

# MEDICAL INDUSTRY MACHINES





At Zemat Technology Group, we are passionate about improving and saving the lives of patients through design and manufacturing high quality, innovative medical devices.

We are a leading global manufacturer of machines and instruments under the WELDMED brand, incorporating thermoplastic welding and bonding for the medical device industry.

In our design and manufacturing process we implement over 60 years of expertise in Radio Frequency welding (also known as RF welding, High frequency welding, Dielectric sealing or Heat sealing), a technology that uses electromagnetic energy to form a permanent bond in polymers, as strong as the original thermoplastic material.

weldmed



***TECHNOLOGY WITH HUMAN TOUCH***





APPLIED  
EXPERTISE  
IN MEDICAL  
PLASTICS  
WELDING &  
SEALING



**SleepAngel**  
Protection from infection

Safeguard against infection  
• Check for visible damage  
• Dispose of pillow if damaged  
Cleaning procedure  
• Disinfect with 70% alcohol, max 1000 ppm active chlorine  
• Wipe off with a water moistened cloth  
www.sleepangel-medical.com



FAST  
EFFICIENT  
CLEAN ROOM  
**SOLID STATE RF**





We provide innovative technology solutions and superior technical support for healthcare industry manufacturers, including Solid State and traditional RF technologies.

Applying highest quality and safety standards in our equipment design, we enhance patient outcomes, and improve the total cost of medical care.

## *MEDICAL MANUFACTURING* **TECHNOLOGY INNOVATION**





Many of our products require highly specialized manufacturing techniques and automation, which in turn require upgrading or customizing equipment. This equipment may be utilized during all aspects of product development and commercialization to drive higher quality, increased output and lower unit costs.

Our ability to design and fabricate high volume rotary, in-line, and other cost reducing manufacturing systems using scalable, modular equipment design is bolstered by equipment specialties that include integrated production systems for RF/Impulse Welding, thermoforming, functional testing, filling (gels), printing, and die-cutting.





HELPING TO DELIVER  
**THE HIGHEST STANDARDS**  
OF MEDICAL CARE





**ADVANCED  
TECHNOLOGY.  
SIMPLE  
SOLUTIONS.**





We provide full manufacturing process validation. Continuously evaluated quality systems ensure strict control of production specifications and timeliness.

Our QC system is compliant with Medical Device Quality System Regulations 21 CFR 820 for Class I, Class II and Class III medical device and component manufacturing.



Additionally, we have extensive experience with Impulse Heat welding, appropriate for applications with non-bipolar polymers and fabrics; Ultrasonic sealing for harder plastics or non-woven fabrics; and Vacuum Forming, used for parts with 3D complex shapes like packaging trays or medical bedding components.

**weLDmed**




## **MEDICAL TECHNOLOGY IN EVERYDAY LIFE**

We provide innovative technology solutions and superior technical support for healthcare industry manufacturers.

Applying highest quality and safety standards in our equipment design, we enhance patient outcomes, and improve the total cost of medical care.

Our ability to perform RF welding on various materials within our ISO Class 8 and ISO Class 7 clean rooms ensures that our customers' medical packaging, product and component solutions are suitable for sterilized medical environments.





Our design, research and development engineers create manufacturing solutions which take customers' ideas from the drawing board to prototype to assembly and completion in quick and cost efficient way.

*BRINGING IDEAS* **FROM CONCEPT  
TO REALIZATION**







## RF Welding Technology / High Frequency Welding Technology)

Radio Frequency (RF) welding, known as Dielectric welding or High Frequency (HF) welding, is the process of fusing materials together by applying radio frequency energy to the area to be joined. Electromagnetic waves are used to heat the material to a point where it begins to melt and form a bond. No external heat is applied. The electrical energy lost in the material is actually absorbed by it, causing its molecules to vibrate raising its kinetic energy or thermal energy. The weld is completed by applying pressure to the bonded area, ensuring a successful seal. The resulting weld can be as strong as the original materials.

WELDMED equipment is used for RF welding on various types of rigid plastics, films and medical grade foams including the following: PET | PETG | PVC | TPU films | Thermoplastic polyurethanes | Open Celled Polyurethanes | LDPE/EVA.

The appeal of RF welding is in the completeness of the weld. Using this method can create very robust hermetic seals. Many welds are subject to pill tests, leak tests, and optical tests to determine that the correct conditions have been achieved.

With RF sealing, everything between the upper and lower dies heats evenly (theoretically). In actual use, however, the dies heat sink the plastic on contact, so a temperature profile would indicate the hottest spot at the interface of the two materials. In bonding, this works to great advantage since the interface is where you desire the most heat.

Other methods, such as thermal, impulse (a switched thermal), and ultrasonics, do not share this advantage. Thermal and impulse temperature profiles indicate the hottest spot is where the dies touch the outside of each layer of plastic, most often degrading the outside of each layer before the interface reaches melt temperature.

Ultrasonics works like a jackhammer, pounding the plastic 20 or 40 thousand times per second. The resulting friction creates heat and thus melts the plastic.

Again, the temperature profile is less desirable than that of RF. These alternative processes are limited in area of seal, lack repeatability of acceptable seal quality, and do not have the ability to tear seal. They are often employed in small area spot seal applications or on products not concerned with appearance, such as screws and loose hardware.

RF welding provides a consistent air tight seal which is crucial for the functionality of medical device packaging. RF welds also evenly distribute stress throughout the material providing a much stronger seam.

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# weLDmed

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[www.weldmed.com](http://www.weldmed.com)



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