



TUNGSRAM™



**MEDICAL
SOLUTIONS**

by Components and Services

tungram.com

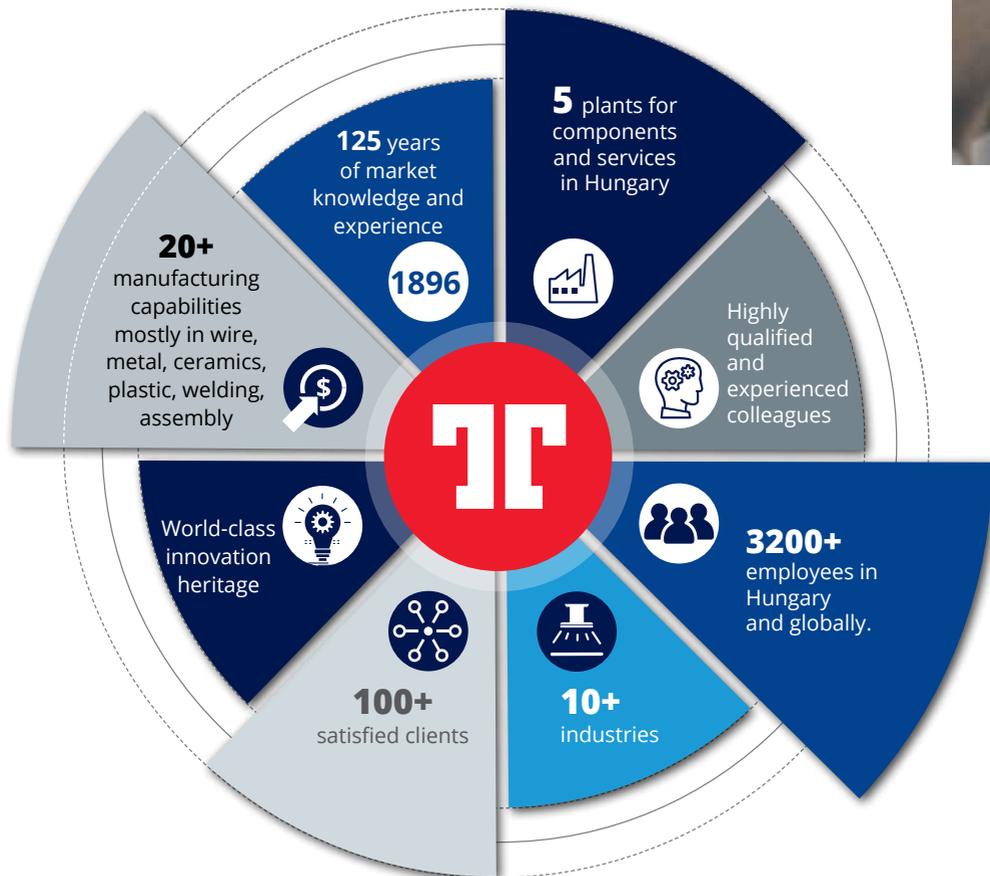


HOW LONG HAS TUNGSRAM BEEN PRESENT IN THE MEDICAL SECTOR?

Tungram's Components and Services business unit was established in April 2018, with the stated objective of leveraging our industrial capabilities and technologies related to traditional lamp manufacturing for the benefit of other companies and to search for new industrial opportunities and market segments. Following the revamp of our company in 2018, and in line with market trends, we wanted to put our

unparalleled engineering expertise and manufacturing capabilities at the service of healthcare. The years that have passed since have proved us right, and we are proud of our successful projects completed so far; our portfolio includes a large number of diverse and exciting assignments ranging from the manufacturing of parts for surgical robots to the assembly of CT machines.

COMPONENTS BUSINESS UNIT IN NUMBERS



TUNGSRAM'S MISSION IN THE MEDICAL SECTOR

The healthcare sector is typically one of the industries where very strict quality standards must be met. Tunggram's track record and tradition in developing professional processes make us outstandingly suitable for adapting these standards. Thanks to our distinguished quality culture, we possess the knowledge required for production, in terms of technology, administration and documentation alike, which led to the implementation of scores of successful

projects in the recent past. Tunggram has in-house professional engineering knowledge based on 6 sigma methodology and extensive manufacturing capabilities, which ensure that we are positioned as one of the most competitive players in the market in various medical technology manufacturing projects.

TUNGSRAM'S PRODUCT PORTFOLIO FOR THE HEALTHCARE INDUSTRY

OUR SUCCESS IN MEDICAL

WIRE

- Manufacturing of multi-use tungsten wire that can be applied in robotic surgeries and built into surgical robots.
- Tungsten wires and shaped probes are widely used in single- and multi-use laparoscopic devices
- Electrosurgeries: use of bent tungsten electrodes
- Our tungsten wire was validated by US Food and Drug Administration

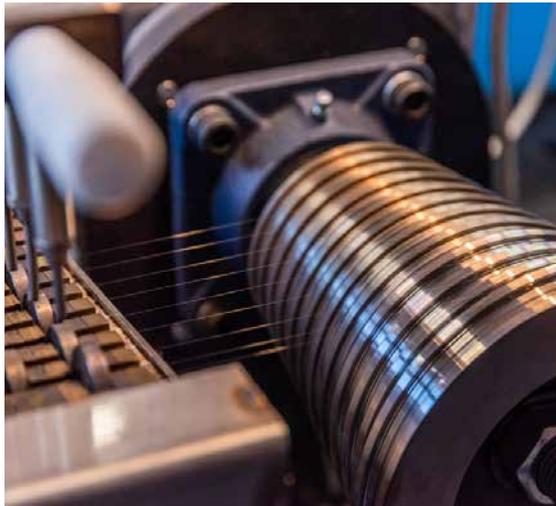


The arguments in favour of Tungram wire production

- Full circle: tungsten production from raw material to the final product
- Tungram has developed in-house process solutions to ensure high capacity and uncompromising quality
- Our wire-cleaning capabilities meet the highest industry standards
- The lowest wire size currently produced is 0.000315 inches (0.008 mm)
- Our tungsten has tailormade mechanical properties and surface finished (black as drawn and electropolished)

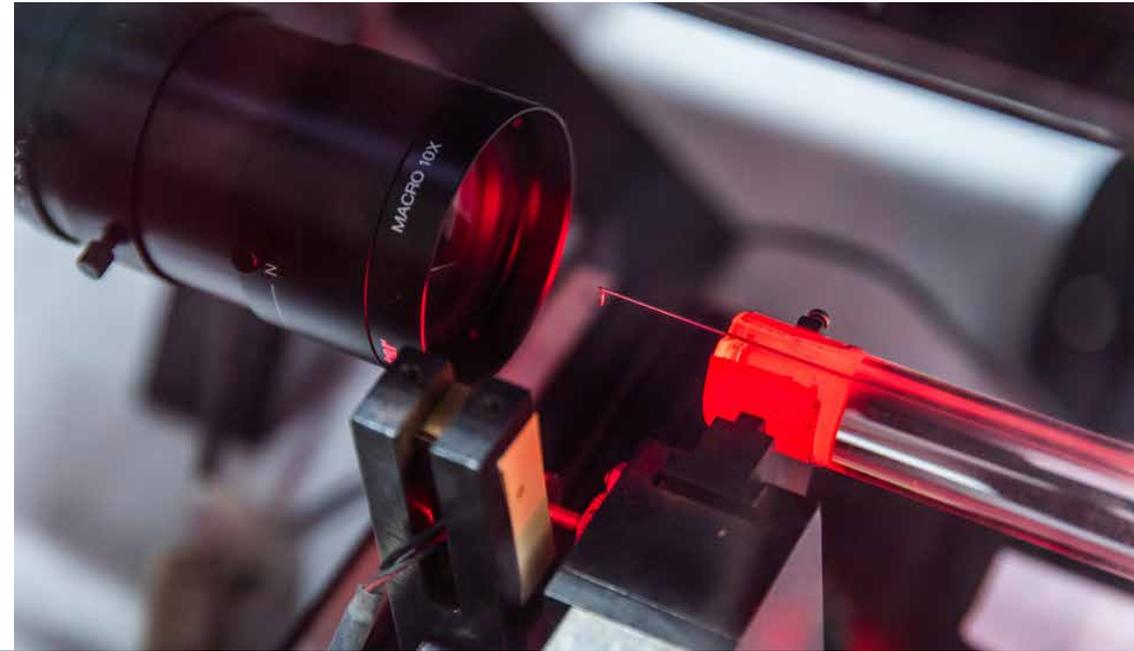
Facts about Tungsten

- Tungsten has the highest melting point among metals at 3370°C (6100°F)
- Tungsten has the highest tensile strength amongst non-alloyed metals at 2965 MPa (430000 psi)*
- Tungsten has the lowest thermal expansion coefficient amongst metals at 4,5α (µm/m°K)



Customer success - Electrosurgery

In addition to the production of tungsten-containing parts, we provide complex services to our customers such as milling, bending, straightening, grinding, cutting, measuring, visual inspection and special packaging.



The success of our services lies in the fact that Tungram fully adapts to emerging customer needs starting from R&D, offers unique and customized solutions, and is flexible in terms of technological developments.





「Client satisfaction - Medical Imaging Equipment」

COMPLEX CAPABILITY STRUCTURE: Welding & NDT – Painting - Assembly

We manufacture components and ancillary products for large and high-resolution **digital medical imaging devices** for our partner. Our service portfolio in the field of medical technology has expanded significantly in recent years.

In addition to **welding and NDT services**, certain processes of electromechanical assembly are also performed by Tungstram.

「Case study - Surgical Robots」

We manufacture tungsten wire with a special composition and high tensile strength for our partners. Our company is a validated, 2nd tier component supplier, who uses our tungsten wire - with a special surface design and composition that is resistant to high mechanical and chemical stress - in their medical devices, mainly in **surgical robots**.

We design our products in line with customer needs, in different sizes, with different diameters, along the given mechanical parameters and according to the predefined surface finish.

Our partners can rely on our experience and expertise in product development, so we conduct professional consultations with both the end user and our direct customers when introducing new products.



Our expertise enables us to assist our partner in the production of welded and assembled units that have a greater than average size and complexity. **We offer best-in-class quality at highly competitive prices!**



OTHER MEDICAL PROJECT BY TUNGSRAM

In addition to medical imaging equipment, we manufacture **parts and components** for other medical diagnostics equipment using metalworking and special materials.

As part of Tungstram's services portfolio, we provide metal cutting, sheet metal forming, welding, painting, plastic injection molding and mechanical assembly services to our partners complying with the highest quality standards, both in terms of technology and documentation.

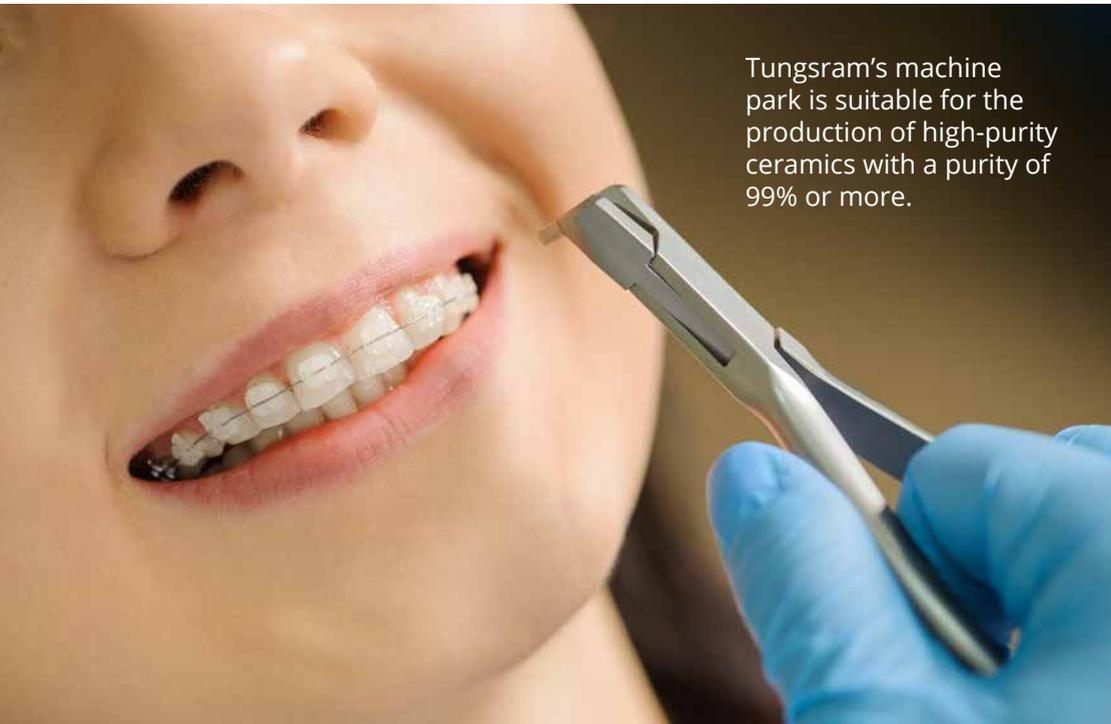


We produce a wide range of **fasteners**, straps and special **binding parts** using stainless steel and a variety of alloys. Our portfolio includes the production of accessories for CT equipment such as the **collimator trolley**, the **homogeneity phantom**, and the **monitor bracket**.

CERAMICS

Tungram's manufacturing portfolio has long included ceramics manufacturing, previously associated with traditional lamp production, now also as a stand-alone activity.

The current product portfolio was launched in 2010, mainly focusing on the production of ceramic raw materials used in dentistry (barstock), and from 2013 also for the sintering of ceramic braces.



Tungram's machine park is suitable for the production of high-purity ceramics with a purity of 99% or more.

The company has world-class sintering capability in H₂ gas (and other gases) at high temperatures. This sintering technology is rare among manufacturers in the EU.

- Powder mixing
- Drying
- Pressing
- Injection molding
- Cutting
- Pre and final sintering
- Grinding



TUNGSRAM'S 50 YEAR-OLD UVC TECHNOLOGY TAKES UP THE FIGHT AGAINST COVID

Tungram is proud to present its latest disinfection device called the UV-C Sanitizer and developed in house using UV technology; the appliance is essential for effective disinfection. The device kills pathogens in a matter of minutes, be it the SARS-CoV-2 (COVID-19) virus or the MRSA, the CRE, or the C.difficile, the most common causes of nosocomial infections.



A unique feature of the device is that it is fully manufactured by Tungram, assembled in our factory in Nagykanizsa and welded by our colleagues in Hajdúböszörmény.



- ISO 14001:2015
- ISO 45001:2018
- ISO 9001:2015
- ISO 50001:2018
- ISO 3834-2

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