

Microwave Industrial Processing

'Technology for the Third Millennium'

Microwave Technology is a visionary new technology that brings improvements in performance of complex devices, together with a reduction in the size and cost of production. It offers advances to a wide range of industries, including telecommunications, aerospace, scientific instruments, environmental monitoring, and especially in biotechnology, food and medicine.

The operation cost associated with the microwave process is lower than conventional technologies due to the energy cost savings, because microwave energy allows the material to be heated more evenly and efficiently.

The new development of Variable Frequency Microwaves (VFM) offer a unique capability in providing uniform and rapid heating over a large volume with high-energy efficiency. This is achieved with variable multi-frequency microwave processing which opens the way for improvements by selecting 'the best frequency' for the material and process parameters.

Space Applications



High Energy Plasmas



Applications

These range from fundamental scientific research to the development and implementation of applications in industry. The research concentrates on developing non-traditional manufacturing processes for industrial applications that demand competitive productivity rates and quality standards.

Aerospace and Automotive Industries

- Microwave Induced Plasma Jet
- Microwave Combustion of Diesel Fuels
- Microwave Ignition of Liquid Fuel Propellants for Rocket Engines

Polymer Industry

- Microwave Joining of Polymers
- Microwave Curing and Joining of Reinforced Polymer Matrix Composites
- Rapid Curing of Adhesive Bonds in Low Dielectric Polymer Sheets using Microwaves

Medicine and Biomedical Industries

- Development of a Passive Microwave Radiometer for non-contact Medical and Industrial Thermography applications
- Development of a Microwave Hyperthermia Apparatus for Cancer Treatment
- Processing of Biocompatible Ceramic Implants using Microwaves

Construction and Building Industries

- Diffusion Bonding of Dielectric Ceramics and Matrix Composites using Microwaves
- Industrial and Domestic Hot Water Systems
- Microwave Heating and Processing Dielectric Fluids
- Microwave Drying of Plaster Sheets

Machinery and Tools

- Diamond coating using Microwave Vacuum Deposition Techniques
- Rapid Prototype Product Development using Ceramic Injection and Microwave Drying Techniques

Paper Industry

- Microwave Heating & Curing of Adhesive-Bonded Corrugated Cardboard

Agriculture Industry

- Investigation of the application of Microwave Technology to Malting
- Investigation of the application of Microwave Technology to Industrial Water Curing and Sterilisation

Diagnostics



Medical Applications



Microwave Magnetron

