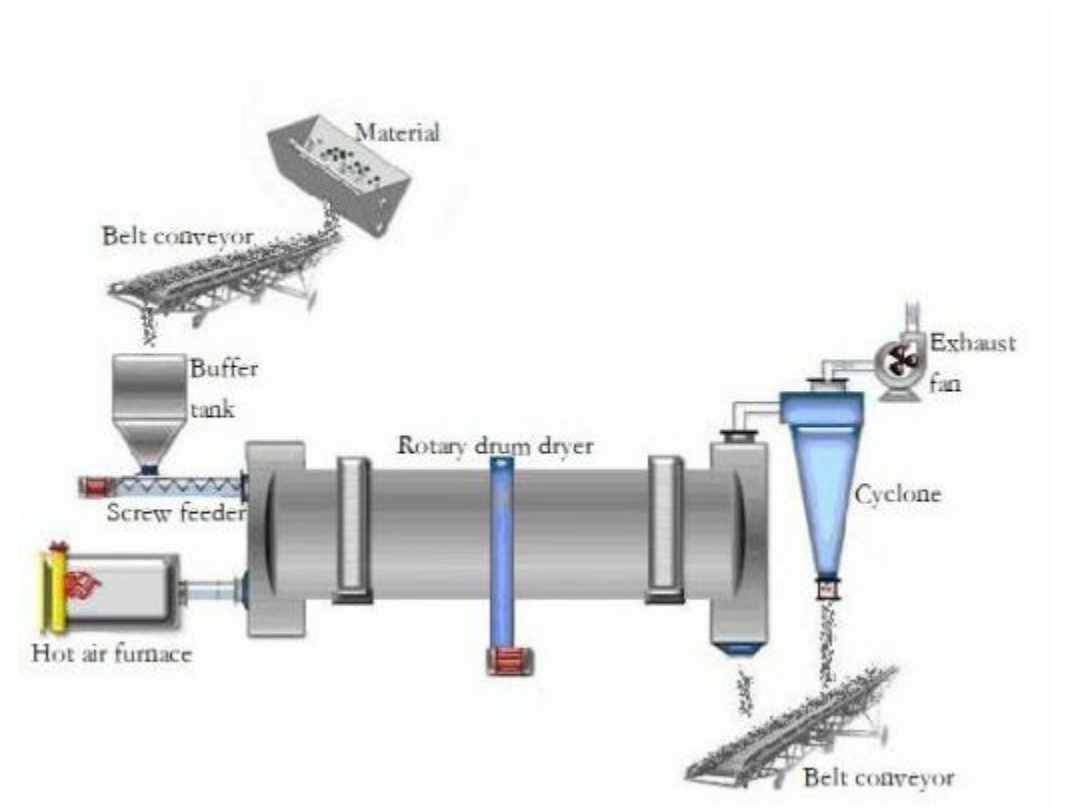
Vacuum Dryers

- Vacuum dryers are specialized drying equipment used for efficiently and gently drying materials, including slag, while operating under reduced pressure conditions. These dryers are designed to address the specific needs of heat-sensitive materials or products that are prone to degradation when exposed to high temperatures.
- In a vacuum dryer, the drying chamber is sealed and air is removed, creating a vacuum or low-pressure environment. This reduction in pressure lowers the boiling point of water and other volatile components, allowing for moisture to evaporate at lower temperatures. As a result, materials like slag can be dried without subjecting them to the high temperatures that might compromise their quality or chemical composition.
- Vacuum dryers are particularly well-suited for drying slag when maintaining its physical and chemical properties is crucial. They prevent thermal damage or oxidation, ensuring the dried slag retains its intended characteristics. Vacuum drying is often chosen for applications in pharmaceuticals, food, and sensitive chemical processes, where product integrity is paramount.





Pneumatic Dryers



Vacuum Dryers



Cement Slag Dryer

- Cement slag dryer is a specialized industrial dryer designed specifically for drying granulated slag, which is a byproduct of the production of cement. Cement slag, also known as ground granulated blast-furnace slag (GGBS), is obtained by quenching molten slag from the iron-making industry with water or steam. It is then finely ground into a powder and used as an additive in cement production to enhance its properties.
- The purpose of a cement slag dryer is to reduce the moisture content of this ground granulated slag to a level suitable for incorporation into cement. The drying process ensures that the slag maintains the desired characteristics, including its fineness and reactivity, which are crucial for its effectiveness as a cement additive.
- Cement slag dryers typically employ various drying technologies, such as rotary drum dryers or fluidized bed dryers, depending on the specific requirements of the production process. These dryers use hot air or gases to evaporate the moisture from the slag, leaving behind a dry and finely powdered material.
- The use of cement slag in cement production offers environmental benefits, such as reduced energy consumption and greenhouse gas emissions, as well as improved durability and performance of concrete.



Iron Slag Dryer

- Iron slag dryer is a specialized drying equipment designed specifically for the efficient removal of moisture from iron slag materials. Iron slag is a byproduct generated during the smelting and refining of iron ore, typically in the steelmaking process. This slag often contains a significant amount of moisture, making it challenging to handle, transport, and process effectively.
- The iron slag dryer operates on the principle of applying heat to the wet slag material, causing the moisture within it to evaporate. This process transforms the wet and cumbersome slag into a dried, more manageable form, reducing its volume and weight. The dried iron slag can then be repurposed for various industrial applications, such as in the production of slag cement, road construction materials, or as an aggregate in concrete.
- Iron slag dryers may use different drying methods, such as rotary drum drying, fluidized bed drying, or vacuum drying, depending on the specific requirements of the industrial process and the desired characteristics of the dried slag product.
- These dryers play a crucial role in improving the efficiency of iron and steel manufacturing processes while minimizing waste and environmental impact by repurposing the slag effectively.



Mineral Slag Dryer

- Mineral slag dryer is a specialized industrial machine designed to efficiently dry mineral-rich slags, such as those produced in metallurgical and mining processes. These slags typically contain a mixture of minerals, metal oxides, and impurities and are a byproduct of various high-temperature operations like smelting, refining, and ore processing.
- The mineral slag dryer operates on the principle of moisture removal, reducing the water content in the slag to enhance its usability and reduce transportation and disposal costs. The drying process typically involves the application of heat to the wet slag, causing the moisture within to evaporate. The dried slag can then be further processed into valuable products or used for various applications, including construction materials, cement production, and road construction.
- Mineral slag dryers are engineered to handle the unique characteristics of mineral-rich slags, which may differ from other types of slag in terms of composition and physical properties. These dryers often incorporate features like rotary drum configurations or fluidized bed designs to ensure efficient and effective drying.



Applications

- Metallurgy and Steelmaking
- Mining
- Waste-to-Energy
- Chemical and Pharmaceutical
- Environmental Remediation
- Agriculture
- Ceramics and Glass Production
- Food Processing



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