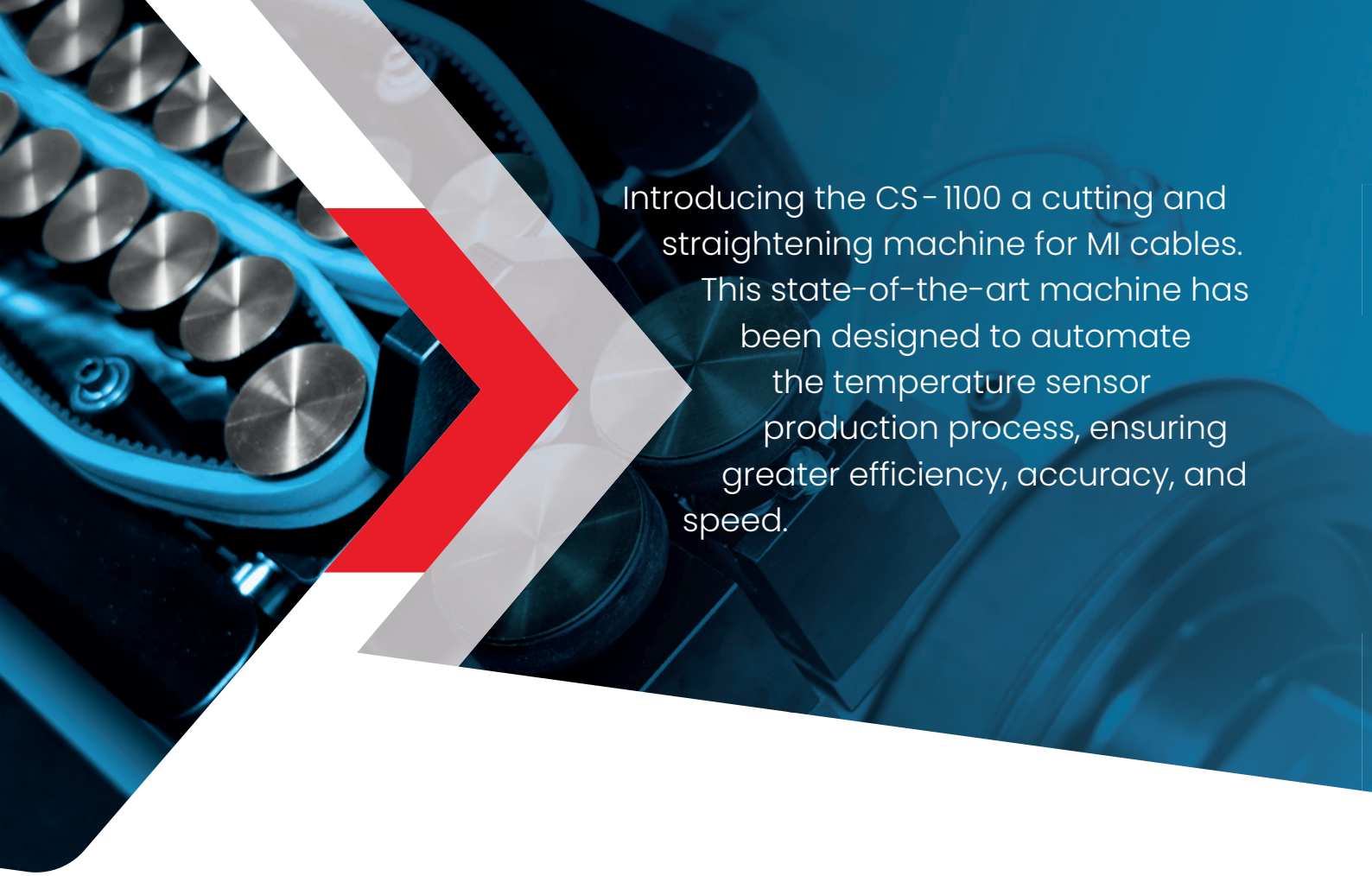
CS - 1100

THE MACHINES FACTORY



Introducing the CS-1100 a cutting and straightening machine for MI cables. This state-of-the-art machine has been designed to automate the temperature sensor production process, ensuring greater efficiency, accuracy, and speed.

Cutting & straightening MI cable

Traditionally, cutting and straightening rigid MI cables has been labor-intensive, requiring skilled technicians. Technical challenges include:

- the outer sheath, combined with the MgO insulation, requires a specific cutting technique to ensure a burr-free product.
- to effectively grind through compact MgO, specialized cutting tools and techniques are required to prevent wear on blades.

These issues not only lead to higher labor costs but also increase the risk of human error, which can compromise the quality of the final product.

The CS-1100 solution

The CS-1100 automates the cutting and straightening process, offering unparalleled precision and consistency. Key benefits include:

- accurate measurements (within 1.0 mm tolerance on lengths >100 meters)
- precision cutting of the MI cables to the required length
- consistency: each cut piece is of exactly the same length and quality
- handling of a wide range of cable sizes (OD between 1.0 mm and 8.0 mm)

This makes the CS-1100 a versatile, cost-saving, and quality-enhancing solution for temperature sensor manufacturing, streamlining production while reducing labor and error.

USP's CS-1100

The CS-1100 delivers precision, uptime, and productivity for MI cable cutting and straightening. Designed for easy maintenance and future upgrades, it keeps downtime minimal and output consistent.

Key technical features

- **High precision** – Burr-free cutting with ±0.2% tolerance, validated via on-site and remote calibration.
- **Flexible range** – Handles 1–8 mm cable diameters (WS-800 available for smaller)
- **Pneumatic clamps** – Reliable, consistent gripping and durability.
- **Ultra-thin cutting disc** – Reduces heat, extends blade life.
- **Encoder quality control** – Guarantees accurate, repeatable cuts.

Productivity & ease of use

- **Automation** – Fully automated, job queue-enabled system reduces labor and errors.
- **User interface** – Intuitive touchscreen with clear alerts.
- **Compact, modular design** – Easy installation and quick part replacement.

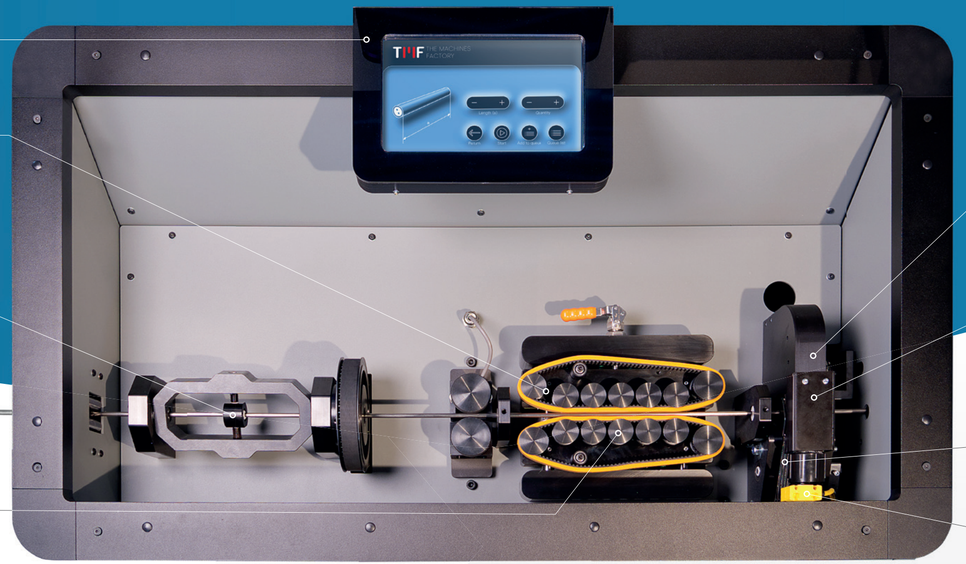
Safety & support

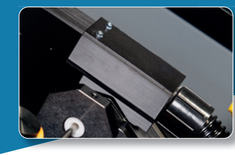
- **CE-Certified safety** – Visible alerts and operator protection.
- **Remote service** – Secure connection for quick calibration and troubleshooting
- **Future-ready** – Pre-installed electronics for easy upgrades.

Reliability

- **Fast parts supply** – Electronics, cutting discs, and bushings quickly available.
- **European quality** – Designed and built in the Netherlands with EU components.
- **Proven solution** – Deployed at multiple sites with excellent results.

High precision cutting & straightening





Vacuum compartment

Cutting disk

Clamping system

Electronics

LCD screen

The machine is equipped with a user-friendly LCD screen and interface, designed to make it easy to operate and monitor the machine during use. The high-resolution LCD screen provides clear and detailed information on the status of the machine, including measurements, cutting length, and cutting speed. The intuitive user interface allows operators to easily adjust settings, input measurements, and start or stop the machine with just a few taps. With its user-friendly design, the LCD screen and interface help to reduce the learning curve for operating the machine and minimize the risk of errors or accidents. Overall, the LCD screen and interface make the CS-1100 a reliable and convenient solution for improving the production process of industrial temperature sensors.

Movement encoder

The movement encoder works by measuring the rotational movement of a wheel that the MI cable passes through, calculating the exact length of cable that has been fed through the machine. This ensures that each cut is made at the precise point where it is needed, resulting in consistent and accurate cuts every time.

Rotary straightener

The CS-1100 straightens the MI cable using a rotary straightener. This works by rotating the MI cable at high speeds while simultaneously applying pressure to straighten the cable. This unique mechanism ensures that the cable is straightened evenly and uniformly, resulting in a high-quality product every time. The PTFE bushings are an integral part of the rotary straightener, ensuring that the cable rotates smoothly and evenly. With regular use, these bushings can become worn. The CS-1100's rotary straightener has been designed with ease of maintenance in mind. Using a unique and straightforward process, the PTFE bushings can be replaced in a matter of minutes, minimizing downtime and keeping production running smoothly.

Feeding system

The feeding system used by the CS-1100 is a standout feature, designed for precision and reliability. The system utilizes two rubber timing belts that apply constant pressure on the MI cable, resulting in a secure grip that ensures the cable moves smoothly through the machine.

What sets this feeding system apart is its ability to compensate for any slippage that may occur during the cutting and straightening process. In the event of slippage, the encoder, which is a part of the machine's unique design features, detects the exact movement of the MI cable and makes the necessary adjustments to compensate for the slippage.

Cutting disk

The cutting disc designed for use in the CS-1100 machine is made of a specialized ceramic material that enhances its performance when working with the abrasive properties of the compact MGO found within mineral insulated cables. Its remarkably thin profile is a key feature, allowing for precision cuts through the MI cable without compromising the integrity of the cable or the precision of the cut. Moreover, this cutting disc is specifically tailored to address the challenge of heat buildup, a common issue when cutting through sheath materials such as AISI310, AISI316, or INC600. Its advanced design minimizes heat generation, ensuring the lifetime of the disc.

Clamp system

We have developed a smart solution to hold MI cables during cutting. The system features a pneumatic clamping mechanism that provides the strength and precision needed for a secure grip, minimizing slippage and ensuring clean, accurate cuts every time.

The design supports a minimum cut length of 20 mm. A slide mechanism directs shorter cut pieces into a basket. Immediately after cutting, air is released around the clamped area, creating a Venturi effect that gently guides the cut piece toward the slide and into the basket.

THE MACHINES FACTORY

Electronics

The smart, user-friendly software in our machine improves efficiency and reduces downtime through key features:

- **Automatic maintenance notifications**
  Alerts for cutting disk or bushing replacement to prevent downtime or damage.
- **Malfunction alerts**
  Flashing lights and on-screen warnings help quickly identify and resolve issues.
- **Queue management**
  Automatically moves from one job to the next, reducing manual intervention.
- **Log files**
  Stores operating data for troubleshooting and maintenance reference.

Purchase or lease

The CS-1100 and its accessories can be purchased outright or obtained through a lease construction. The lease option includes an extensive service contract for the entire lease period. The lease arrangement can be linked to the amount of MI cable you purchase from Kamet, meaning that higher purchase volumes may result in more favorable conditions. If you are interested, we can provide a calculation tailored to your yearly MI cable usage.

Leasing may also offer fiscal benefits, as lease payments are typically considered business expenses and can reduce the taxable profit of your company. This can make leasing an attractive alternative to an upfront investment.

Optional support service

We offer an optional on-site installation and training service. Our training program is designed to help your machine operators use the CS-1100 effectively and safely, and to get the most out of its advanced capabilities. During the training, we will provide a comprehensive overview of the machine and its features, including how to change wear parts such as PTFE bushings and cutting disks. We will also demonstrate how to adjust the machine to different cable diameters, and explain how to optimize performance.

By taking advantage of our on-site training service, you can be confident that the machine is correctly set-up and that your machine operators will have the skills and knowledge needed to get the most out of the cutting and straightening machine.

Accessories

The CS-1100 machine itself is the heart of the system, it's efficiency and functionality can be further enhanced by the following optional accessories:

Spool holder

Feeding the MI cable to a cutting device can be challenging. Especially when dealing with small diameter cables (less than 2.0 mm), which are prone to tangling and inconsistent feeding when not properly organized. Without a designated spool holder, these delicate cables can easily become entangled, leading to interruptions in the production process, increased downtime, and potential damage to the material.

Our SH-600 automatic spool holder solves these issues by providing a controlled and consistent feed of material. The electronically driven spool holder is an innovative and highly efficient tool designed to work seamlessly with the CS-1100 machine. Specifically engineered for handling cables with small diameters, this spool holder addresses the common issue of tangling by providing a designated and controlled mechanism for feeding the material by means of a tension management sytem. This tension management systems features a cable tensioner with a sensor, maintaining the proper tension in the cable as it is fed into the machine. Its integration with the CS-1100 enhances productivity, quality, and operational efficiency.

Collector

The collector is used to neatly collect and organize the straightened cables, making it easy to handle and transport them to the next stage of the production process.

Automate your **production** process **of** industrial **temperature sensors!**

About TMF

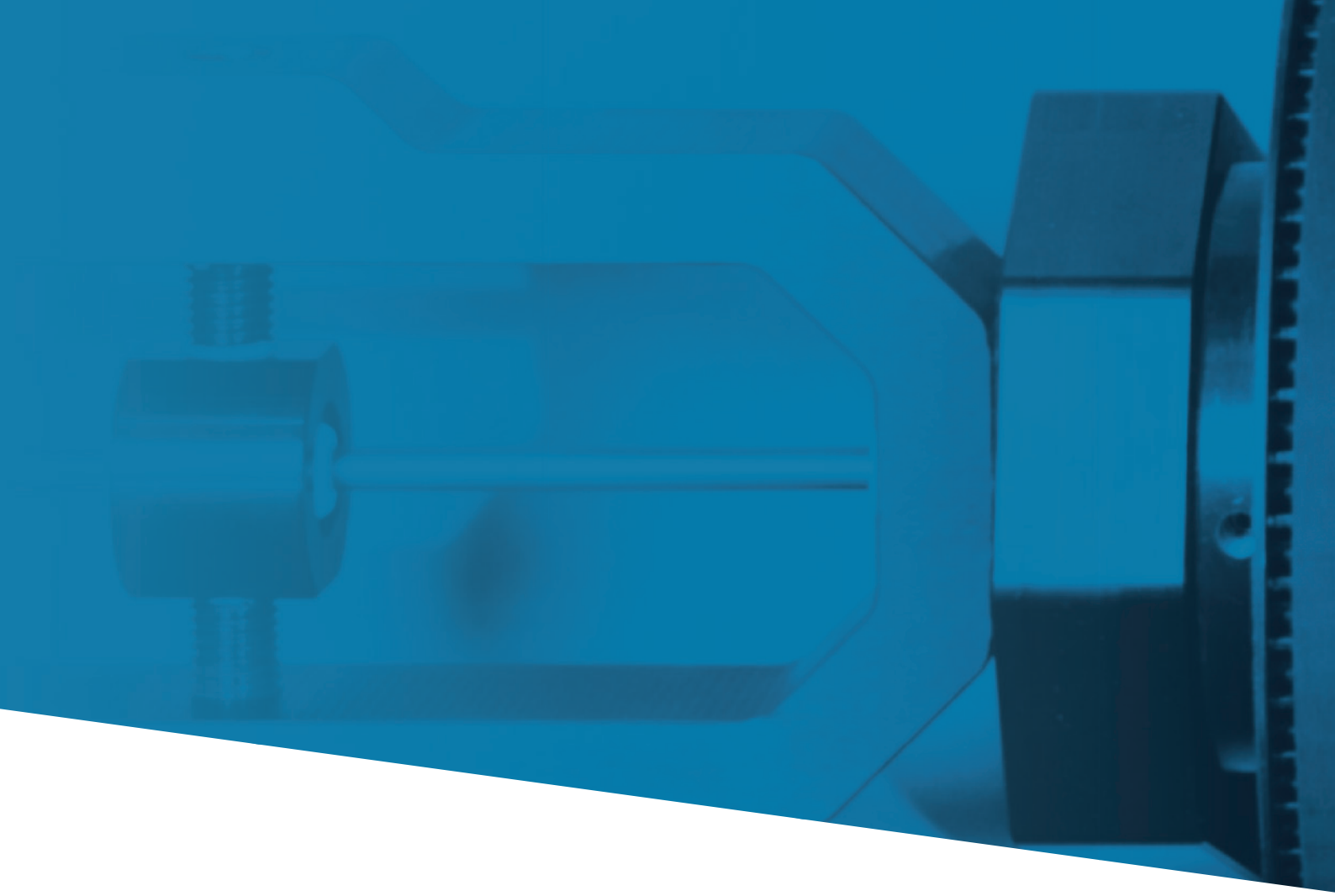
Founded in 2023, The Machines Factory is a Dutch company focused on producing machines that revolutionize sensor automation. Our mission is to produce machines that enable customers to automate their industrial temperature sensors production process , thus reducing the high degree of manual labor and lengthy production times that it usually involves.

We believe that automation is the future of manufacturing, and we're passionate about helping our customers take advantage of the latest technology to streamline their operations, reduce costs, and increase productivity.

The Machines Factory started as a co-creation between Dutch companies Kamet Trading B.V. and Antech Solutions B.V.

Kamet has established itself as a leading supplier in the field of thermal components, supplying an extensive range of high quality products to industrial temperature sensor manufacturers in Europe.

Antech is focused on the research, development and prototyping of machines. Antech aims to fill a critical gap in the market related to system mechatronic development. A gap best described as practical development of future technologies proven in working prototypes.



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