



48⁺ Years
Of experience

MICROWAVE HEATING SYSTEM



In Association with SVCH-Technologii, Moscow (Russia)

ISO 9001:2015 | ISO 14001:2015 | ISO 45001:2018

ABOUT US

KERONE is now renowned for serving the specialized needs of customers with the best quality and economical process of application engineering solutions and industrial heating products manufactured in a high-quality environment by a trained and qualified workforce (special purpose machinery)



KERONE is a pioneer in application and implementation engineering with its vast experience and team of professionals.



KERONE is devoted to serve the industry to optimize its operations both economically and environmentally with its specialized process engineering solutions.



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 Manufacturing Excellence



Great Sale Support



Highly Customized Product



Adherence to Standards



Sound Infrastructure



Team of experts Delivering Quality



Timely Delivery



Cost Effective Solutions



WHY CHOOSE US

"Choose Kerone for innovative solutions tailored to your unique product needs, ensuring efficiency, reliability, and unmatched quality."

With decades of expertise, cutting-edge technology, and a customer-centric approach, Kerone Engineering offers tailor-made Applications Engineering solutions that prioritize quality, flexibility, and cost-effectiveness. Benefit from our commitment to excellence, post-sales support, and innovative solutions for your unique Applications Engineering needs. Choose Kerone Engineering for reliability, performance, and unmatched value.

MISSION



To enhance the value of customer operation through our customer need centric engineering solution.



We are committed to providing our customers with unique and best-in-class products in the industrial thermal processing segments. Through strategic tie-ups for technical know-how with renowned leaders in industry-specific segments, we ensure that our offerings meet the highest standards of quality and innovation.

VISION



Turn into a world leader in providing specialized, top-notch quality and ecological industrial heating, cooling, and drying solutions across the globe.



To attain global recognition as the best of quality and environment-friendly engineering solution company.



Enhance the value of customer operation through our customer need centric engineering solution.



TRUSTED PARTNERS





Microwave Heating System

Introducing our innovative microwave heating technology, which provides precise, quick heating for a variety of sectors. It ensures consistent outcomes with minimal energy use thanks to its unparalleled speed and homogeneity. Modern safety measures provide peace of mind, while customizable settings cater to a variety of demands. Our technology raises the bar for performance and innovation in a variety of fields, including materials science and food processing. Discover the heating technology of the future—where brilliance and efficiency collide

Today we shall review some of these as listed below:-

- Microwave heating systems are member of ELECTROMAGNETIC HEATING FAMILY
- Microwaves has frequency of 2.45GHZ AND 915MHZ
- Microwave is generated from small device known as 'MAGNETRON'
- Microwave heating system has property to HEAT FROM WITHIN
- Microwave heating systems heats volume of material hence also known as 'VOLUMETRIC HEATING'

The principles of MICROWAVE HEATING as applied to industrial processing are outlined and the basic design of applicators for material processing is described. Industrial applications range from FOOD TEMPERING to RUBBER VULCANIZATION and from VACUUM DRYING to SINTERING OF CERAMICS. Established applications to date are summarized

Microwave heating is a process within a family of electroheat techniques, such as

- Induction
- Radio Frequency
- Direct Resistance or Infra-Red Heating

all of which utilize specific parts of the electromagnetic spectrum

These processes supplement, and in specific cases totally replace, conventional heating or drying systems used in industry. This is because some conventional systems are very bulky, not easy to operate, can pollute the environment due to harmful omissions and above all can be very inefficient.

The major advantages of using microwaves for industrial processing are rapid heat transfer, volumetric and selective heating, compactness of equipment, speed of switching on and off and pollution-free environment as there are no products of combustion. Microwave leakage can certainly be kept well below government recommended levels.

Microwaves Heating System

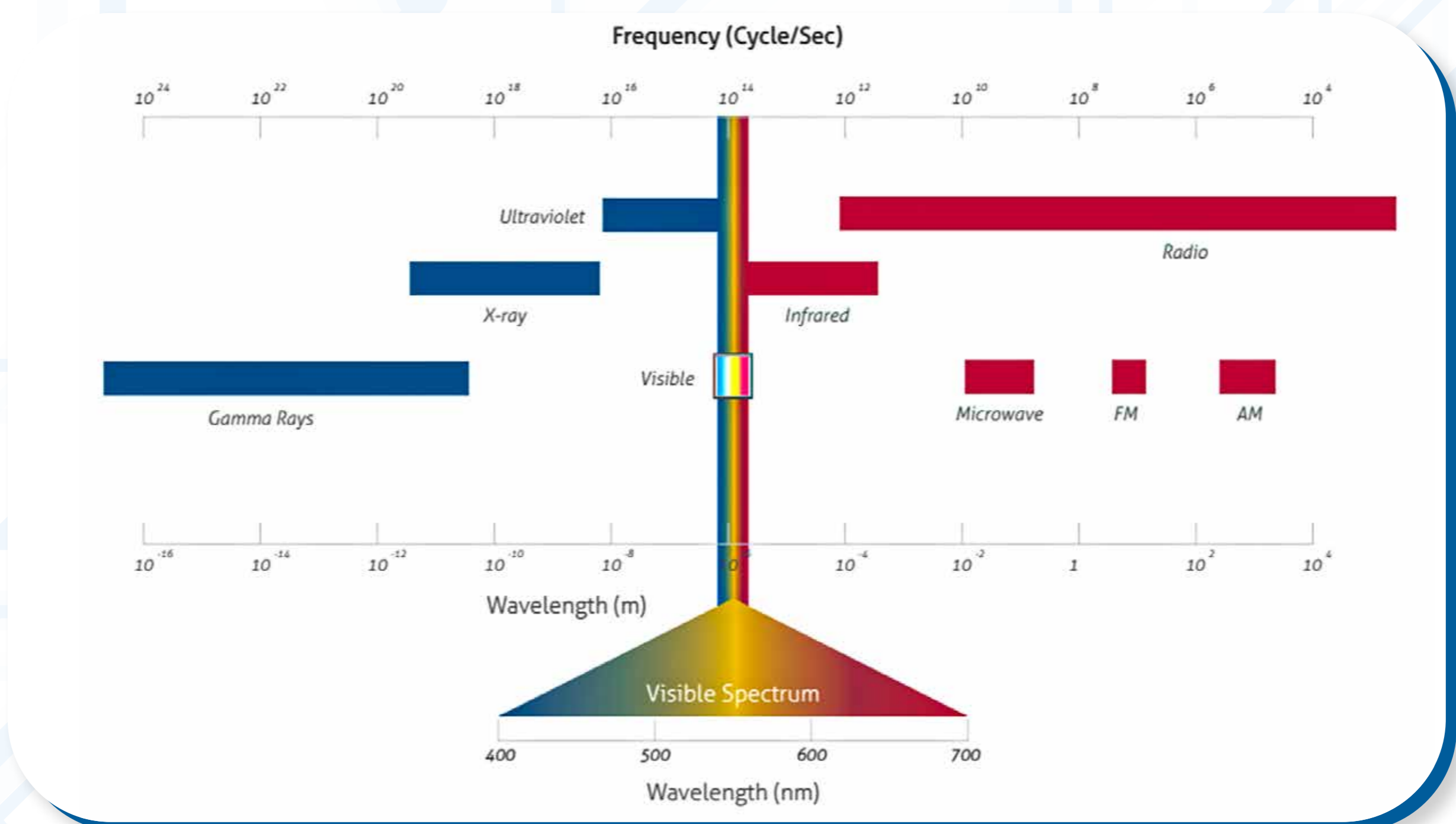
Classification

Microwave Frequency

915 Mhz
2450 Mhz

Heater Type

Batch
Continuous
Hybrid



Microwaves Heating System

- Microwave heating system is generates the heat very fast within material
- Heating of materials are due to molecule movements hence no chamber warm up time is required
- Environmental friendly and green heating solution, no carbon emission
- 100% energy utilization, as heating takes place within the material
- Better floor utilization index as it doesn't require chamber area
- No Temperature loss in surrounding, ambient workplace

VS

Conventional Heating System

- Microwave heating system is generates the heat very fast within material
- Instance heating does not takes place, it requires warm-up of surrounding
- Produces carbon or toxic gases hence not much environmental friendly heating solutions
- 100% energy utilization is not possible, as material is heated by surrounding hot air
- Poor floor utilization index as it require bigger chamber area for material to rotate
- Surrounding air temperature rises with rise in heater temperature

Microwaves Heating System

VS

Infrared Heating System

- Microwave heating systems utilizes electromagnetic system uses wavelength of about 1 centimeters
- Microwave heating systems does not require large space hence offers better floor utilization index
- Microwave heating systems are not substitute the conventional heaters
- Depth of heat penetration is higher in Microwave heaters
- Rate of heating depends on the moisture content within the material
- Heats the objects from within the object

- IR heating systems utilizes electromagnetic system uses wavelength of about 0.01 centimeters
- Compact system providing better floor utilization index
- Infrared heating systems are better substitution of traditional convention heaters
- Depth of heat penetration is lower in infrared heaters as it heats from surface
- Rate of heating depends on the surface characteristics of material
- Heats the object from surface of object

Advantages of

Microwaves Heating System

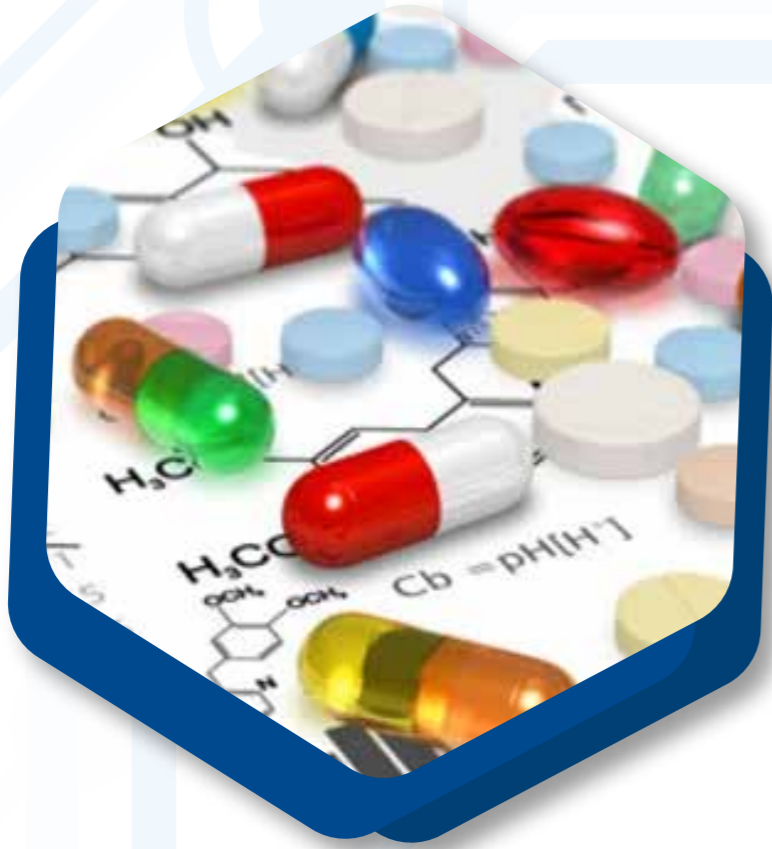
- Purity in final product
- Improve reproducibility
- High Efficiency of Heating
- Process speed is increased
- Floor Space requirements are Decreased
- Better and more Rapid Process control is achieved
- Desirable chemical and physical Effects are produced
- Environmental heat loss is save, Reduce wastage of heat
- Reduction in unwanted side reaction (reaction Quenching)
- Selective Heating i.e. heating selectively one reaction component
- Uniform Heating occurs throughout the material Process speed is increased



Microwaves Heating System

In Pharmaceutical Industries

Microwave based heating systems has very significant role in various process in Pharmaceutical industrial processing, some are mentioned below



- Thawing
- Sterilization
- Assists Drug Extraction
- Microwave Digestion
- Chemistry Synthesis
- Cancer Therapy
- Drying and Powder Making

Microwaves Heating System

In Plastic & Rubber Industries

Plastic and Rubber has increased its application in various application, so the demand. Below and few important applications those require heating



- Rubber Coating
- Extrusion Curing
- Extrusion Curing
- Pyrolysis Of Plastic
- Plastic Welding
- Preheating Of Rubber
- Vulcanization Of Rubber

Microwaves Heating System

In Food Industry

The Food and Packed Food industry has multiple application that require microwave heating are as follows



- Thawing
- Cooking
- Baking
- Blanching
- Tempering of Frozen Products
- Drying / Dehydrating
- Pasteurization and Sterilization

Microwaves Heating System

In Ceramics

Glass and Ceramics find multiple applications those require Microwave heaters



- Plasma Processing
- Solid State Processing
- Liquid State Processing

Microwave Dryer Continuous Type



Can add to the performance of the machine by choosing from various additional optional features like Temperature control, Pulsating power, Hot air assisted RF / MW system, Heater temp control, Air assisted RF/MW system, Air velocity control, Vacuum assisted RF/MW system, Vacuum / pressure control, Alarm system after RF OFF, PLC base control system, Data logger with computer interface.

Features

- Microwave Magnetron
- Variable Frequency
- PID Indicator / Controller
- Variable Power output
- Stainless Steel Chamber
- RF / MW Choke / Timer Provision
- Electrical & Thermal Safety Features

Microwave Dryer Batch Type



Completely Stainless Steel chambered - Batch Type Dryers have Microwave Magnetron from leading Brands with some more unique features like Temperature Indicator, Provision for RF/MW Choking, Provision for Timer, Power Control ranging from 10% to 100%, and has all required electrical & Thermal safety features for RF/MW generator. Above all, this can be designed completely custom and sized as per the end users requirement specifications

Features

- Pulsating Power
- Heater Temp Control
- Temperature Control
- Air Velocity Control
- Alarm System After Rf Off
- Air Assisted Rf / Mw System
- Vacuum Assisted Rf / Mw System
- Plc Base Control System
- Data Logger With Computer Interface



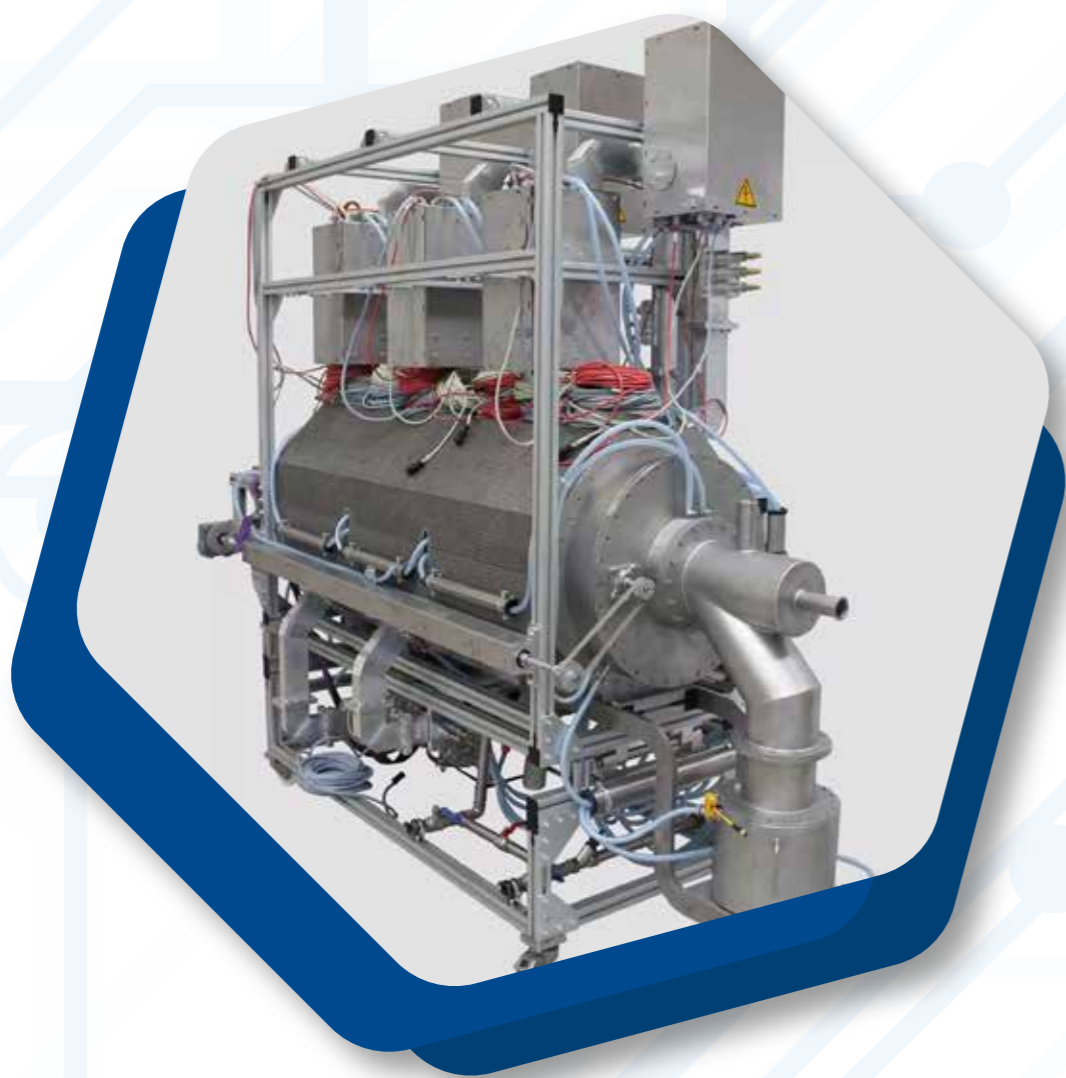
Microwave Solid State Generator

Introducing the Microwave Solid State Generator: a pinnacle of electromagnetic technology. Precision, dependability, and efficiency combined into one machine for industrial revolutions. Unmatched accuracy and versatility for telecommunications to material processing. Sophisticated controls, small form factor, seamless integration, boosted output, reduced expenses.



Microwave Vacuum Technology

Introducing Microwave Vacuum Technology (MVT): redefining industrial operations. Combining vacuum and microwave radiation for accelerated drying, heating, and processing with consistent results. Preserves material quality by reducing oxidation in a vacuum. From food to material synthesis, promotes sustainability and efficiency. Enhances innovation, productivity, energy savings, and product quality.



Microwave Pyrolysis Rotary Oven

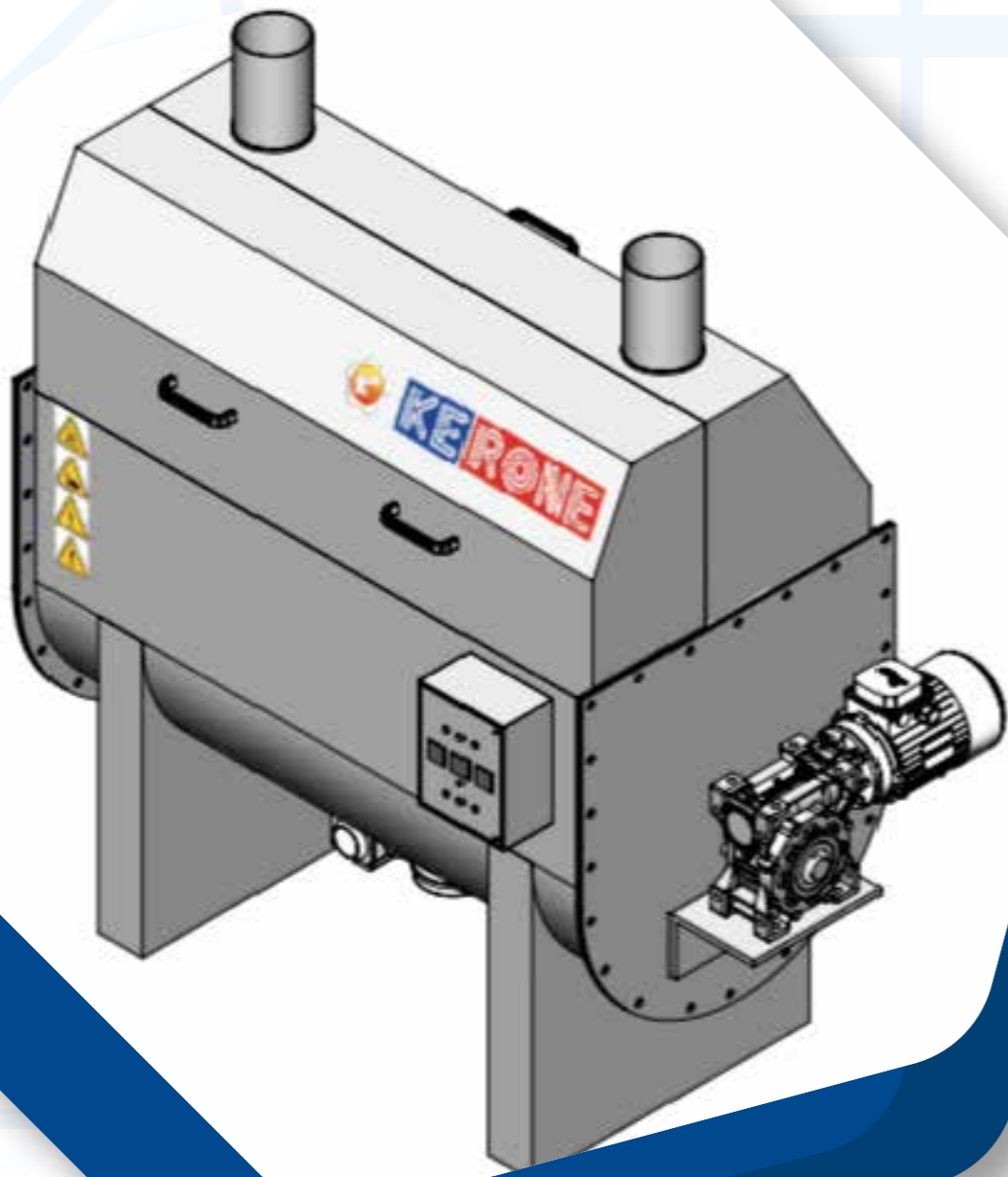
Introducing our Microwave Pyrolysis Rotary Furnace Oven: Revolutionary thermal processing with precision and ease. Converts organic materials efficiently into biochar, syngas, and bio-oil. Ensures uniform heating with rotating design. Prioritizes sustainability, adapts to diverse production needs. Embrace the future of efficient, profitable operations with us.



Microwave Chamber Dryer

Introducing our Microwave Chamber Dryer: revolutionizing drying with advanced technology. Fast, even drying, energy-efficient. Precise control for consistent results in food, pharmaceuticals, ceramics, textiles. Unmatched effectiveness, reduced environmental impact. Elevate your operations now.

Batch Rotary Microwave Heating System



Most processed foods today are heat treated to kill bacteria. Prolong exposure to high heat often diminishes product quality. Microwaves interact with polar water molecules and charged ions. The friction resulting from molecules aligning in rapidly alternating electromagnetic field generates the heat within food. Since the heat is produced directly in the food, the thermal processing time is sharply reduced. The colour, texture and other sensory attributes of foods processed by microwave sterilization are often better compared with those of conventionally retorted foods while meeting microbial safety requirements.

In sterilization of food material, the primary objective is preservation. Food industry has been largest consumer of microwave energy, where its application has been utilized in drying, pasteurisation and sterilization of various foods. It offers shorter processing time which maintains original nutritional and sensory properties of food. US Federal Communication Commission (FCC) allocates 915 MHz and 2450 MHz bands for industrial and domestic microwave heating applications.

Our Batch Rotary Microwave Heating System is designed to achieve commercial sterility of the products, giving it long-term shelf stability. A significant reduction in the thermal processing time while making food safe for consumption is the major advantage of microwave sterilization processing.

Application

- Textile Industry
- Food Processing
- Pharmaceuticals
- Chemical Processing
- Microwave drying of powders i.e. spices
- Microwave sterilization and disinfestation of food solids

Advantages

- Reduction In The Thermal Processing Time
- Instantaneous Turn-on And Off
- High Throughput Of Processed Foods
- Safe To Operate And Is Safe For Environment
- Fresh-like Taste And Texture, And Improves Visual Appeal Of The Food.
- Possibility Of Incorporation Of Microwave Processing Equipment In The Existing Processing Lines.
- Provides Contamination Free High Quality Product By Eliminating Microbial Load Which Further Results In Increasing Its Shelf Life.

Batch Radio frequency Heating System

Radio frequency (RF) heating is a promising technology for food applications because of the associated rapid and uniform heat distribution, large penetration depth and lower energy consumption.

During RF heating, heat is generated within the product due to molecular friction resulting from oscillating molecules and ions caused by the applied alternating electric field. RF heating is influenced principally by the dielectric properties of the product when other conditions are kept constant.

The Radio Frequency (RF) band of the electromagnetic spectrum covers a broad range of high frequencies, typically either in the kHz range ($3 \text{ kHz} < f \leq 1 \text{ MHz}$) or MHz range ($1 \text{ MHz} < f \leq 300 \text{ MHz}$).

These waves lie in the radar range and can interfere with communication systems, only selected frequencies are permitted for domestic, industrial, scientific and medical applications. These frequencies are 13.56, 27.12 and 40.68 MHz

Unlike conventional systems where heat energy is transferred from a hot medium to a cooler product resulting in large temperature gradients, RF heating involves the transfer of electromagnetic energy directly into the product, initiating volumetric heating due to frictional interaction between molecules (i.e., heat is generated within the product)

The use of RF heating also can result in reduced energy consumption which can be considered as great advantages over traditional methods of heating over traditional methods.



Application

- PLC control with fault identification
- Batch Type Front Opening Radio Frequency (RF) Heater/ dryers
- Flexible, accurate and effective at low rates of energy utilization
- Superior quality processed product at highest rate of production
- Designed to handle wide range of Products
- Meets appropriate regulations all through the world
- Residual humidity restricted within +/- 1%.
- Volumetric heating keeps the temperature low and uniform throughout the web to prevent overheating.

Advantages

- Higher heating rate
- Contactless heating
- Design freedom
- Shorter process lines
- Improved energy efficiency
- No warm up & cool down time required.
- Environmental friendly and green heating solution, no carbon emission.
- Possible to heat only one part of a composite material, which improve product quality by not heating sensitive materials

OUR CLIENTS









THANK YOU

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