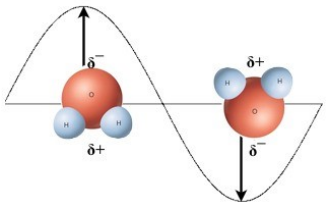
Microwave Heating Seminars

While microwave heating technologies have been applied to industrial processes for many decades, new applications are continually being developed as an alternate to conventional heating methods. Even so, the advantages and benefits of microwave heating may not be well understood by those who are new to the technology. Perhaps just as important is an understanding of the challenges presented by each application and how to assess the technical and economic feasibility.

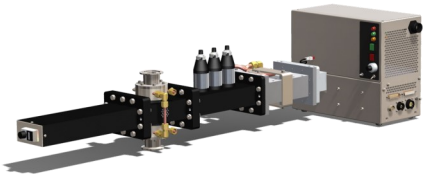
JFGerling Microwave Applications Consulting offers a series of technology seminars designed for anyone directly or indirectly involved in the development and/or implementation of a microwave heating application. Seminar topics range from technology basics for non-technical newcomers to in-depth details for experienced technical users. Seminars can also be customized for a specific application or process and presented as a webinar or in-person at the client's facility or GCI. Hands-on workshops are also available. Please contact GCI for more information.

SEMINAR TOPICS

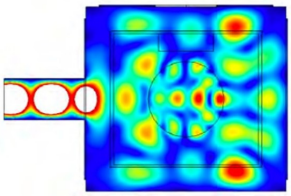
Each of the following main topics represents a single seminar session (duration times are approximate). Subtopics can be combined to create a custom seminar tailored to the client's needs.



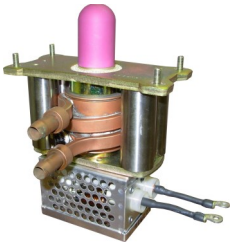
- **Fundamentals of Microwave Heating (**1 hour)
  - Dielectric heating basics
  - Mw sources, waveguides and cavities
  - Material interactions
  - Bioeffects and safety
- **Industrial Microwave Processing** (2 hours)
  - Characteristics of microwave processes
  - Common types of systems
  - Basic system elements
  - Unique system configurations
  - Common and unique applications



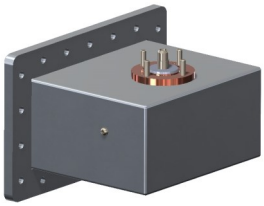
- **System Configurations** (1.5 hours)
  - Essential system elements
  - Impedance matching
  - Unique system configurations
  - Optimizing performance



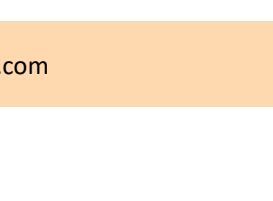
- **Fundamentals of Applicators** (1.5 hours)
  - Applicators defined
  - Types and configurations
  - Electromagnetic "mode"
  - Cavity resonance, Q factor, efficiency
  - Heating uniformity
  - Power coupling
  - Impedance matching
  - Common features



- **Fundamentals of Magnetrons** (1.5 hours)
  - Basic theory of operation
  - Operating characteristics
  - Filaments
  - Launch configurations
  - Magnetron Probe
  - Techniques to maximize magnetron life
  - Failure modes and analysis



- **Health, Regulatory and Safety Issues (**1 hour)
  - Basic health and safety issues
  - Health effects related to exposure
  - Regulatory standards and compliance
  - Safety standards for system components
  - Guidelines for safe equipment operation
- **Microwave Component Design (**1 hour)
  - Design methodology
  - Separate sessions for each of the following topics:
    - * Waveguide to coax adapters
    - * Multi-stub waveguide tuners
    - * Movable ("sliding") short circuits
    - * Waveguide pressure/vacuum windows
    - * Waveguide corners, twists, transitions
  - Construction methods



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