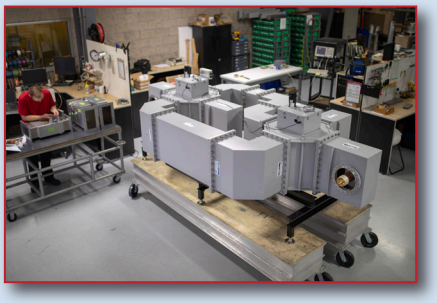
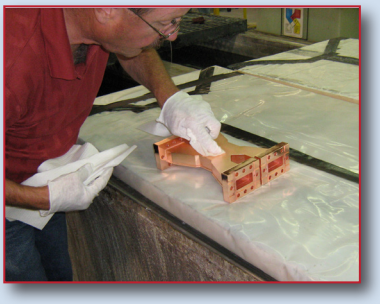
FABS and LABS

Microwave Techniques Defines High Power





There's power and there's power, like thousands of watts to megawatts. Microwave Techniques LLC is one of the few companies dedicated to truly high power RF, microwave and mmWave components and systems for defense, industrial, medical, scientific and broadcast. The parent of several companies, Microwave Techniques' brands are well known: Mega Industries, Ferrite Microwave Technologies (FMT), Industrial Microwave Systems (IMS), Micro Communications (MCI) and FXR Microwave. In addition to focusing on high power, Microwave Techniques differentiates itself by offering both components and systems.

Its extensive portfolio of high power components includes circulators, isolators, loads, waveguide and coaxial transmission lines, combiners, stub tuners, filters, coaxial transfer switches and vacuum components, some with power handling to 50 MW and covering frequency bands from 50 MHz to 50 GHz.

The systems offered by Microwave Techniques perform microwave tempering for frozen foods and meats; cooking pre-cooked foods like bacon; heating and drying foam, wood and textile materials; cylindrical heating of fluids, liquids and chemicals; and generators and transmitters for various applications. These industrial systems typically operate in the 915 MHz ISM band and generate power levels from 6 kW to 1.2 MW, tailored for the application.

Each company in Microwave Techniques' portfolio has a long heritage serving its market. MCI formed in 1966 to develop components for broadcast transmitters, like coaxial transfer switches and combiners. It has the distinction of receiving two Technology & Engineering Emmies, recognizing it for RF combiner innovation and pioneering broadcast transmission technology.

Started in 1983, FMT was a spin-out from Raytheon's Special Microwave Device Operation, formed to supply industrial microwave systems. FMT adopted a vertical integration strategy, developing and manufacturing the high power components used in its systems, except for high power tubes. It also uses this capability to increase manufacturing volumes by selling high power components.

Prompted by customers, Mega Industries started in 1989 with a team of three working in a 2500 square foot "garage" in Portland, Maine. Its heritage is found in many high energy physics laboratories around the globe: the Large Hadron Collider at CERN, the European Spallation Source at Lund, the SLAC National Accelerator Laboratory in Menlo Park.

Today, Microwave Techniques has facilities in Maine, New Hampshire and North Carolina. The components division (the FMT, Mega, MCI and FXR segments) occupies two facilities in Gorham, Maine. Last February, the company expanded to support growth from the 2020 Mega-FMT merger. Adding 21,360 square feet, the components division now has nearly 60,000 square feet for manufacturing, testing and assembly. This includes an ISO Class 5 clean room for cleaning, brazing and assembling ultra-high vacuum components, constructed in 2013. The expanded facility also houses sales, engineering and administration. Systems manufacturing is based in Nashua, New Hampshire. To add manufacturing capacity to support growth and the recent acquisition of IMS, the systems division will move to a larger facility this fall. IMS' North Carolina site will remain as an R&D center, developing 915 and 2450 MHz heating systems.

Although its products may be considered mature, Microwave Techniques has the latest design tools for product development: CST Microwave Studio, Ansys HFSS and SolidWorks for mechanical and thermal analysis. Additive manufacturing is used for some manufacturing operations, complementing conventional machining.

Now with more than 100 staff, Microwave Techniques retains a small company culture based on open communication and teamwork. To maintain the expertise gained over the decades, the company has established an apprentice program, teaming experienced and new staff, recent high school and college graduates.

Very high power RF is something of a hidden market, yet its many applications are found throughout modern life, from scientific research to consumer food preparation. Microwave Techniques knows this market "second to none," demonstrated by its long-term commitment to meeting each customer's unique needs. "Our engineering team can handle any project that comes our way."

www.microwavetechniques.com