



Materials Processing by Dielectric Heating

Dielectric heating processes such as Radio Frequency (RF) and Microwave can rapidly and efficiently mould and cure a wide range of polymer or composite materials. When used in conjunction with RF or microwave transparent moulds, this approach will volumetrically heat the material of interest without heating the mould. These techniques give considerable enhancements in energy efficiency and reductions in process time.

Curing or moulding of many polymers, adhesives or composites can be both slow and energy intensive. For example, steam chest moulding of expanded polystyrene (EPS) is a highly energy inefficient process with large amounts of energy being used to heat and then cool the aluminum moulds used. Use of an RF press system and an RF transparent mould both enables this process to be carried out with a significant reduction in energy input and removes the need for expensive steam plant.

Curing of adhesives is often carried out utilizing a slow room temperature cure process (often up to 24h) and requires that the component being cured is clamped in place for the duration of the process. RF heating can often reduce the cure time to a few minutes thereby substantially reducing cycle times and increasing throughput.



Benefits of Dielectric Heating

- Rapid Heating profiles
- Increased throughput
- Volumetric & uniform heating of material
- Energy Efficient
- Reductions in process time
- Targeted heating of component of interest

Our Services

- Moulding of expanded polymers (e.g. EPS)
- Design of RF or microwave transparent & functional tooling
- Design & build of industrial Microwave & RF systems
- Curing Adhesives
- Composites Curing and moulding
- Polymer curing and moulding

Core Expertise

- Pressurized microwave trial system (up to 10bar)
- RF press trial system
- Measurement of material dielectric properties
- Bespoke system design & build

