

### Impulse sealing process

This process entails controlling the sealing temperature for a defined time. A constant heating impulse is generated during each cycle, depending on the rate at which the heat sealing band heats up and cools down. This process ensures a repeatable sealed seam quality and high machine output.

### Heat sealing bars with heat sealing bands

Our heat sealing bars are available in straight versions either with or without cooling, as well as for contoured (e.g. rings, corners, bends) or 3D (e.g. tubes, spouts) applications. Our application team performs sealing tests using your specific film and develops a customized tool together with you. Our CAD team designs a heat sealing bar based on your sealing application and machine dimensions.



### Heat sealing band

The heat sealing band is the main component in the sealing process. A heat sealing band which is optimally adapted to the carrier design and the film properties is vital to the success of your impulse sealing system. Like ROPEX heat sealing bars, our heat sealing bands can be supplied in straight versions or with 2D or 3D contours.

### System components

Any additional system components which are required for your heat sealing bars and temperature controllers are individually dimensioned by our support team and described in detail in the ROPEX application report. The ROPEX application report provides the foundation for all ROPEX sealing systems. It contains all important system parameters and connection diagrams as well as a bill of material for all of the components in your system.



### RESM-5 monitoring device

The RESM-5 is an optional add-on for the control loop that enables even greater reliability. It is connected to an existing control system and monitors the maximum temperature with a variable limit function. A exceedance will be registered via the alarm output. This creates a redundant system.



New technical possibilities.

Individual solutions.

As your requirements are unique.

### Know-how & added value

We unlock new technological potential for our customers and generate added value with groundbreaking products and highly efficient solutions.

### Quality & Reliability

Our customers know they can count on us for support – with everyday tasks or highly specialized applications.

### Customized solutions

No two heat sealing applications are the same, and our customers can be certain of getting a made-to-measure solution.

### Security & success

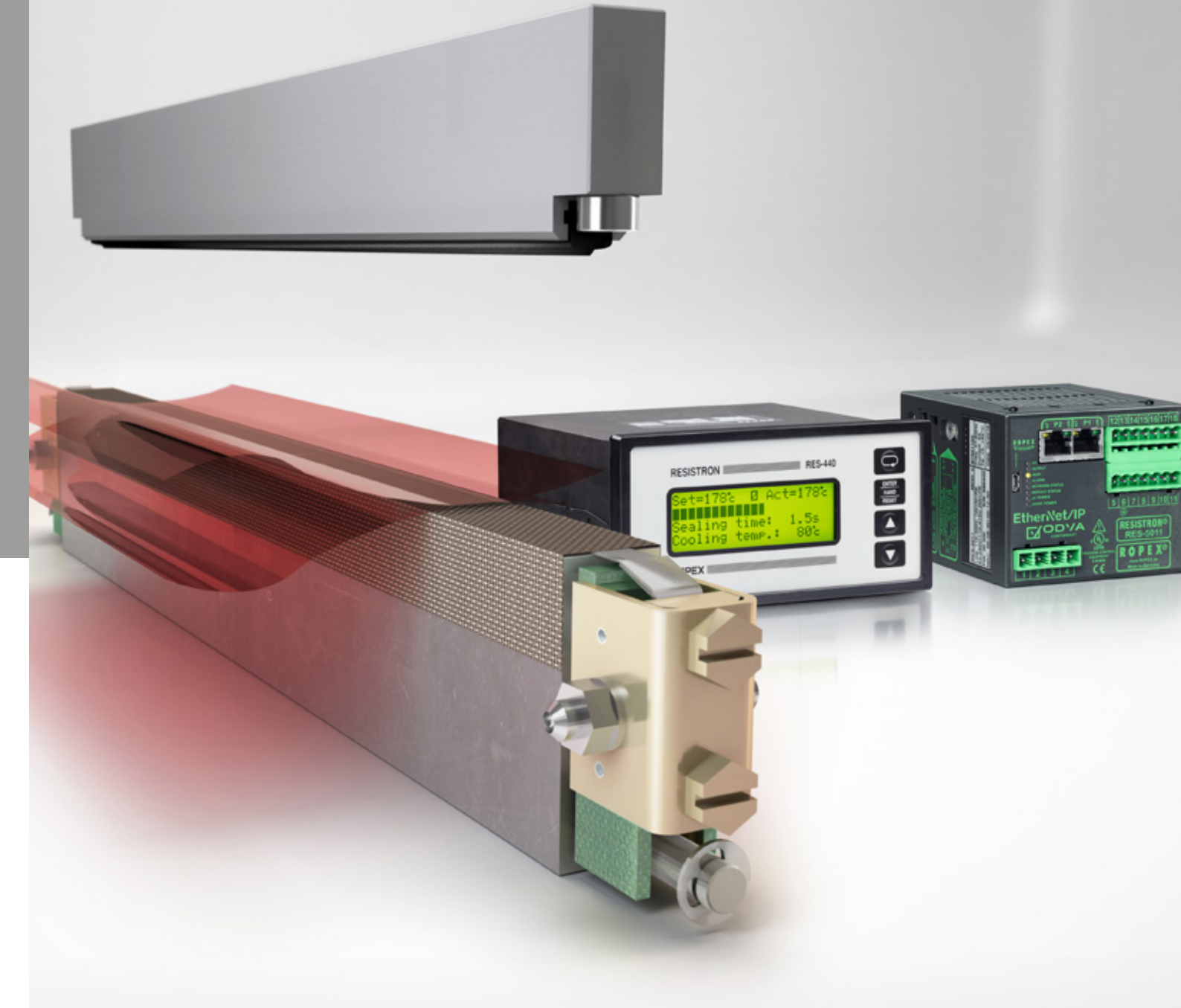
With well-engineered solutions and dependable quality, we provide you with the security you need to make your project a success.

### Speed & accuracy

Our customers value our ability to respond promptly but precisely to their inquiries.

### Partnership & service

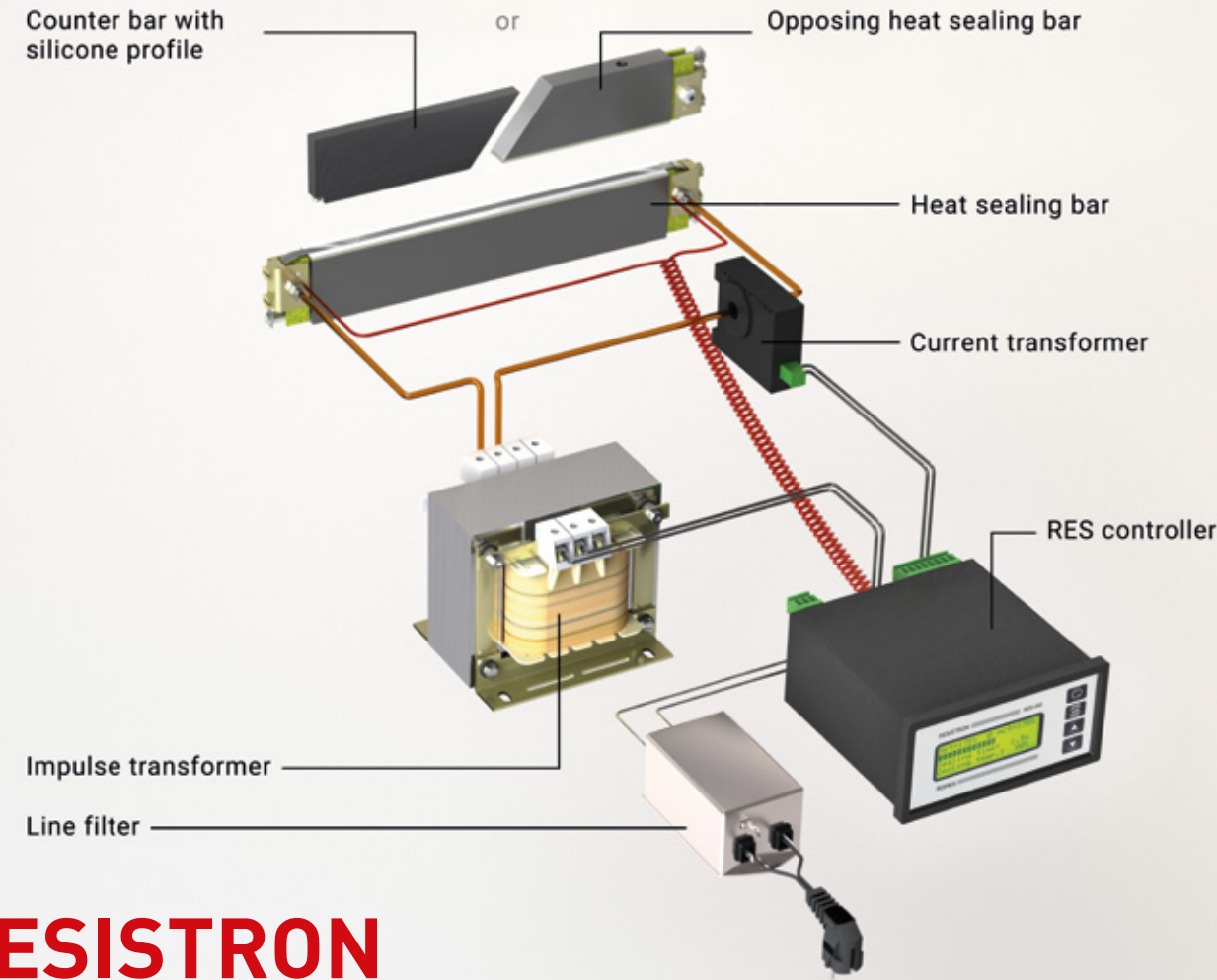
Comprehensive consulting, short lines of communication and tailored system solutions add up to maximum customer focus.



**RESISTRON** – Impulse sealing process with sensorless temperature control for optimal sealing results







## RESISTRON

### RESISTRON impulse sealing system for thermoplastics

Modern packaging has to meet increasingly high quality and visual requirements. Ever faster cycle rates must be reconciled with the thinner and hence more sensitive film types which are in use today. This makes it even more difficult to guarantee a repeatable sealing process.

The "RESISTRON sealing system" developed by ROPEX is a complete system comprised of several application-specific components, of which the RES temperature controller and the RES sealing tool are the two most important. The RES sealing tool is a heat sealing bar with a heat sealing band and a matching counter bar which are tailored to your individual sealing application. By combining it with the system components, you obtain a customized system configuration.

### Five steps to your RESISTRON sealing system

- Enter all relevant technical information in our RESISTRON questionnaire on the ROPEX website.  
→ Our support team will get back to you regarding your inquiry
- We then carry out a feasibility study and clarify any question marks with you.
- If necessary, we produce sealing samples using your specific film to verify your quality and visual requirements.
- Once all of the technical details have been resolved, our support team creates a ROPEX application report for you.  
→ Your ROPEX application report contains all relevant information on your sealing system.
- Finally, you can place an order for your customized sealing system based on the ROPEX application report.




### Applications

RES temperature controllers are normally used together with a sealing tool. However, they are equally suitable for other sealing applications, for instance for controlling hot air systems. Display and top-hat rail versions are available. The display versions are designed for installation in an operator panel and allow you to enter all relevant sealing parameters directly. The display also shows your current settings plus the ACTUAL temperature. The rail mounting version is intended for installation in an electrical cabinet and integrates various functions as well as interfaces to the higher-level machine control system.












### How it works

Extremely precise and fast measurements are essential in order to accurately determine and control the temperature of a heat sealing band. In a heat sealing system with RESISTRON temperature controllers, this is achieved without sensors by measuring the voltage and current at the heat sealing band. The measurements are repeated fifty or sixty times a second. The ACTUAL temperature can then be calculated from the voltage and current values using the heat sealing band's resistance characteristic. It is subsequently compared with the SET temperature and corrected if the difference is not zero. Even very low thermal loads are instantly detected and can be corrected quickly and precisely.

### Display versions



Type	Temperature Adjustment	Display	Diag-nostics	Terminals Alarm	Booster	Features/Applications
 RES-420	Display	● LCD ○ VFD	●	●	●	Simple applications
 RES-440	Display	● LCD ○ VFD / ◆ ATR	●	●	●	Timer functions, preheat
 RES-445	Display / 0...10 V <sub>DC</sub> / ◆ PD	● LCD ○ VFD / 0...10 V <sub>DC</sub> / ◆ ATR	●	●	●	Timer functions, preheat, PLC interface

### Rail mounting versions

Type	Temperature Adjustment	Display	Diag-nostics	Terminals Alarm	Booster	Features/Applications
 RES-401	◆ PD	◆ ATR	—	—	—	Low cost
 RES-402	0...10 V <sub>DC</sub> / ◆ PD	0...10 V <sub>DC</sub> / ◆ ATR	—	●	—	Low cost, simple applications, max. U <sub>2</sub> = 80 V <sub>AC</sub> , PLC interface
 RES-403	◆ PD	◆ ATR	●	●	○	Simple applications
 RES-406	PROFIBUS	PROFIBUS / ◆ ATR	●	●	●	PROFIBUS interface
 RES-407	0...10 V <sub>DC</sub> / ◆ PD	0...10 V <sub>DC</sub> / ◆ ATR	●	●	○	PLC interface
 RES-408	Display	Display / ◆ ATR	●	●	○	Separate operator panel with LED display, preheat
 RES-409	CAN-Bus	CAN-Bus / ◆ ATR	●	●	●	CAN bus interface, preheat
 RES-5010	PROFINET	PROFINET / ◆ ATR	●	●	●	PROFINET interface 
 RES-5011	EtherNet/IP	EtherNet/IP / ◆ ATR	●	●	●	EtherNet/IP interface 

● Standard ○ Option ◆ Accessory  
 LCD Liquid crystal display (green) VFD Vacuum fluorescent display (blue) ATR Analogue temperaturemeter PD Potentiometer

### Special versions

Type	Temperature Adjustment	Display	Diag-nostics	Terminals Alarm	Booster	Features/Applications
 RES-004	Display	Display	●	—	—	Low cost, very simple or restricted applications, LED display, timer functions, burst firing control
 RES-430	Display	LCD	●	—	—	Low cost, simple or restricted applications, closing pressure monitoring, timer functions, secondary control