Who are we…

Conceptualized and shaped in 1976

One of the most admired and valuable company for customer satisfaction.

We are pioneer in application and implementation engineering

40+ years experience in engineering excellence.

Immense expertise in providing engineering solutions.

Witnessed growth in revenue and team strength YoY
<table>
<thead>
<tr>
<th>Member of AIMCAL</th>
<th>Member of IHEA</th>
<th>Strategic Partners of Emitech Italy</th>
<th>IRQAO Certified For Quality</th>
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<td><img src="image1" alt="AIMCAL Logo" /></td>
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<td>Recognized and Rated by CRISIL</td>
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<td>Member of A.M.P.E.R.E. (Europe)</td>
<td>ASCB(E) Certification for Best practice</td>
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Why We…

- Highly Customized Product
- Adherence to Standards
- Cost Effective Solutions
- Sound Infrastructure
- Timely Delivery
- Great After Sale Support
What is Pasteurization and Sterilization...

**Pasteurization**
- Pasteurization is the process of heating liquid to a specific temperature for a specific time period to reduce microbial growth.
- Heat liquid to a set temperature below boiling point and then cool quickly.
- High-temperature, short-time (HTST) and Ultra-high temperature processing (UHT).
- Taste of the food remains the same.
- Some microbial bacteria that stops growth.
- Liquids, Liquid Food, Milk.

**Sterilization**
- Sterilization is the process of eliminating all bacterial growth from various different objects.
- Heat or chemicals used to kill all various types of bacteria.
- Applying heat, irradiation, chemicals and applying high pressure.
- Alters the taste of the food.
- All various types of microbial growth including bacteria, fungi, viruses.
- All type of Food, Medical, Cleaning,
Why Microwave for Treating Food...

<table>
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<th>Benefit</th>
<th>Additional Benefit</th>
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<tr>
<td>Uniform heating occurs throughout the material</td>
<td>Process speed is increased.</td>
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<td>Better and more rapid process control is achieved.</td>
<td>Purity in final product.</td>
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<td>Selective heating i.e. heating selectively one reaction component.</td>
<td>Reduction in unwanted side reaction (reaction Quenching)</td>
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<td>High efficiency of heating.</td>
<td>No fumes and pollutants</td>
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<td>Direct utilization of large-sized feedstocks</td>
<td>Improve reproducibility</td>
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<tr>
<td></td>
<td>Environmental heat loss is save, Reduce wastage of heat</td>
</tr>
<tr>
<td></td>
<td>Overall cost effectiveness/savings</td>
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Microwave heating systems are members of the Electromagnetic heating family.

Microwaves have frequencies of 2.45GHz and 950MHz.

Microwave is generated from a small device known as the Magnetron.

Microwave heating systems have the property to heat from within.

Microwave heating systems heat the volume of material, hence also known as 'Volumetric Heating'.
Is food processed in Microwave safe for Consumers…

1. The microwave energy is changed to heat as soon as it is absorbed by the food.
2. It doesn't make the food radioactive or contaminated.
3. There is no residual radiation remaining in the food.
4. When the microwave energy is turned off no adverse effect left out.
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.

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.
It is difficult to estimate the total economical value for microwave sterilization technology when considering the complete chain from food product manufacturing, storage to distribution.

But new values are added by using versatile novel technology that offers advantages over traditional processing such as:

- Ability to process all type of food product solid, semi-solid and liquid
- Rapid rate of heating and preservation of sensory and nutritional values
- Possibility of ascetic packaging
- High throughout of processed foods
- Can be incorporated in the existing processing lines
Microwave Pasteurization...

Motivation behind utilizing the microwave for pasteurization is the speed and effectiveness.

Pasteurization is a process applied generally to liquid foods mainly to kill key pathogens and inactivate vegetative bacteria and enzymes to make food safe for consumption.

Pasteurization can be achieved by ultra-high temp (UHT), high-temperature-short-time (HTST) and low-temp long time (LTLT).

The inactivation of PME and Lactobacillus plantarum are more pronounced using microwaves as compared to conventional heating.

Pasteurization temperatures and times vary, depending on the product nature and the target organism.

Microbial destruction are more temperature sensitive under microwave.
Sterilization is a more severe thermal treatment of foods

In the process of sterilization, the foods are heated to sufficiently high temperature for a sufficiently long time to destroy microbial and enzyme activity.

Sterilization process requires the technology that can offer sufficient heat in lesser time without causing any or reduce the damage to nutrients and sensory components.

Microwave sterilization had some challenges in past such as unpredictable and non-uniform energy distribution.

At Kerone, we have developed the control microwave sterilization solution that eliminates all previous hiccups.
Other Applications of Microwave in Food Industries:

- Thawing and tempering
- Drying
- Pre-cooking
- Cooking
- Baking
- Blanching
Trusted Partner of following consultants...
Our Clients…

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<th>Saint-Gobain Glass</th>
<th>Alstom</th>
<th>Jasubhai Engineering Pvt. Ltd.</th>
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