KERONE

Kerone Engineering Solutions Limited

COMPANY PROFILE

In Association with SVCH-Technologii, Moscow (Russia)

EMitech®

ELECTRO MAGNETIC innovative technologics

Kerone Engineering Solutions Limited

ABOUT KERONE

- KERONE is now renowned for serving the specialized needs of customers with the best quality and economical process of Heating /cooling and drying 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 devoteded to serve the industry to optimize its operations both economically and environmentally with its specialized heating and drying solutions.
- 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 having immense expertise in manufacturing and implementing various types of engineering solutions.
- KERONE is possessing experience of 48+ years in engineering excellence.

48 Years
Manufacturing Excellence

Great Sale
Support

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

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.

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OUR PRODUCTS

Industrial Dryer

- Drum Dryer
- Infrared Dryer
- Imperial Dryer
- Tunnel Dryer
- Tray Dryer
- Fish Dryer
- Spray Dryer
- Food Dryer
- Coir Pith Dryer
- Hot Air Dryer
- Conventional Dryer
- Microwave Dryer
- Flash Dryer
- Sludge Dryer
- Fluid Bed Dryer
- Rotary Dryer

Process Equipments / Plant

- Reactors
- Feeders
- Industrial Dryer
- CIP/SIP Systems
- Pilot/Lab Scale Plants
- Screw Feeder/Blender
- Powder Transfer System
- Skid Mounted Process Units
- Bag House Filter
- Complete Turnkey solutions
- Process Plants
- Hotmelt Adhesive Plants
- PE Wax plants
- Sulphur melter plants
- Mixing plants and Batching systems

Cold Plasma

- Cold Plasma for Sterilisation
- Atmospheric Plasma for Food Preservation
- Cold Plasma for Food Sterilisation
- Cold Plasma & Non-Thermal Plasma for Food preservation
- Non-Thermal Atmospheric Plasma for Sterilisation

Industrial Oven

- Batch Industrial Oven
- Continuous Industrial Oven
- Plastic Annealing Oven
- Drum Heating Oven
- Electric Oven for HT/LT Motors

Biochar Processing Line

- Biochar Processing from Wood
- Biochar Processing from Organic Waste

Radio Frequency Heating System

- Biochar Processing from Wood
- Biochar Processing from Organic Waste

Production Line

- Food Processing Line
- Microwave Food Processing/ Production Line
- Infrared Food Processing/ Production Line
- Ready to Eat Meals Food Processing Plant
- Cereal Processing Plant
- Baby Food Production Plant
- Nutritional Retention

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Production Line

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Heating and Cooling System

- Hot Water System
- Skin Mounted Reaction Unit
- Fractional Distillation
- Single Fluid Heating Cooling System
- Complete Turnkey Solutions

Coating Line/Plant

- Lab and Pilot Scale Coating Line
- Commercial Scale Coating Line
- Cast Coating Line

Coating and Impregnation Plants

- Gravure Coating Machines
- Air Knife Coating Machines
- Web Coating Machine
- Slot Die Coating Machine
- Curtain Coating Machines
- Immersion/Dip Coating Machine
- Hot Melt Coating Machines
- Fabric Coating Machines

Industrial / Commercial Dehydrators

- Tunnel Dehydrator
- Conveyorised Dehydrators
- Batch Type Dehydrator

Industrial Heaters

- Corrugation Heater
- Immersion Heaters
- Cartridge heaters
- Tubular heaters
- Flameproof heaters
- Custom Built Heaters

Gas IR Heating System

- Mfb Burner
- Gas Combustion
- Conveyorised Gas Infrared Ovens
- Gas IR Heating Systems for Preheating and Post Heating Of Seam Welds
- Surface Heating System Gas(IR)
- Heaters Gas IR
- Heating Systems for Paper Coating and Curing

Other Products

- Heating & Cooling Plant
- Rotary Calciner
- Pulp Packaging Dryer
- Potato Powder Production Plant
- CO2 Autoclave
- Sulphur Melting & Granule Plant
- Wet Laid Paper Plant
- Ethanol Recovery Plant
- Hot Air Generator
- Infrared Heating Equipment
- Fuel Fired Heating System
- Umbrella IR Dryer for Pharma
- Industrial Heating Equipment
- Infrared Heating System
- Infrared Heaters
- PLC Automation Panel

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VALUE PROPOSITION

Highly
Customized Product

Sound
Infrastructure

Adherence to
Standards

Team of experts
Delivering Quality

Timely
Delivery

Cost Effective
Solutions

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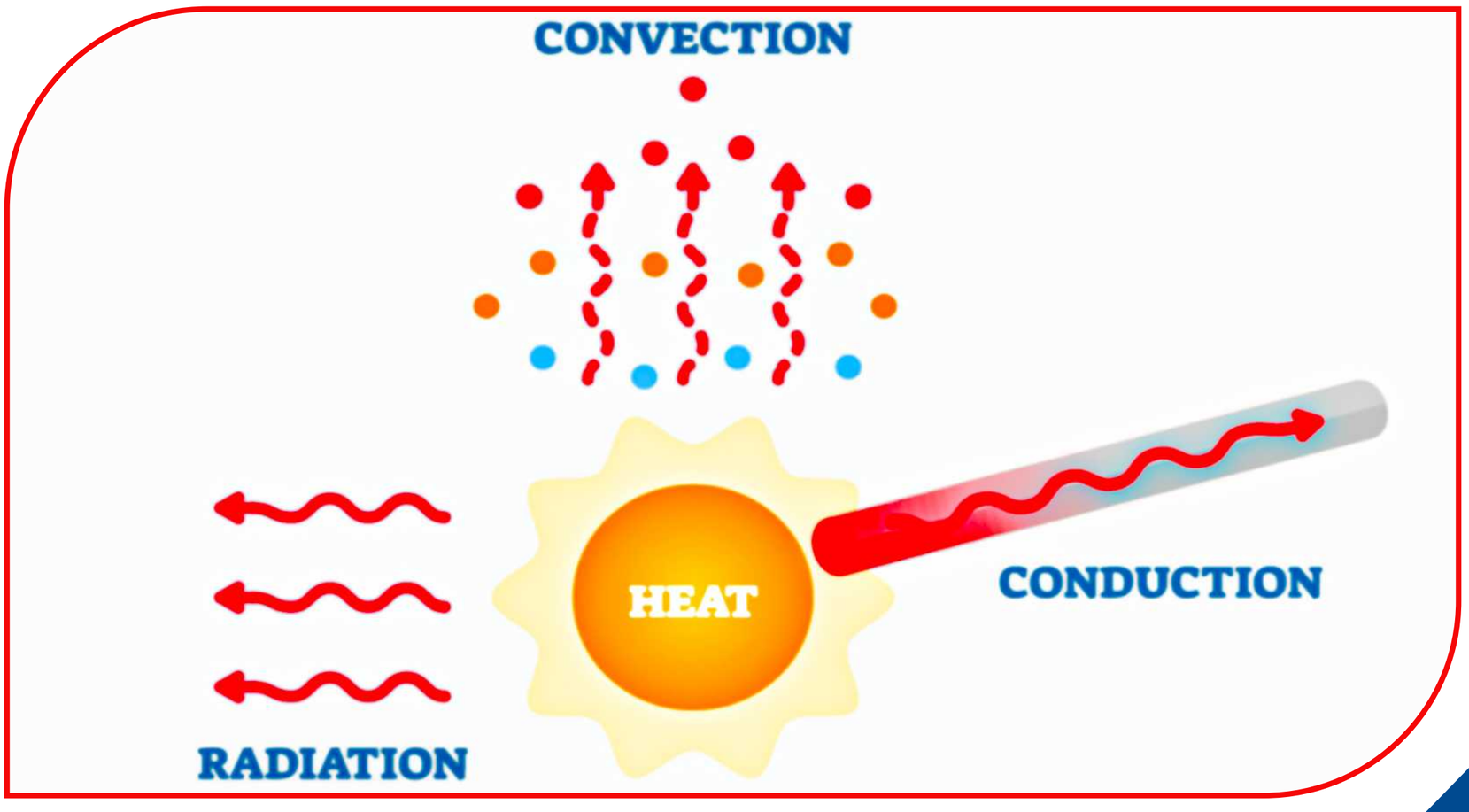
HEAT TRANSFER TECHNOLOGIES

Heat transfer is the process by which thermal energy is deliberately conveyed from one location to another, using the principles and techniques of heat transfer technology. It comprises of different ways such as conduction, convection, and radiation to move heat in a particular direction. It plays a vital role in regulating temperatures in different applications such as heating, cooling, and industrial processes that assure comfort in diversified industrial sectors.

Today we shall review some of these as listed below

HEAT TRANSFER METHODS



Conduction → Convection → Radiation

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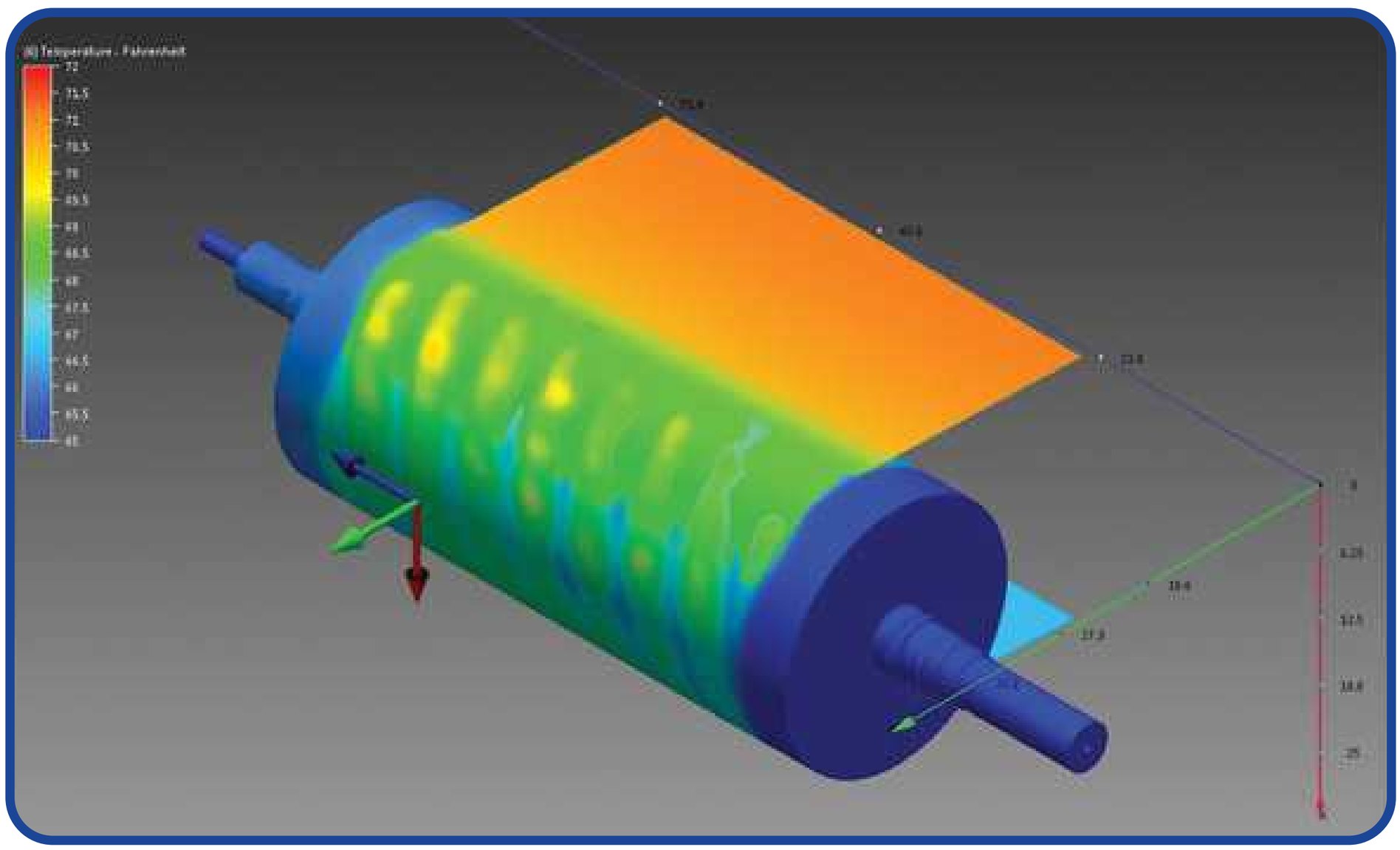
CONDUCTION HEATING

A phenomenon that involves transfer of energy from one particle of the medium to another with the particles in immediate contact with each other. Kinetic energy transfers heat from a region of high kinetic energy to one at low kinetic energy. This happens due to high-speed particles colliding with slow-speed particles, leading to an increment in the kinetic energy of the latter ones. Heat by direct contact is one of the common types. Thermal conduction also called conduction.



Salient features

- Closed construction available
- Minimize vapour nuisance
- Maintains low RH air blanketing

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SOME OF OUR INSTALLATIONS

Conveyorized Heating
System for Piston Rod

Fabric Coating and
Drying System

Inline Electrical
Water Heater

Batch Heating System
for Annealing of Metal Parts

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Batch Heating System for
Silicon Rubber Hose Curing

Hot Water Heating
Generating System

Batch Heating System
for Automotive Parts

Batch Oven for
Metal Heating

Heaters By Kerone

1. Corrugation Heaters
2. Strip and Band Heaters
3. Immersion Heaters
4. Cartridge Heaters
5. Flameproof Heaters
6. Space Heaters
7. Tubular Heaters
8. Custom Built Heaters

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CONVECTION HEATING

We hold the upper hand in customizing the hot air dryers based on the heat exchanger such as Condenser, Vent Condenser, Re-Boiler and Sub-cooler based on the suitability of the Client process need

Based on client requirements and process needs, KERONE manufactures Hot Air dryers and Hot air Generators manufactured those can be fired by a variety of fuels :

1. Oil fired Hot Air Dryer
2. Gas Fired Hot Air Dryer
3. Solid Fired Hot Air Dryer
4. Electric Hot Air Dryer

Application Industries

Food Industry → Chemical & Pharmaceutical Industries → Hotel & Laundries → Rubber Industry → Textile Industry → Ceramic → Wood Processing

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SOME OF OUR INSTALLATIONS

Gas Convection Curing
System for Automobile Gaskets

Fabric Coating and
Drying System

Conveyorized Hot Air Heating
System for Drying Metal Parts

Hot Air Tray Dryer

At KERONE we have been involved in the manufacturing of conventional heating and drying system since 1976, which provide us with experience in manufacturing a vast variety of conventional drying solutions, the conventional dryers designed and built by KERONE are strictly as per the need and specification of the client's process requirements.

Dryers are designed only after studying every parameter of process requirement, and the study is performed on the consequence analysis for each minute-to-minute detail. We have established our name for timely delivery and high-quality products.

We manufacture various types of conventional dryers:

1. Batch type
2. Conveyorized Type

- With Various Temperature Zone
- With Uniform Temperature Zone
- Can accommodate multiple types of conveyor mechanism.

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Gas Convection Drying System

Batch Dehydrator for Noodles Drying

Batch Drum Heating Oven

Batch Drum Heating Oven Double Door

Applications in Various Industries

- Food Industry: Curing, Dairies, Confectionery, Fruits & Vegetable Canning, Dehydration, Pasteurizers, Vegetable Oil Refineries etc.
- Chemical & Pharmaceutical Industries: Dyes and Intermediates, Refineries, Lube oil plants, Oil Reclamation, Additives, Adhesives, Pesticides, Fertilizers etc.
- Metal Pre-treatment, Timber Seasoning
- Textiles: Stenter machine, Curing machines etc.
- Rubber, Tyre Retreading, Paper & Board, Leather Industries,
- Cement Concrete/Mosaic Tiles Curing
- Hotels & Laundries, Kitchen

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Conveyorized Glass Bottle Drying

Batch Tray Dryer for Food Solids

Batch Tray Dryer for Colour Pigments

Batch Convection Heating System
for Curing of Rubber Products

Batch Lab Oven

Batch Dehydrator for Spices

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CONVECTION HEATING SYSTEM VS MICROWAVE HEATING SYSTEM

Conventional Heating System

- Conventional heating system have slow hating rate, heat is transferred via means of air
- 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

Microwave 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

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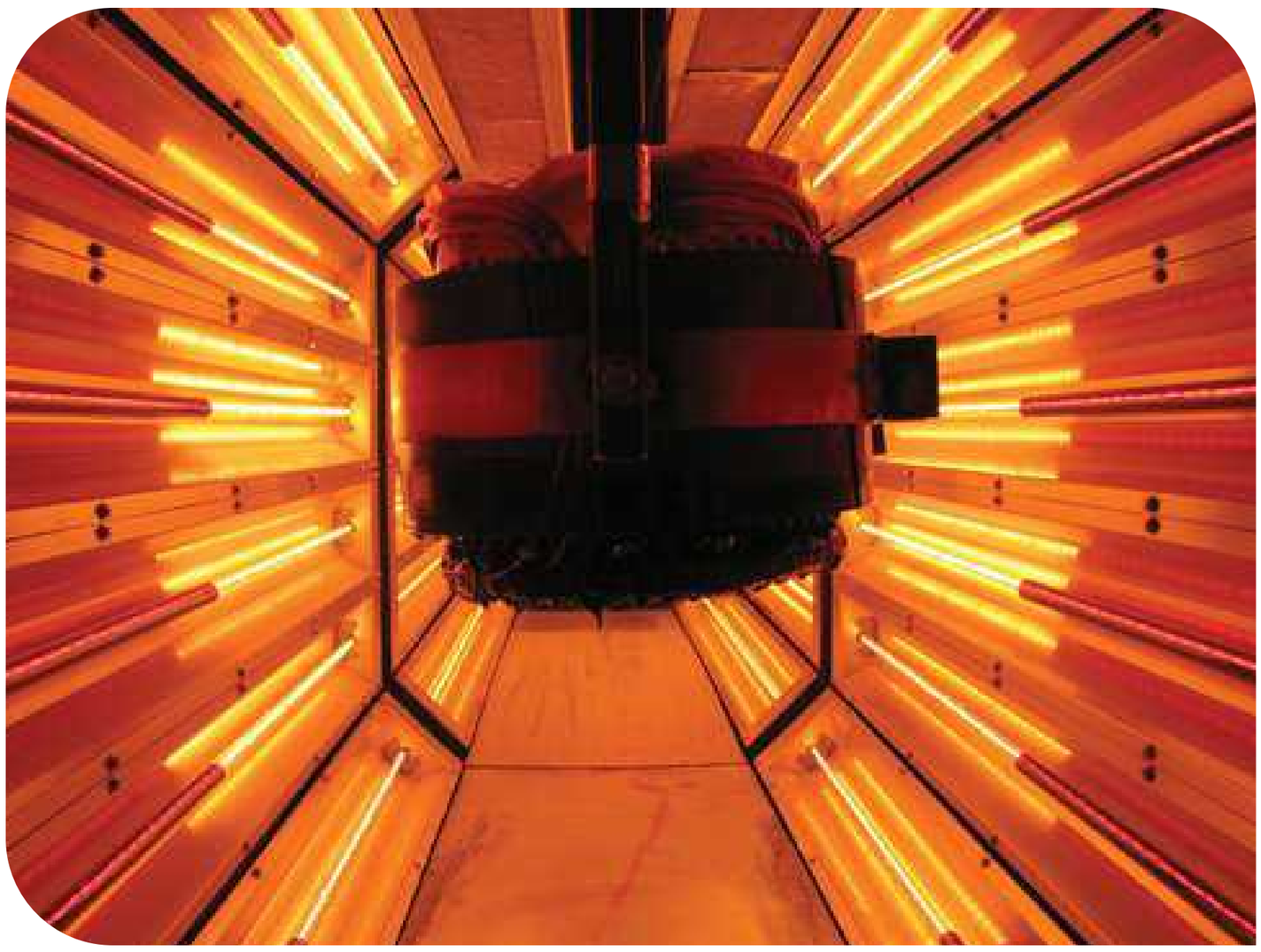
RADIATION



INFRARED HEATING

Designing & manufacturing Infrared heating system user across industries for various applications :

As one of the pioneers in the infrared drying industry, Kerone is among the top few companies to promote infrared as a means of producing the heat needed for heating/drying. Over the course of the last few years, we have significantly contributed to the revolution that has occurred in the drying and heating industry in Asia and other continents.

Application Industries

Plastic Annealing → Plastic Welding → Glass & Metal → Heat Treating → Cooking → Oven & Impregnation Pants → Chemical Industry → Curing of Coatings → Plastic Shrinking

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SOME OF OUR INSTALLATIONS

Continuous IR Heating
System for carbide pieces

Conveyorized IR Heating
System for Metal Dies

Conveyorized Drying
System for Screen Printed Ink

IR Flash Dryer for Drying
of Plastisol Based Ink on Fabric

Some Facts about Infrared Technology

- Infrared dryers belong to the family of generate heat at the targeted material type of dryers similar to microwave and RF dryers, however, a key difference is Infrared generates heat on the surface of a material.
- To increase the heat efficiency of conventional ovens IR booster section is introduced.
- It increases line speed enhances production and maximizes resources. It provides a smaller footprint that results in less work in progress.
- These systems also allow resultant ambient heat to be redirected into a convection oven for added savings.
- Infrared Heating can be introduced at the initial stage of a Conventional or Microwave Drying process to increase the product temperature and reduce surface moisture content.

Infrared waves are majorly classified based on the wave length range:

- Short wave infrared (wavelength range from
- Medium wave infrared (wavelength range 1400 nm and 3000 nm).
- Far infrared or dark emitters (Wavelengths above 3000 nm).

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Conveyorized IR Preheating System for
Non-woven fabric prior to molding
(Automotive Lining)

Batch IR Furnace for
Drying of Meal Sludge

Lab Gas IR Heating System

Conveyorized IR Heating
System for Foundry Mold Drying

Feature of the Infrared Dryer

- Infrared dryers are having superior air Handling arrangement.
- Forced airflow speed up drying/curing process.
- High-volume circulation blower reduces energy costs
- After the dryer has been turned off, the blowers and belt will continue to run for five minutesto shut down automatically after cooling of heat chamber
- Conveyor belt is made of imported antistatic heat-resistant,Teflon-coated fiberglass coating.
- conveyor Driven by a reliable, heavy-duty, variable-speed, AC motor with imported variable speed drive and gear box.

Applications in Various Industries

- Adhesive coating
- Foundry Mold Drying
- Plastic Annealing
- Drying of fabrics in Textile.
- Drying of ink and paper
- Laminate foam to fabric using web adhesives for automotive and furniture industries.
- Preheat films for laminating and embossing.
- Cure Silicone coatings on varioussubstrates.
- Dry and cure solvent base resin coatings for electronics industry.
- Drying of pharmaceutical coating.
- Curing Rubber Products

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Continuous EPDM Rubber
Vulcanizing Plant

Continuous IR System for
Paint Drying on Metal Strips

Auto Exposed Printing
& IR Drying System

Batch IR Heating System for Annealing
and Shaping of Medical Products

Continuous IR System for
Curing of Coted Yarn Threads

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INFRARED HEATING SYSTEM VS MICROWAVE HEATING SYSTEM

Infrared Heating System	Microwave Heating System
IR heating systems utilizes electromagnetic system uses wavelength of about 0.01 centimeters	Microwave heating systems utilizes electromagnetic system uses wavelength of about 1 centimeters
Compact system providing better floor utilization index	Microwave heating systems does not require larges space hence offers better floor utilization index
Infrared heating systems are better substitution of traditional convention heaters.	Microwave heating systems are not substitute the conventional heaters
Depth of heat penetration is lower in infrared heaters as it heats from surface	Depth of heat penetration is higher in Microwave heaters
Rate of heating depends on the surface characteristics of material	Rate of heating depends on the moisture content within the material
Heats the object from surface of object	Heats the objects from within the object

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HIGH FREQUENCY HEATING

MICROWAVE HEATING

Specialized in designing & manufacturing Microwave heating system that caters to specialized needs

We have been innovating in the field of heating, drying and cooling technologies since last 48 years. We provide wide range of electro-magnetic heating solutions that finds application in many industrial processes and plants.

Application Industries

Paper Coating & Printing → Textile Industry → Food Processing → Wood and Pulp Processing → Plastics → Rubber Industry → Pharmaceutical → Ceramic

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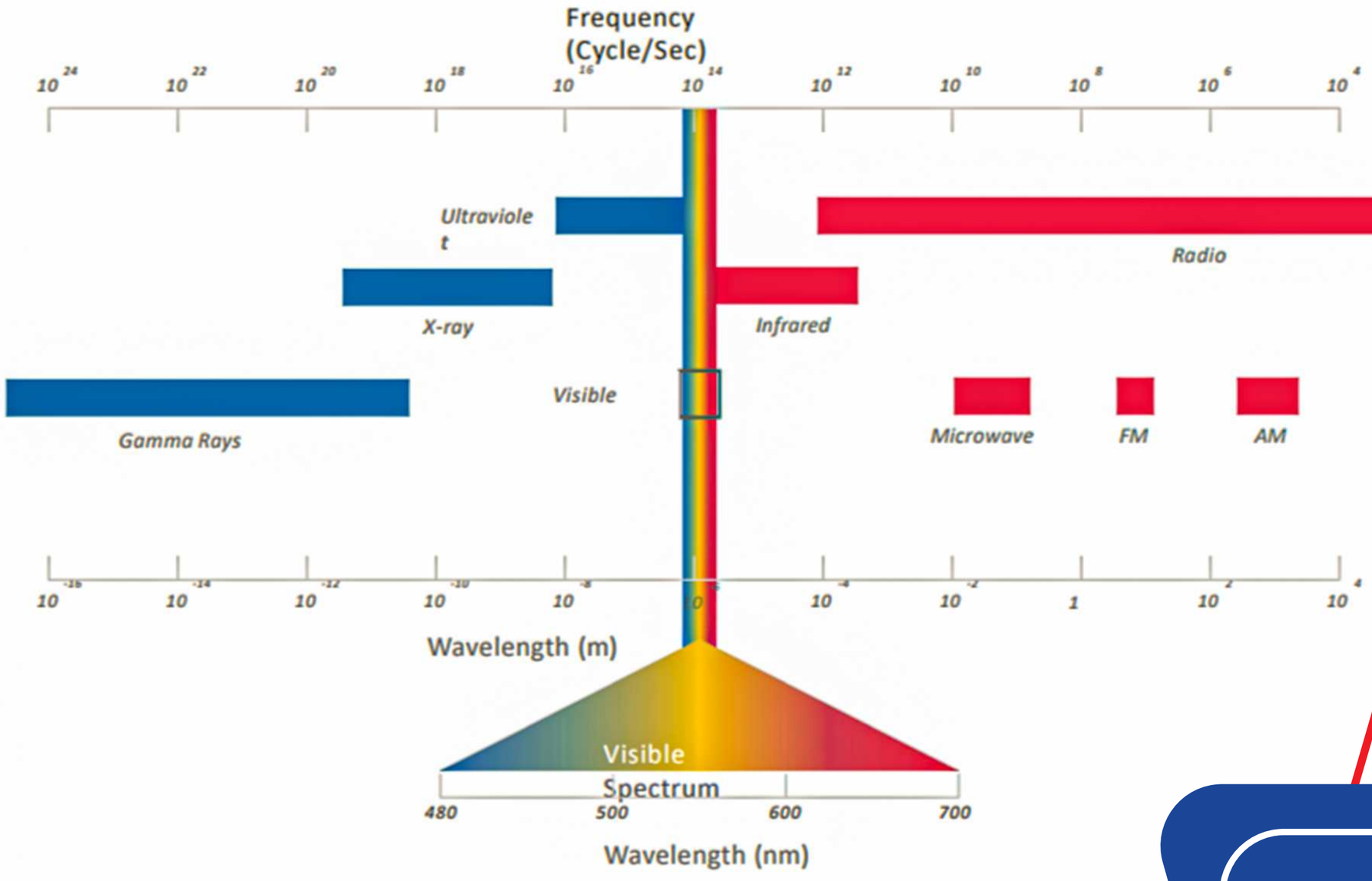
ADVANTAGES OF MICROWAVE HEATING SYSTEM



Frequency (Cycle/Sec)

- Uniform Heating occurs throughout the material Process speed is increased
- Desirable chemical and physical Effects are produced
- Floor Space requirements are Decreased
- Better and more Rapid Process control is achieved
- Purity in final product
- High Efficiency of Heating
- Environmental heat loss is save, Reduce wastage of heat

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SOME OF OUR INSTALLATIONS

Microwave System for Dryings and
Sterilization of Tea/Herbs/Flowers

Conveyorized Microwave Heating System
for Drying of Pulp Paper & Trays Drying

Conveyorized Microwave Heating System
for Drying of Pulp Paper & Boards Drying

Applications of Microwave

Food Industry:

Large drying time is always been a major limitation of Conventional Drying Processes. But now with the help of Microwave heating system assisted with IR or Hot Air system, process timecan be reduced upto 1/4th.

Low product temperature (min 60°C) is maintained to perform drying operations. Thus all natural ingredients and sensory of the food grade products are remain intact.

Microwave treatment for Sterilization and Disinfestation food grade products is eenvironmental sustainable, Efficient and safest physical method to inactivate microorganisms and insects of every stage i.e. eggs, larvae, pupae, adults thus drying and sterilization can be achieved in single process .

Some Facts about Microwave Technology

- Heating and drying has been an enormously imperative procedure in almost all areas of industrial processing.
- Our Microwave Heating and Drying Equipments are specially designed to provide maximum efficiency and reduce large amount of process time.
- Maximum powder utilization and volumetric heating are the main key features of the microwave process.
- No warmup time required hence system is always ready to use.
- Due to low process time and temperature required, all natural ingredients and sensory are preserved.

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Batch Microwave System for Pre-Heating of Green Rubber Tyre Prior to Moulding

Continuous Microwave Sterilization System for Agro Food Grains

Conveyorized Microwave System for Sterilization of Rubber Wood

Rubber Industry

Microwave heating is a quick and efficient method of heating materials that are difficult to heat by convection or infrared methods, so production rates increase and product quality improves.

This technology has the capability that penetrate the rubber material under process and energize the water molecules present within, which results in very high-quality processing in a shorter time. As rubber is a poor conductor of heat, this process is very effective.Since different materials absorb microwave energy at different rates, a product with many components can be heated selectively.

Labor-intensive steam autoclaves used traditionally for heating rubber now can be replaced with highly efficient, high-speed microwave curing ovens automated with electronic controls and sensors.Microwave Pre-heating of the tire before molding can reduce molding time and improve the quality and durability of the tire.

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Conveyorized Microwave Hybrid System
for Drying & Sterilization of Neem Leaves

Batch Microwave Hybrid Heating
System for Sterilization of Spices

Continuous Microwave Heating System
for Disinfestation of Pistachios

Wood Industry

A number of wood species have a very low permeability that causes problems during timber processing. These problems include very long drying times, large material losses after drying, expensive drying processes, and difficult impregnation with preservatives and resins. Furthermore, growth stresses in wood and collapse often lead to drying defects and high material losses in the recovery of sawn timber.

Potential Benefits of Microwave Treatment on wood

- Consumption of chemicals for the pulp production process is reduced by 25-45% due to the efficiency of the use of chemicals for cooking.
- Accordingly, reducing the need for processing chemicals reduces energy costs and increases the productivity of the process.
- Accordingly, reducing the need for processing chemicals reduces energy costs and increases the productivity of the process.
- Increased permeability of wood provides a more rapid contact between the chemical and the structure of the wood, increasing the efficiency of the reaction
- Improving productivity 20-34% for systems with limited performance of the digester

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Batch Microwave Heating System
for Sterilization of Herbal Powder

Batch Microwave Heating System for
Pre-heating of Rubber Preforms

Conveyorized Microwave Hybrid Heating
System for Curing of Rubber Profiles

Feature of the Microwave Heating Systems

- Customized Equipments, manufactures according to customers product and process requirements.
- highly controllable.
- Work space requirement is very less.
- Variable Power output (selectable) up to 100%.
- RF/MW choke/timer provision.
- Required electrical & thermal safety features for microwave generator.
- Variable frequency (Belt speed control).

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RADIO FREQUENCY HEATING

Specialized in designing & manufacturing Radio Frequency (RF) heater & Dryer :

Radio Frequency (RF) heaters came as a revolution in the process of heating and drying to reduce the time it used to take with conventional systems. The demand of the situation was for good quality-oriented manufacturers who could engineer and develop such heating and drying equipment that could fit into the specialized needs of the market.

Kerone is holding vast experience in designing, manufacturing and installation of customized Radio frequency (RF) industrial dryers for various industrial applications based on the need and suitability of client's process requirements. The radio frequency (RF) dryers manufactured in Kerone are strictly follow the defined international standards.

Product Range

1. Radio Frequency Dryer
2. Batch Dryer
3. Online (RF) Radio Frequency Dryer

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PROCESS EQUIPMENTS

The process Equipments/Plants are usually consisting of the following

- Reactors
- Feeders
- Industrial Dryer
- Mixing Plant
- CIP/SIP Systems
- Powder Transfer System
- Batching Systems
- Cyclone Separator
- Skid Mounted Process Unit
- Bag House Filter

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SOME OF OUR INSTALLATIONS

Silicon Encapsulation Plant

POP Bandage Tape Loading and Mixing Plant

Wet Laid Paper Manufacturing Pilot Plant

Reactors

Reactors are vessels designed to contain chemical reactions.

We Design and Manufacture Reactor for

1. Chemical
2. Pharmaceutical
3. Petrochemical

Feeders

Feeder guides the chemicals, materials and ingredients into a processing machine and equipment

Types of Feeders:

1. Batch Feeder
2. Continues Feeder

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Potato powder production line

IR roaster and sterilization for Dalia

Pilot Mixing plant hot melt adhesive

IR roaster and sterilization for Semolina

Continuos sterilization for pulses, grains & continuous sterilization for pouch/bag packed

Biochar processing line/plant

Hot melt adhesive mixing plant

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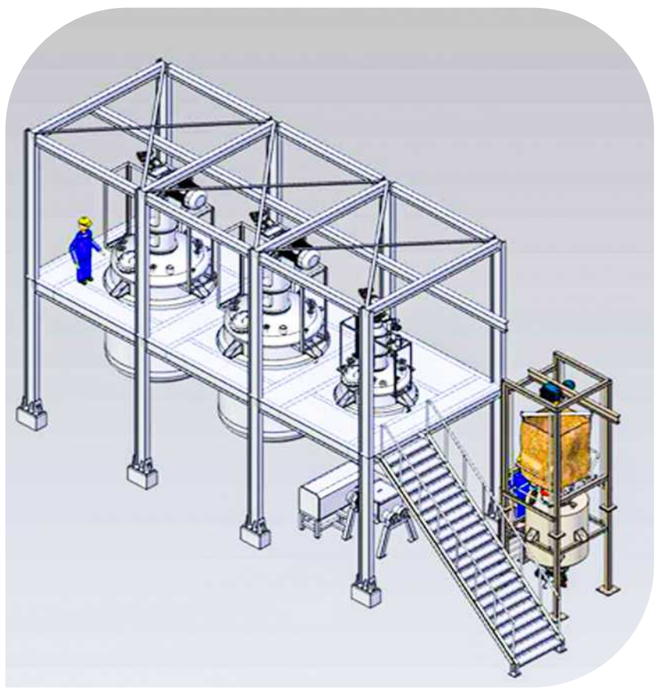
Mixing Plants

Mixing reactors are very commonly used for solid dissolution, product mixing, chemical reactions, batch distillation, crystallization, liquid/liquid extraction and polymerization

Application of Mixing Plants

- Chemicals Plant
- Paint Manufacturing
- Pharmaceutical Industries

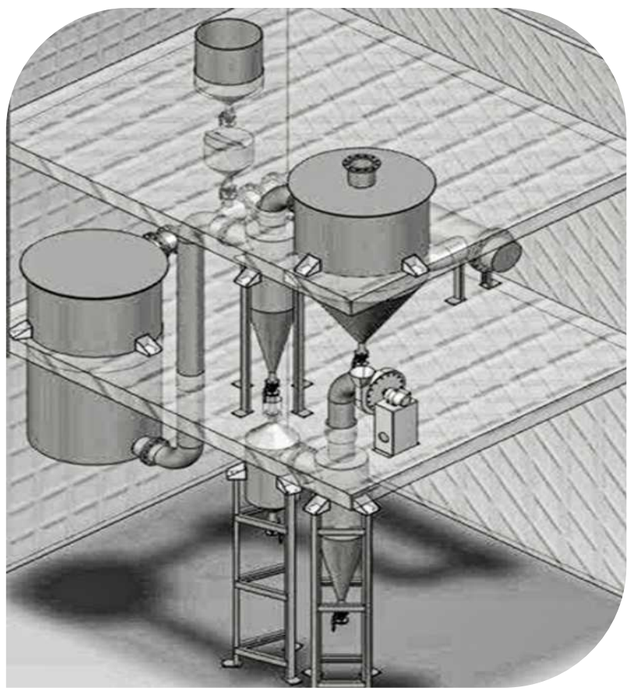


Powder Transfer System

The PTS Powder Transfer System is an extraordinarily efficient and dependable technique of conveying and dispensing dry and wet powders and granules.

Main Components

- A vacuum conveying system utilizing Roots Blower, Modular construction equipment.
- Jet Air Wand with Air regulating Damper.
- Jet Air Wand fitted with stainless steel wire mesh to stop foreign particles' entry into the process.
- Entire transfer through electro-polished pipe with curvilinear bends and isolating valves both manual and pneumatically actuated.
- Suitable filters pleated 5 microns in the product unloading chamber, pulse jet type for inside cleaning.



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PROCESS PLANT

Process Plants are large scale manufacturing setup, the main objective of such setup is to help the companies involved in the large scale manufacturing process.

Industries with its process plants

- Chemicals Plant
- Biochemical Plant
- Oil Refineries
- Pharmaceutical Plants
- Food & Beverages

CIP/SIP SYSTEMS

The CIP/SIP systems together helps in maintaining the desired level of hygiene, by continously killing the germs

Types of Industrial Dryers

CIP (Clean-in-Place) :

- CIP (Clean-in-Place) systems offers the arrangement for cleaning/sterilizing the interior surfaces of vessels, equipment, filters, pipes and fittings, without disassembly them.

SIP(Steam-In-Place) :

- SIP(Steam-In-Place) Systems are liable for frequently steaming parts of product contact, vessels, flow paths, and sample ports.

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CYCLONE SEPARATOR

Cyclone Separator is used to separate the solids from the air, gas and liquids without any filter.

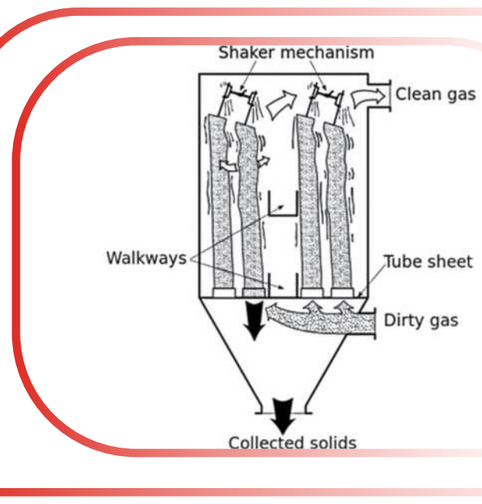
Operating Principle

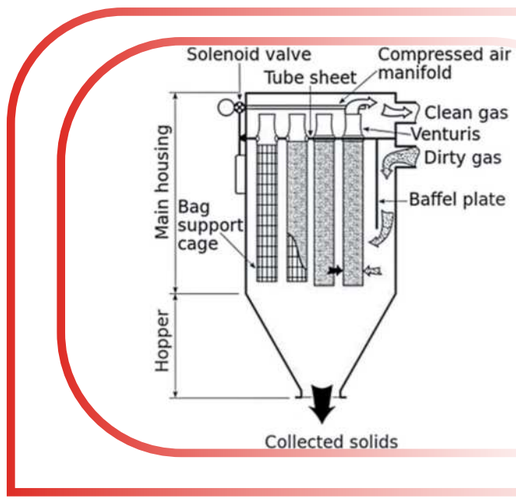
- Cyclone separator operates on the principle of the centrifugal force. The separation depends on both the particle's size and the density of the particles.

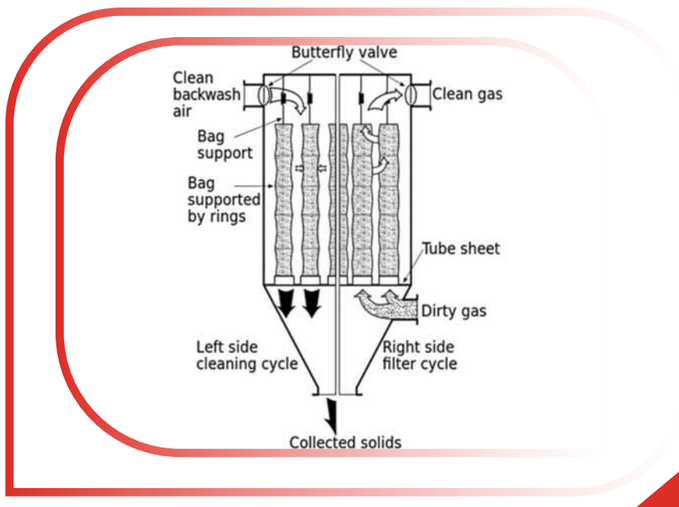
BAG HOUSE FILTER

Baghouse dust collectors are a fabric filter air-material separators employed for particulate removal from manufacturing and other industrial operations to keep dust and solid particulates from entering the workplace or being released into the atmosphere.

Mechanical Shaker Bag house







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SPECIAL PURPOSE MACHINE

Designing & manufacturing Special Purpose
Machines across industries for various application

Design for Specialized Needs

Special purpose machines are those machines which are especially design and build to answer the specialized needs.

Across Industries

We design and build various heating systems for various special-purpose applications across industries.

Critical Project for Kerone

Every single special-purpose machines are treated and handled as a critical project for Kerone.

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APPLICATION AREAS

Paper Industry

Infrared Paper Coating & Drying Machine processes have proved its importance in today's time where the paper industry has undergone tremendous change and conventional drying method is replaced by high intensity electrical infrared drying and coating.

High intensity infrared drying allows evaporation of eight to ten times more water than conventional drying method per square meter which provides for improved quality, fast immobilization, space saving as well as simplified sheet runs.

Heating → Pre-heating → Drying → Adhesive Curing / Coating → Ink Drying → Paper Decoration → Decorative Paper Making

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COATING LINES

Coating Plant for Label Stocks

Filter Paper Coating & Corrugation Plant for Automotive

Adhesive coating plant for medical tapes

Gravure coating plant for paper

Filter Paper Corrugation Plant for Automotive

Kerone Engineering Solutions Limited

Curtain Coating Machine

Fabric Coating Machine

Hot melt Coating Machine

Gravure Coating Machine

Web Cotaing Machine

Slot Die Coating Machine

Reverse Roll Coating Machine

RUBBER INDUSTRY

At Kerone, we are helping many rubber processing giants with its highly advanced and sophisticated microwave and IR based heating solutions for Heating, Pre-heating and vulcanization processing.

For rubber manufacturers vulcanization is very critical process as it gives the strength and durability that is required for any rubber to get moulded and utilise for any application.

Continuous microwave vulcanization curing plants designed by Kerone is very cost effective solution for the processers of rubber as our Continuous Microwave+IR vulcanization curing systems accelerator the process of vulcanization by putting rubber under high temperature and pressure, this results in high quality processed rubber.

Rubber Vulcanization → Rubber De-vulcanization → Rubber Melting → Rubber Curing → Heating of Latex Foam Rubber → Rubber Extruder → Drying of Polyester Bands after Dipping → Preheating of Seals

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FOR RUBBER INDUSTRY

Batch Microwave System for
Pre-Heating of Rubber Tyre Prior to Moulding

Batch Gas Convection Heating
System for Automotive Gasket Curing

Conveyorized Microwave Hybrid Heating
System for Curing of Rubber Profiles

Continuous IR Heating System
for Curing of Automotive Rubber Gaskets

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FOOD INDUSTRY

- The food industry is a complex and much of the food energy consumed by the world population. The food industry is taken into consideration electro-magnetic heating is useful in many processes like as post bake drying, softening, defrosting , roasting etc.
- Heating equipments manufactured by Kerone are totally safe to handle. As heating is carried out at low temperature in our equipments the important properties of food products like smell, color, shape etc. remain unchanged.

Technology options available

For every specific target substance or material, we provide different technological options to choose from. Continuous conventional dryer, Hot air assisted drying, Vacuum assisted E-drying, Hybrid approach i.e. Used RF/MW technology in your pre-post stage of your existing plant and MW technology for Sterilization and Disinfestation.

Heating → Drying/Dehydration → Tempering → Defrosting → Softening → Roasting → Sterilization/Disinfestation /Enzyme Inactivation → Blanching → Caramelization

Kerone Engineering Solutions Limited

SOME OF OUR INSTALLATIONS

Hot Air Dryer

coir pith dryer

Imperial and Band Dryer Food Industry

Food dryer

Infrared Heating System for Preheating of Non-woven Laminates prior to Moulding

Sludge dryer

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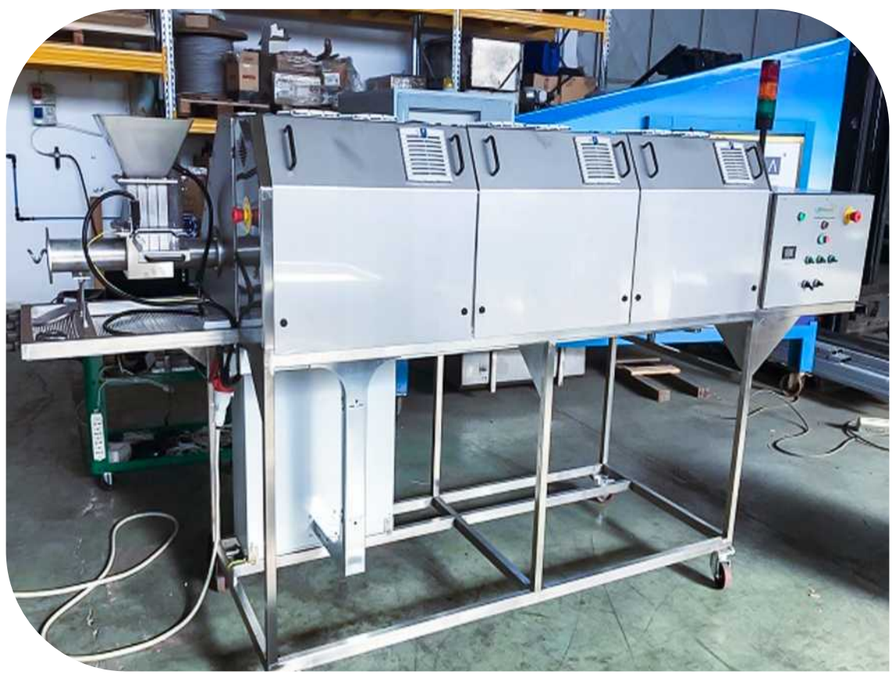
Conveyorized Infrared Dryer

Tray Dryer



Grain dryer

Spray Dryer

Box Convection Dryer

Microwave Dryer

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Rotary Dryer

Radio Frequency Dryer

Fish dryer

Microwave Dryer

Fluidised Bed Dryer

Batch Dehydrators

Tunnel Hybrid Dryer

Flash Dryer

Rotary Drum Dryer

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MICROWAVE STERILIZATION & DISINFESTATION SYSTEM

Batch Microwave Heating System

Lab-scale Batch Microwave Heating System

Continuous Microwave Sterilization System (Throughput 250kgs/hr)

Continuous Microwave System for Disinfestation of Pistachios (Throughput 2-2.5TPH)

Conveyorized Microwave System

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SIMULATION / TEST REPORTS

Process

Batch Convection Heat Treatment for
Drying of Jarosite Slurry

Requirement

Final product must have moisture content less than 20%

Sample Preparation

Lime solutions of having pH around 12 has been prepared and added in given Jarosite slurry until it attains pH 7. The final slurry of pH 7 is then dried with uniform thickness of 6 mm

BEFORE AND AFTER PICTURES OF TREATED SPECIMEN SAMPLE

Before

Initial Moisture Content: 63%

After

Final Moisture Content: 8%

RESULTS AND OBSERVATIONS:

There is complete drying with required final moisture at 55°C in 1 hour for 1kg of sample.
It has been observed that there is no colour change with free flowing texture.

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Process

Batch Convection Heat Treatment for
Drying of Instant Noodles

Requirement

Final product must have moisture content between 8-10%

Sample Preparation

Steamed noodles cakes (whole) have been dried without adding any additive to achieve even drying characteristics

BEFORE AND AFTER PICTURES OF TREATED SPECIMEN SAMPLE

Before

Initial Moisture Content: 30%

After

Final Moisture Content: 9%

RESULTS AND OBSERVATIONS:

There is complete drying with required final moisture at 70°C in 5 hour for 1.5kg of sample .
It has been observed that there is little colour change with required brittle texture.

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Process

Batch Microwave Heat Treatment for
Sterilization of Chickpea Protein Powder

Requirement

Sterilization without degrading Protein

Sample Preparation

For this experimental run, Chickpea Protein Powder has been sealed packed in microwave transparent bags and placed in microwave heating system for different setting parameters to achieve sterilization treatment.

BEFORE AND AFTER PICTURES OF TREATED SPECIMEN SAMPLE

Before

After

OBSERVATIONS MICROBIOLOGICAL TEST RESULTS:

It has been observed that there is no damage to sample with required product temperature.

Parameters	Sample No. 1	Sample No. 2
Batch Size (grams)	500	500
Microwave Power(kW)	0.9	0.8
Product Temperature(^{o}C)	60-70	60-70
Cycle Time(minutes)	12	15
Protein	85.60%	84.06%
TPC CFU/g	830	640
Yeast & Mold CFU/g	Absent	Absent

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Process

Continuous Infra-red Heat Treatment for Drying of Metal Slime

Requirement

Final moisture of product should be equal to or less than 10%

Sample Preparation

The experiment has been performed on metal slime without adding any additive under continuous infrared heating system to speed up the drying rate with 20 mm thickness of layer.

BEFORE AND AFTER PICTURES OF TREATED SPECIMEN SAMPLE

Before

Initial Moisture Content: 32%

After

Final Moisture Content: 8.5%

RESULTS AND OBSERVATIONS:

There is complete drying at 160°C in 10 minutes for 800 grams of sample. It has been observed that there is no burning effect with required final moisture content.

Process

Batch Microwave Heat Treatment for
Rubber Preheating

Requirement

Temperature of core of product after treatment must be range between 60-70°C

Sample Preparation

For this experimental run, rubber slabs has been placed on turntable in microwave system and then microwave heating treatment has been given for various parameters to achieve the requirement.

PICTURES DURING TRIALS

RESULTS AND OBSERVATIONS:

It has been found that preheating of natural rubber, which is having low elastic properties, when exposed to microwave radiation, it get more resilience and elasticity. The requirement of core temperature is successfully achieved with temperature gradient 8°C in 2 minutes.

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Process

Continuous Microwave+Infrared Heat Treatment for Drying of Neem Leaves

Requirement

Treated leaves should be almost dry with minimum moisture content

Sample Preparation

For this experimental run, Neem leaves on conveyor has placed in such a manner that it forms uniform layer for air to circulate for achieving even drying characteristics.

BEFORE AND AFTER PICTURES OF TREATED SPECIMEN SAMPLE

Before

Initial Moisture Content: 60%

After

Final Moisture Content: 7%

RESULTS AND OBSERVATIONS:

It has been observed that there is uniform heating and no burning effect with required moisture content and crunchy texture in 16 minutes of 3 kW microwave power and 60°C IR temperature.

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CLOSURE COMMENTS

Since the last 48 years, accuracy, efficiency, machine quality and output quality are not just words but KERONE's lifetime commitment towards our profession since its inception, creating a base of more than 1000 loyal customers. Our systems are used to meet the varying demands of numerous industrial applications – all with a level of precision that manufacturers seek. Fulfilling demands as per client's specification has been our top priority and we strive to carry the same forward. We also provide detailed assistance for installation without much hassle of complex functioning of the machinery. We always strive to achieve more than client satisfaction with our timely delivery, quality and efficiency towards all equipment manufactured by us.

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Kerone Engineering Solutions Limited

UNIT 1

4 & 5, Marudhar Industrial-Estate, Panchal Road, Opp. Syndicate Bank, Bhayander (E), Mumbai-401105. (India)

Contact Us
+91-22 48255071, 48255072

UNIT 2

Kerone Engineering Solutions LTD., Plot No. B-47, Addl. Midc Anandnagar, Ambernath (E), Dist. Thane (India)- 421506

Contact Us
+91(0251)2620542/43/44/45/46

UNIT 3

Kerone Engineering Solutions LTD.,
Plot No. W-104, Addl. Midc Anandnagar, Ambernath (E), Dist. Thane (India)- 421506

Contact Us
+91(0251)2620542/43/44/45/46

Our Mails
info@kerone.com
sales@kerone.com
marketing@kerone.com

Website
www.kerone.com
www.kerone.net
www.keroneindia.com

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