

MEDICAL INDUSTRY MACHINES



zemat

Technology Group



MEGA

**100kW HF Welder
for medical mattresses**



Advanced Radio Frequency welding and sealing technology helped the human race reach the Moon. Today, humans are looking in the direction of landing on Mars. The IR heat bonded and HF welded technical textiles and other bipolar RF weldable polymer materials will play a key role in this development.

The healthcare industry requires clean, reliable, and cutting-edge technology for improved patient care and research. At **Zemat Technology Group**, we are passionate about technology development, improving and saving the lives of patients through design and manufacturing high quality, innovative medical materials' converting machines.

In parallel, the quality of any high value product like automobile, boat or a plane must be assured by the perfection of manufacturing. Therefore, we are at the forefront of bonding, HF heat sealing and RF welding technology to develop and deliver **the best quality, efficiency and fabrication cost saving solutions**. Our philosophy is based on technical superiority and service with a "no nonsense" policy. We provide the best manufacturing solutions for the most demanding and **innovative medical, automotive and other industries**.

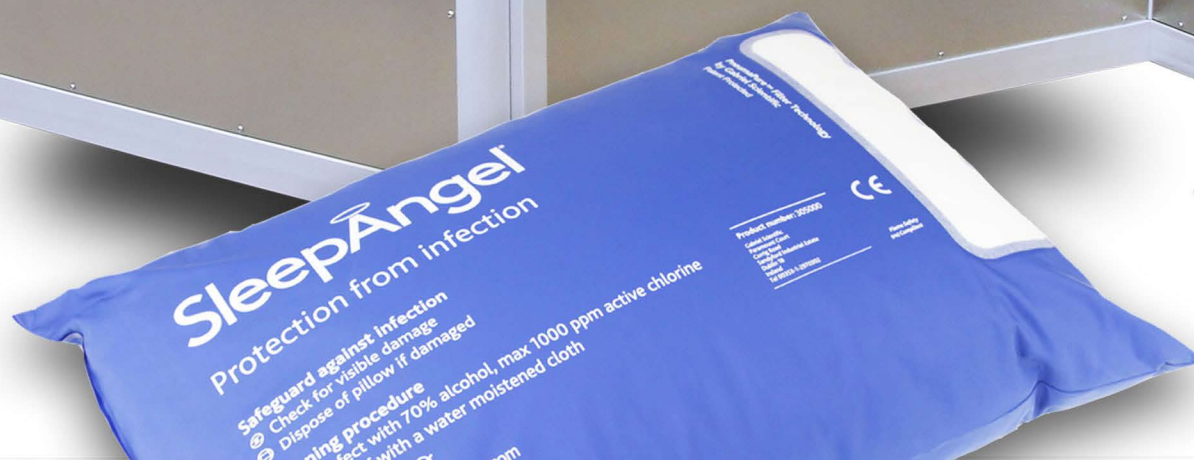
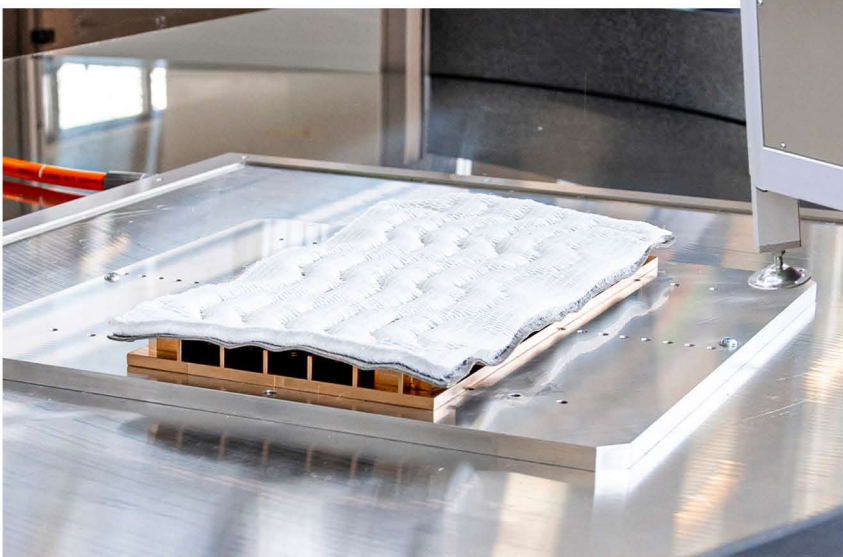
Zemat Technology Group is a **leading global designer and manufacturer** of industrial machines and devices incorporating thermoplastics welding, sealing and cutting technologies, integrated automation projects and customized manufacturing solutions. We strongly believe that providing the right technology and machines, we will enable your company to further improve its manufacturing process, while helping to strengthen your corporate identity. In our development, design and production process we implement over **65 years of expertise** in the Radio Frequency welding and sealing (also known as High Frequency, RF welding, Dielectric sealing), a technology that uses electromagnetic energy to form a permanent bond in polymers, as strong as the original thermoplastic material.

Machines and tools built by Zemat Technology Group are **fully CE/UL compliant** and made in accordance with ISO9001 standards.

MEDICAL TECHNOLOGY WITH THE HUMAN TOUCH

DDPAD





MEDICAL PRODUCTION TECHNOLOGY INNOVATION WITH CUSTOM DESIGN SYSTEMS

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.



**APPLIED
EXPERTISE
IN MEDICAL
PLASTICS
WELDING &
SEALING**

**FAST
EFFICIENT
CLEAN
ROOM
SOLID
STATE RF**

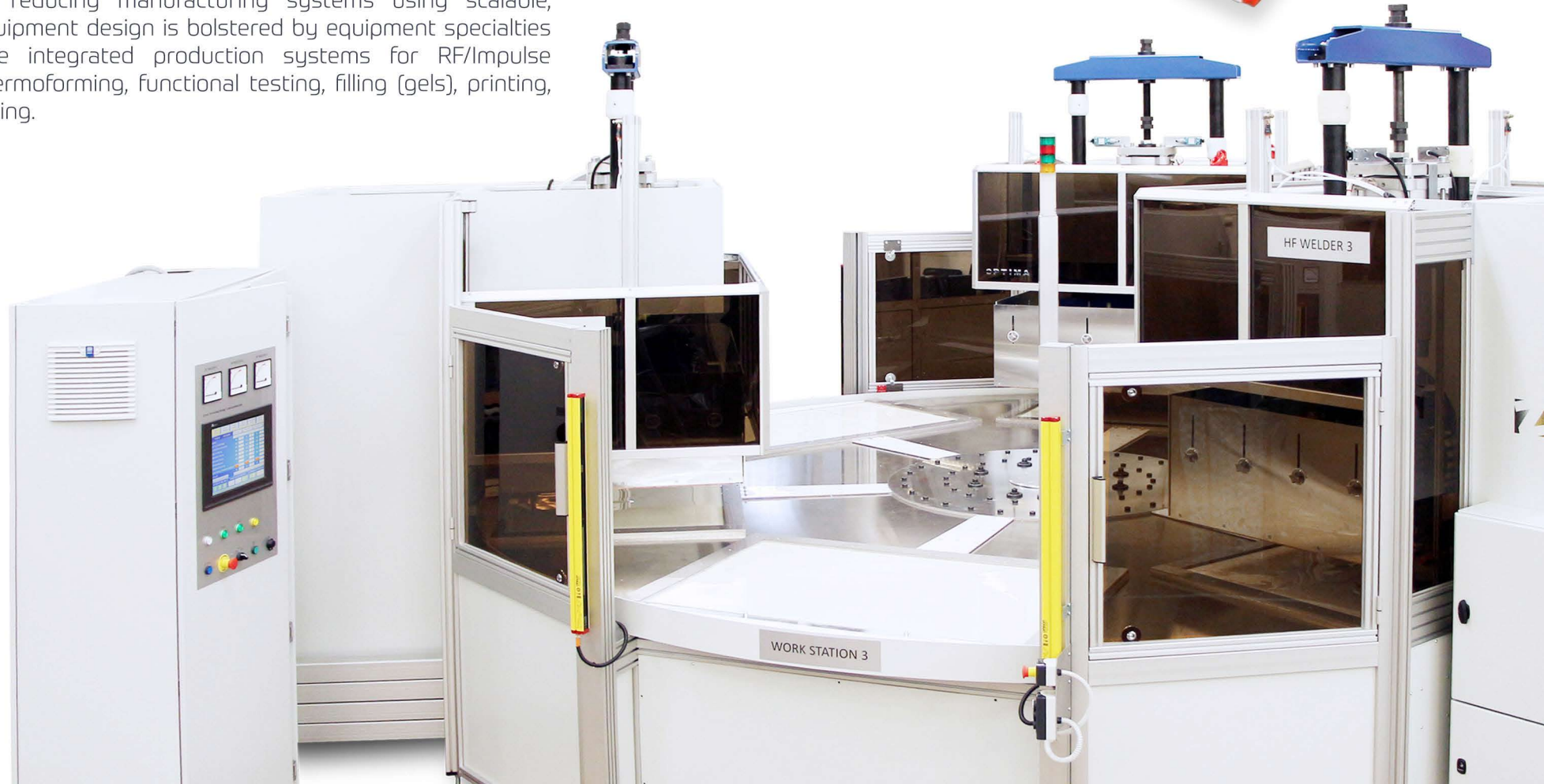




HELPING TO DELIVER THE HIGHEST STANDARDS OF MEDICAL CARE

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.



SOLTRAN SNX

The world's smallest
all-in-one
Solid State Generator
with **Dynamic HF
Matching System**

The new **LDMOS Transistor HF Welders & Sealers** have higher improved linearity and withstand all mismatched impedance, including unpredictable arc conditions. Ultra-fast PIN diode topology DMS Dynamic Matching System™ with full control of reflected power to protect the system semiconductors.

The **Soltran SNX HF generator** with an integrated Pin Diode Dynamic Matching System™ can be integrated with various HF welding systems, hand-held tools and presses. It provides the newest and most innovative solution in the **Solid State based HF welding and sealing technology** as well as unsurpassed flexibility for small HF seals and multi-shape weld combinations.

The matching unit adjusts the input impedance for a quick and precise reaction to the changing load characteristics during the welding cycle. These changes are monitored and recorded to ensure **perfect welding with each cycle**, resulting in enhanced seal quality at lower output power.

Fold back SWR protection allows working with **maximum safe output power** under mismatch conditions and power feedback mode reduces output power variations under the mismatch load.

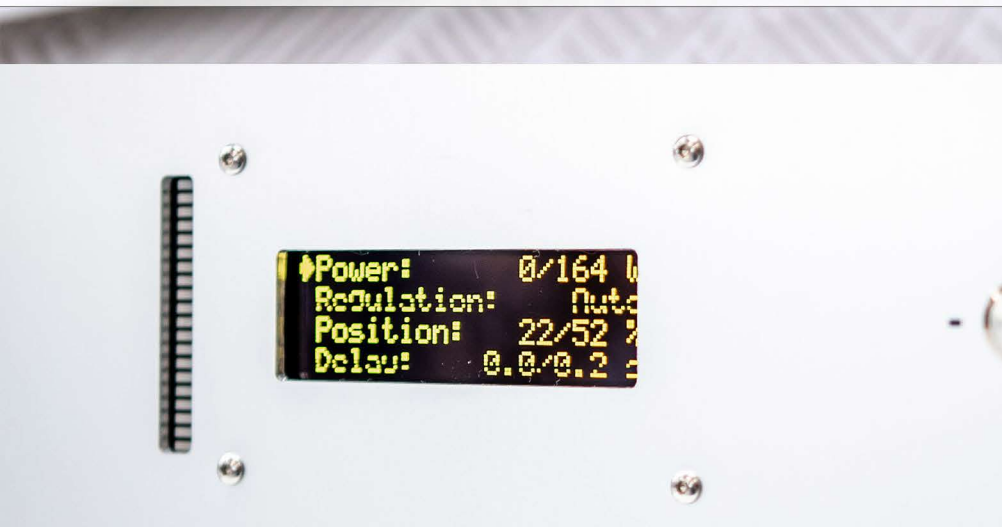


APPLICATIONS

- Precision microprocessor control of output power
- Ultra-fast reflected power control
- Standard 19" Rack mount or tabletop design
- Perfect repeatability of each weld parameters
- Low power consumption and real time power output recognition
- High resistance to vibration and shock, enabling the use in mobile applications
- Microprocessor manual control with touch screen HMI imaging
- Registration and visualization of the welding process
- Unlimited recipes data base
- Ability to work with broad range of HF presses and tools/electrodes

MAIN ADVANTAGES

- Medical tubing, shut-off valves, drainage tubes
- Blood bags, IV bags, urinary drainage bags and body bags
- Blood pressure cuffs and wound evacuation pumps
- Patient ID bracelets and tags
- Catheter forming and tipping
- Hazardous waste containment systems
- Lumbar support, grommets, stem valves in automotive industry
- Custom stationery, packaging solutions





**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.



MEDICAL TECHNOLOGY IN EVERYDAY LIFE

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

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

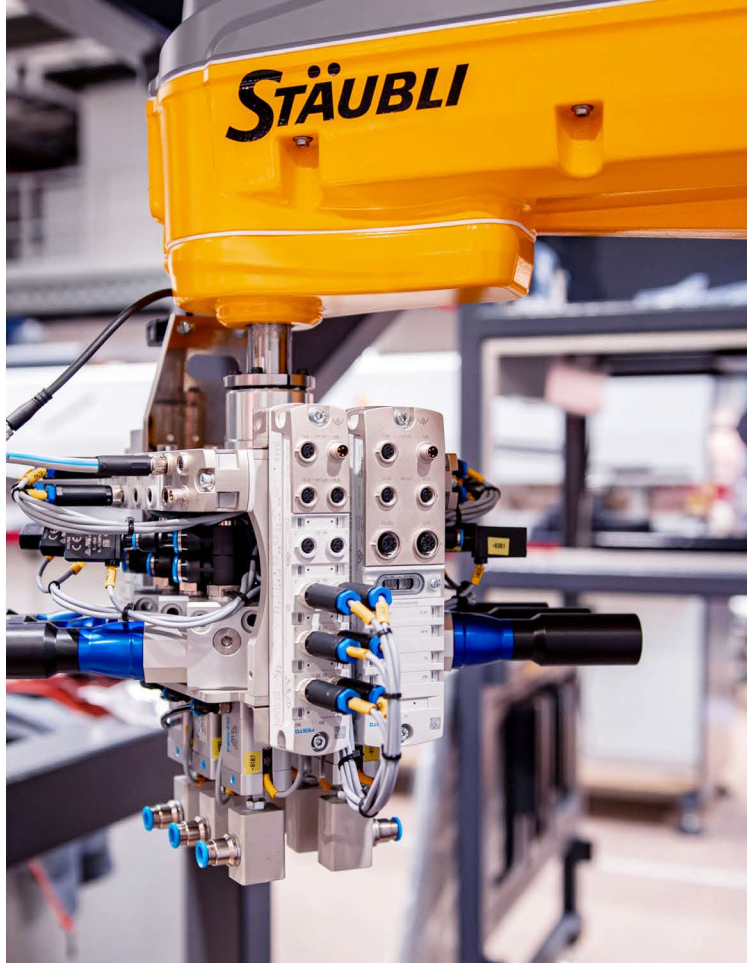
Our ability to perform RF welding on various materials within our **ISO Class 8 and ISO Class 7 clean rooms** ensures that our customers' medical packaging, product and component solutions are suitable for sterilized medical environments.



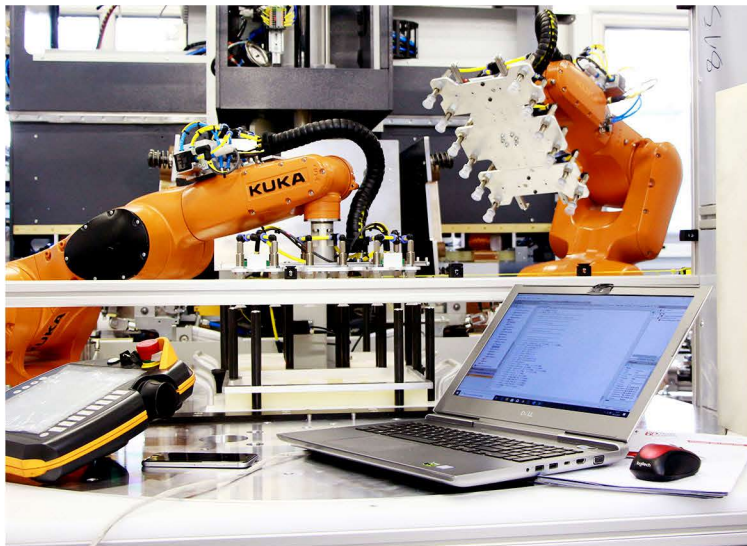
BRINGING IDEAS FROM CONCEPT TO REALIZATION

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.





INTELLIGENT **ROBOTIC SOLUTIONS** WHERE THE HUMAN TOUCH GIVES LIFE TO TECHNOLOGY



The present demanding industrial production environments require the use of the most advanced multi-axis and SCARA robotic systems. Our company designs and builds **fully automatic manufacturing solutions** based on the robotic technology, VR visual recognition modules, precision servo-drives and IQC intelligent quality control systems.

From work cycle support systems to fully automatic production lines the robotic and automation solutions increase productivity, eliminate human error and create eco-friendly work environment. We specialize in **integration of High Frequency welding and sealing technology with robotic systems.**

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.

Zemat machines are 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 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.

zemat[®]

zemat.com