



**Your leading specialist**  
for cutting and joining  
thermoplastics.

# Impulse Sealing Technology by ROPEX

1-1 What we do

1-2 Case Study

1-3 ROPEX impulse technology at a glance

1-4 Your advantages with us

1-5 This is ROPEX

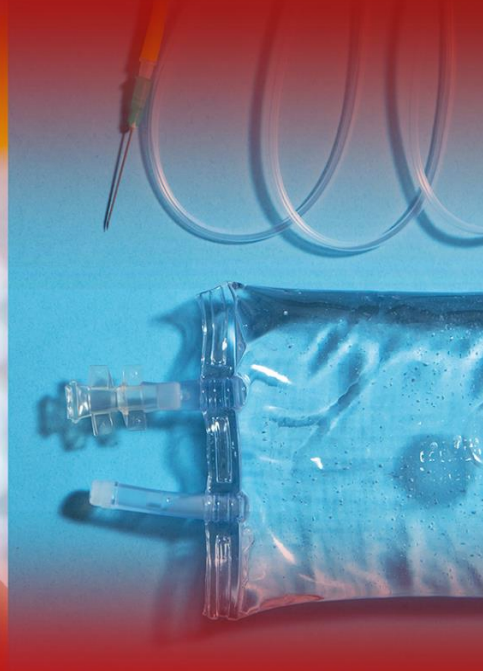
# ROPEX Application Segments



**CONSUMER  
GOODS**



**HEALTH**



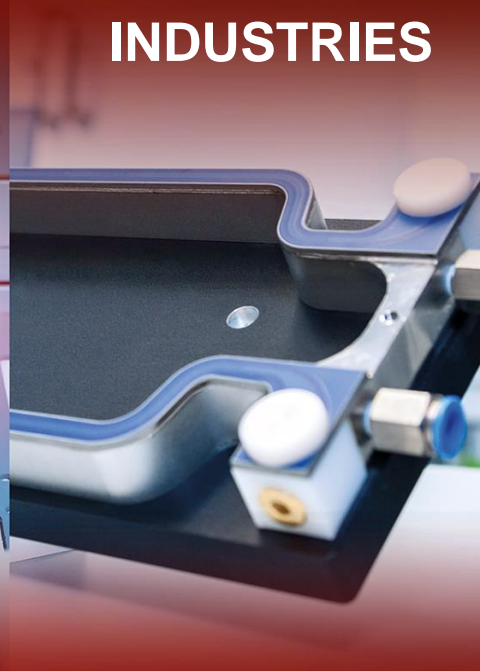
**AUTOMOTIVE**













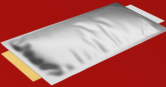

**BATTERIES**



**DEVELOPING  
INDUSTRIES**



# ROPEX Application Segments

|                              |   |  |  |  |
|------------------------------|---|--|--|--|
| <b>Consumer goods</b>        |    | <b>Food &amp; beverage</b>  | <b>Personal hygiene</b>     | <b>Infant care</b>    |
| <b>Health</b>                |    | <b>Medical sciences</b>     | <b>Pharma sciences</b>      | <b>Life sciences</b>  |
| <b>Automotive</b>            |    | <b>Transportation</b>  | <b>Aerospace</b>   |  |
| <b>Batteries</b>             |   | <b>Electric vehicles</b>   | <b>Other applications</b>  |  |
| <b>Developing industries</b> |  | <b>Tech start-ups</b>  | <b>Energy</b>  | <b>Semiconductors</b>  |

# Impulse Sealing Technology by ROPEX

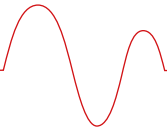
1-1 What we do

1-2 **Case Study**

1-3 ROPEX impulse technology at a glance

1-4 Your advantages with us

1-5 This is ROPEX



# Pillow packaging

## Customer requirements:

- Sealing tightness against leakage after sealing.
- Uniformed seam quality throughout 450mm length.

## Challenges:

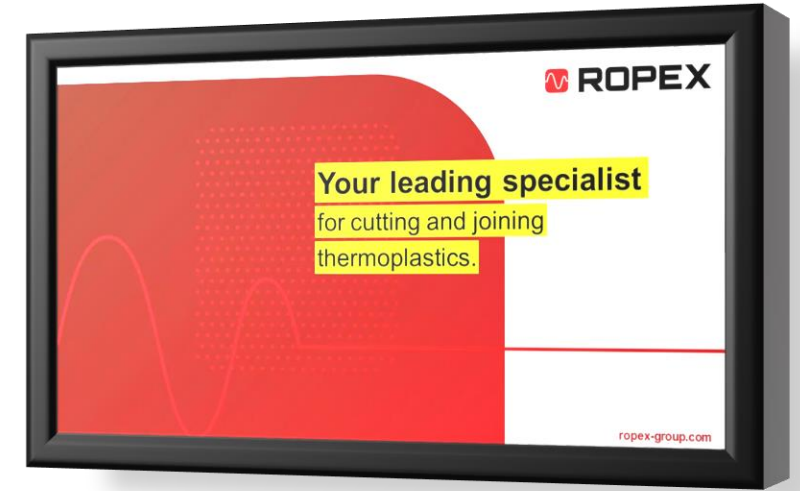
- Restoration force from pillow to impact seam open despite mechanical press.
- Several layers due to not precise stretching jig.
- No change of machine structure and other process like stretching tool.

## ROPEX solution:

- CIRUS system with active cooling to help seam to be tightened quickly

## Customer benefits:

- **Perfect sealing quality:** no leakage despite unexpected several layer jump occurring (even 4 layers).
- **No warm-up phase for the tools:** Thanks to impulse technology, there is no need for a warm-up phase. This enables faster commissioning and helps to increase overall efficiency and save energy.
- **One sealing condition:** No need to change sealing condition everyday.
- **Uniformed Seam quality:** CIRUS sealing band provides uniformed sealing temperature over the active zone.





# Organic film sealing for detergent pods

## Customer requirement:

- Seal water-soluble bio-film (PVOH) along the longitudinal seam at regular intervals.

## ROPEX solution:

- Designed a RESISTRON sealing tool with a suitable counter-layer as well as a temperature controller.
- Film is fed evenly through the machine to create the pods in the next step.
- Active temperature control allows the heat input to the film to be actively influenced, ensuring consistent quality with each impulse.
- Risk reduction of injury to employees in the event of machine maintenance. Since the tools are heated exclusively during the impulse, there is no risk of burns during a tool change.

## ROPEX benefits:

- High employee safety – no risk of burns during a mold changeover.
- Process stability.
- A high-quality, smooth seam.
- Active temperature control.
- A customized overall solution.
- Easy maintenance.



# Eurohole

## Cut & seal in one step

### Customer requirement:

Cut & seal in one step and no production of loose parts.

### ROPEX solution:

Developed a CIRUS- tool with integrated contoured heating rail. The tool also has an integrated cutting device.

### Customer benefits:

- Increase in the number of cycles.
- Format-independent, no tool change necessary.
- Independent of material.
- Reproducible process.
- High seam quality: firm and smooth.
- Cut & Seal in one step.
- First pouch marketable.
- Easy maintenance.





# Packaging for frozen food

## Customer requirement:

- Increase the output of their existing vertical form, fill and seal machine (VFFS) for packaging frozen food.

## ROPEX solution:

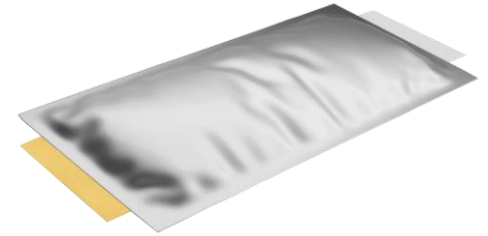
- Configured a CIRUS impulse sealing system from standard components that operate all common interfaces for process automation. Therefore, our system can be easily integrated into their packaging process.
- CIRUS allows the highest heating and cooling rates to be achieved, resulting in the shortest possible processing times to speed up the packaging and sealing process – with their existing packaging machine.
- The customer also gained flexibility in terms of materials and formats, since the machine parameters can be changed quickly and different film formats can be sealed without changing tools.
- Most importantly, CIRUS allows our customer to guarantee sealing of the highest quality.

## Customer benefits:

- More rapid packaging and sealing process.
- Flexible in terms of materials and formats, since the machine parameters can be changed quickly and different film formats can be sealed without changing tools.
- Highest quality: clean, smooth and reproducible seam without irregularities.
- Fast changeover, due to standard components.
- No new machine purchase.



# Sealing pouch cell



## Customer requirements:

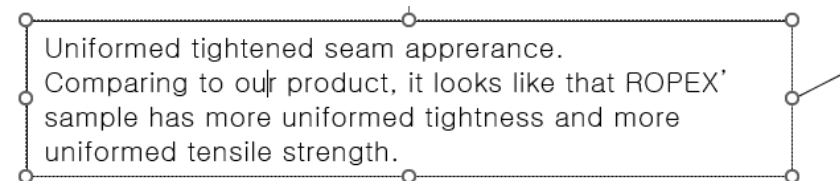
- Seal the sides of the pouch cell.
- Compensate the layer jumps caused by sealing in the tabs.
- Low heat input on the packaged goods, since the seam is located directly on the cavity of the pouch cell.

## ROPEX solution:

- Sealing tools that are heated on both sides and controlled with two control circuits.
- The soft silicone pad under the heating bands compensates for the difference in height between the tab and the film, ensuring a consistently tight seam.
- The system heats up quickly and cools down again quickly. In addition, the heat input into the sensitive packaging material of the pouch cell is minimal and the unit can also be used in confined production spaces.
- In the first production step, the three sides of the pouch cell, including the tabs, are sealed together. Then the fourth side is sealed after degassing.

## Customer benefits:

- No warm-up phase of the system required, seam tight from the first cycle.
- Repeatable sealing results from cycle to cycle.
- Fast, precise control as no external sensor is required.
- Minimal heat impact on the product.
- Independent temperature control of each heat-sealing band.
- Fast heating and cooling of the system, due to the low mass of the heat-sealing band.



## A Customer feedback

# Sealing prismatic cell

## Customer requirement:

- Sealing insulator film to terminal cover, sides and bottom with spot sealings.

## ROPEX solution:

- One heat-sealing tool per seam.
- Multiple heat-sealing tools with one circuit system possible.
- Compact design of the heat-sealing tool tailored to the specific application.

## Customer benefits:

- No warm-up phase of the system required, seam tight from the first cycle.
- Repeatable sealing results from cycle to cycle.
- Fast, precise control without need for an external sensor.
- Minimal heat impact on the product.
- Fast heating and cooling of the system, due to the impulse sealing technology.



# Splicing Changeover

## From manual to semi-automatic process

### Customer requirement:

- Customer wants to validate this process and wants to convert the reel change process from a manual to a semi-automated process.

### ROPEX solution:

- Developed a suitable RESISTRON sealing tool that was optimized for the process parameters, such as material, pressure and time, in order to produce a repeatable sealed seam.
- Users make settings directly on the display control of the temperature controller. The tools then automatically seal the two roll ends together so that production of the medical bags can continue without interrupting the material.

### Customer benefits:

- Consistent quality: fulfillment of the repeatability of the sealing process through partial automation for satisfactory sealing results.
- Technical support: Before, during and after implementation, the application engineers are on hand to provide technical advice and support during implementation.
- Flexible use: If the process parameters are changed, the tools and settings on the temperature controller can be easily adjusted.
- Energy efficiency: energy-saving technology ensures, it only consumes electricity during use.



# Vacuum packaging of baking yeast

## Customer requirement:

- Minimizing waste during vacuum sealing baking yeast in its Vertical Form Fill Seal (VFFS) machine.
- Effective correction of creases or layer jumps, which led to a reduction in seam quality.
- Limited space in the packaging machine for the tools.
- Create a stable seam, as vacuum sealing exerts high pressure on the seam immediately after sealing.



## ROPEX solution:

- Development of five RESISTRON systems that can be easily installed in the machine.
- Double-sided heating tools that the heat penetrates the film evenly.
- Silicone profile underneath the heating bands to compensate wrinkles or layer jumps to improve seam quality.

## Customer benefits:

- Reduction in vacuum loss: Vacuum loss has been reduced from 3% to 0.3%.
- No warm-up phase for the tools: Thanks to impulse technology, there is no need for a warm-up phase. This enables faster commissioning and helps to increase overall efficiency and save energy.
- Higher quality seams: The integration of a silicone profile underneath the heating tapes ensures effective compensation for creases or layer jumps, resulting in higher quality seams. In particular, the pellets in the seam area are evened out, which improves the end product quality.
- Uniform vacuum seams: Thanks to the tools heated on both sides, uniform heat input into the film is ensured, resulting in homogeneous seams.
- Reduction in production costs: The reduction in waste contributes directly to a reduction in production costs.
- Minimal downtime during the retrofit: The selection of suitable system components enables a smooth retrofit process with minimal downtime.

# Impulse Sealing Technology by ROPEX

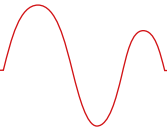
1-1 What we do

1-2 Case Study

1-3 **ROPEX impulse technology at a glance**

1-4 Your advantages with us

1-5 This is ROPEX





# Impulse Sealing Technology

a technology with external heat input to the packaging material

constant heat hot jaws

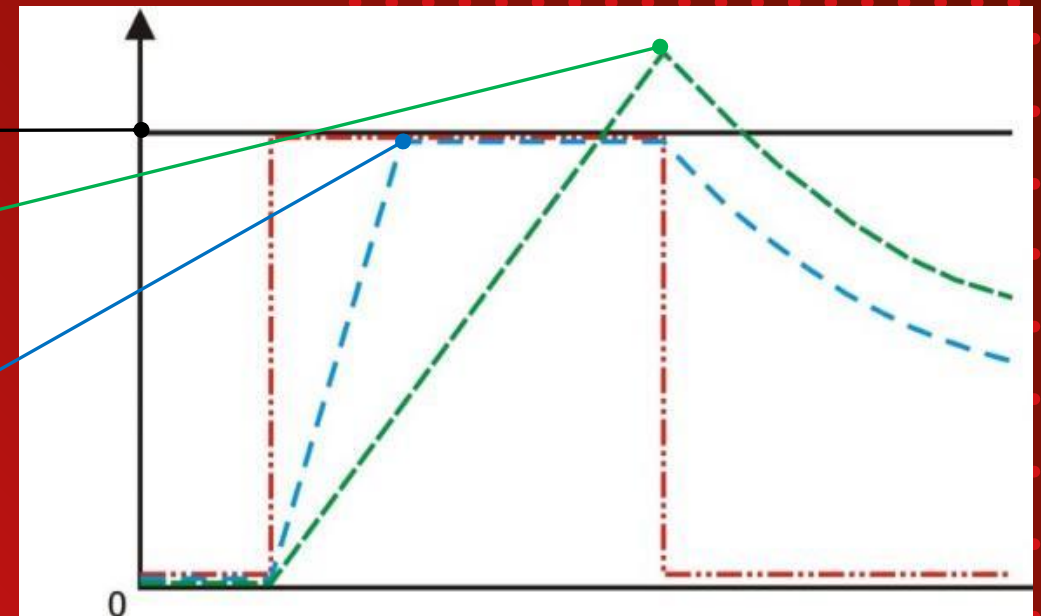
sealing band time measuring

sealing band temperature controller

ROPEX impulse sealing technology

Other technologies with external heat input to the packaging material:

- Constant heat
- Hot air (contactless)



sealing

cooling

sealingcycle

# RESISTRON System

## Heat-sealing Band Solutions

1 Counterpart with silicone profile

2 Opposite heat-sealing tool

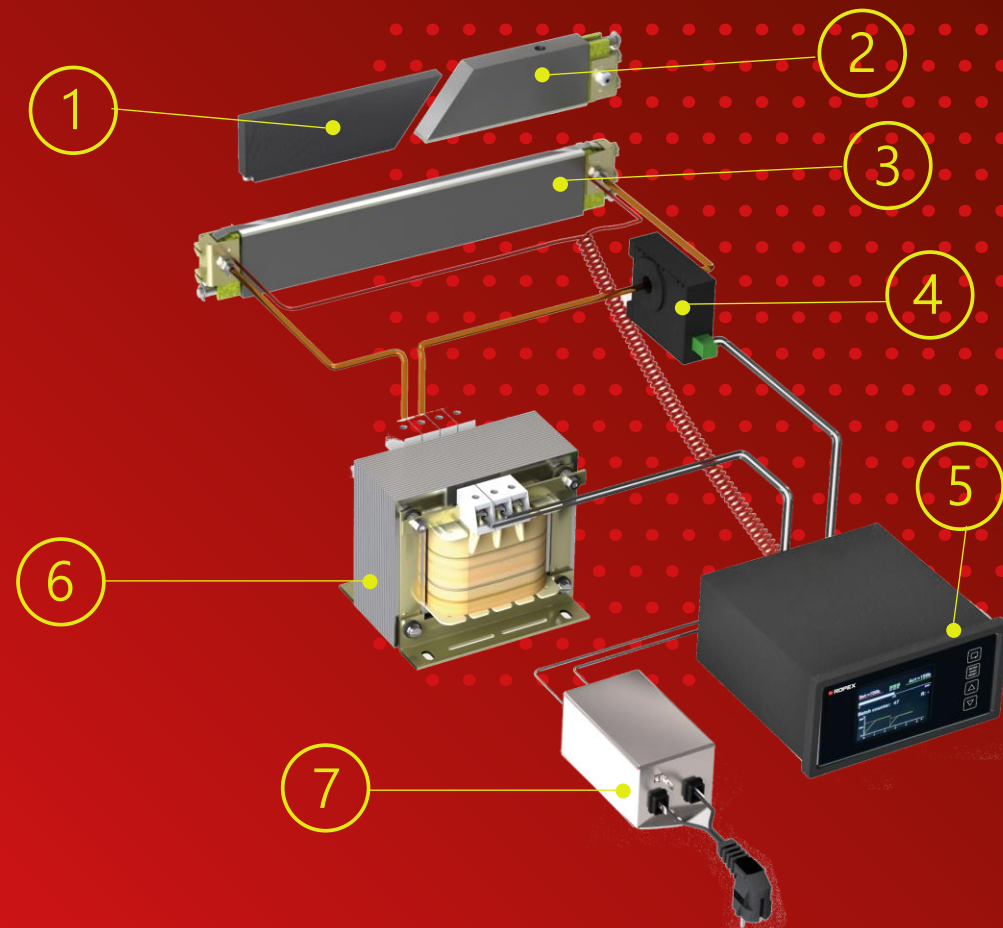
3 Heat-sealing tool

4 Current transformer

5 Temperature controller

6 Impulse transformer

7 Line filter



# CIRUS System

## Ceramic Heat-sealing Solutions

1 Silicone retainer with profile

2 UPT heat-sealing tool

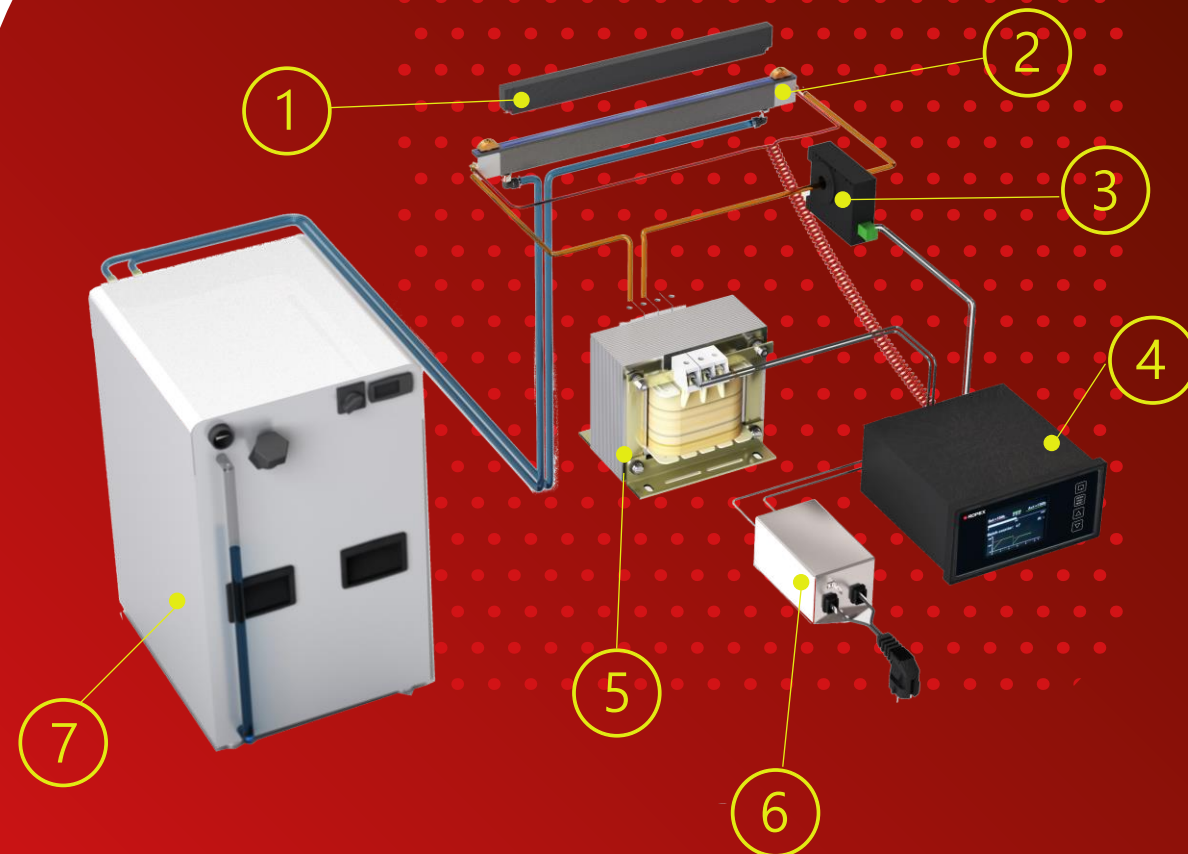
3 Current transformer

4 Temperature controller

5 Impulse transformer

6 Line filter

7 Cooling unit



# Technology Comparison

## RESISTRON – Heat-sealing band technology

- Active length almost without restrictions (about 7 m already realized)
- Active width almost without restrictions (about 40 mm already realized)
- 1D, 2D and 3D (Spout, tube etc.) possible
- Useful up to approx. 80 cycles per minute
- Suitable to layer jumps (flexible heat-sealing band)
- Cooling of the seam possible
- Cut & Seal-applications with various solutions (cutting wire, beaded band, combination band, silicone profiles for cutting)
- Both sided heat possible (thick films, inserts between film layers, ...)

## CIRUS – Ceramic heat-sealing technology

- Active length limited to max. 1 meter
- Active width limited to max. 6 mm
- 1D and 2D possible
- Useful up to approx. 120 cycles per minute
- Partly suitable to layer jumps
- Ultrafast cooling of the seam (due to direct cooling of the heating line) possible.
- Cut & Seal-applications with various solutions (silicone profiles for cutting, cutting device)
- No movable parts
- Independent of format (due to direct cooling)
- Easy cleaning (maintenance-friendly)
- Humidity-resistant (FS-tools)

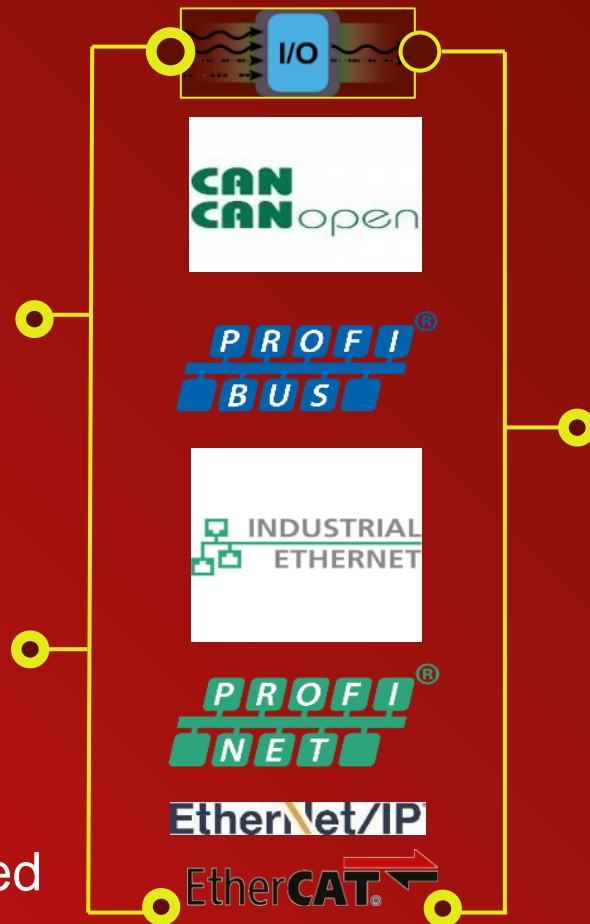
# Connected to the World



Cabinet Mounted



Frontpanel Mounted



ONLINE DIAGNOSTIC SERVICES



# ROPEX Online Diagnostic Services

Cabinet Mounted

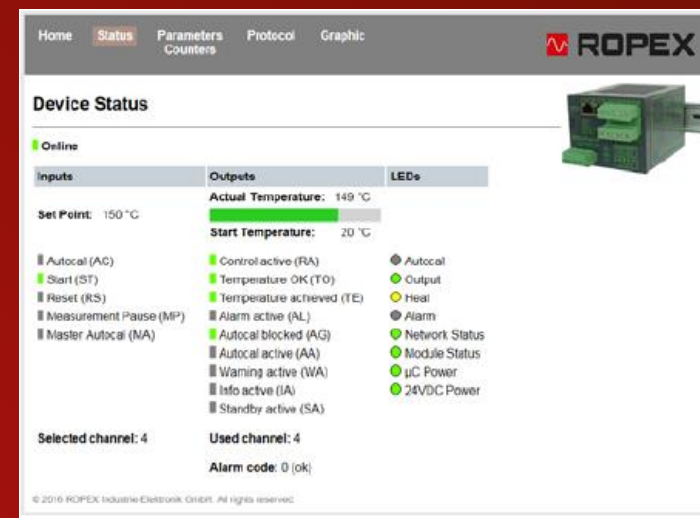
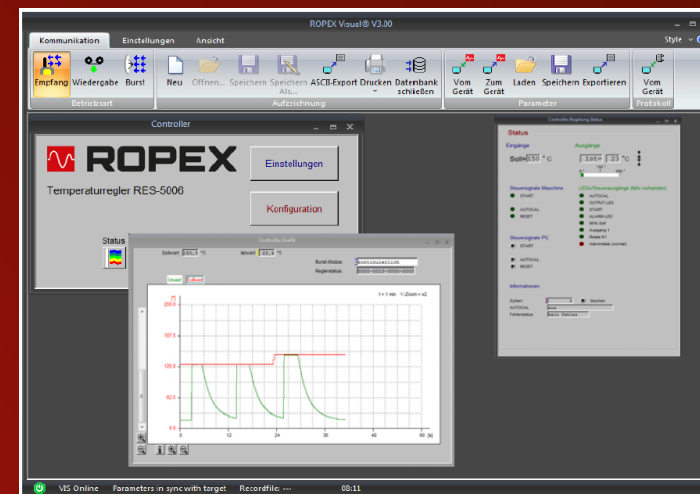


Frontpanel Mounted

Controller and sealing diagnostics via ROPEX Visual



Controller integrated ROPEX webserver application





# Impulse Sealing Technology by ROPEX

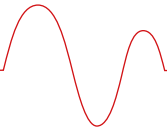
1-1 What we do

1-2 Case Study

1-3 ROPEX impulse technology at a glance

1-4 **Your advantages with us**

1-5 This is ROPEX



# Benefits for your Application

- ✓ Precise and fast temperature control (RES & CIR)
- ✓ Repeatability of sealings (RES & CIR)
- ✓ No warm-up phase (RES & CIR)
- ✓ Defined heat sealing areas (RES & CIR)
- ✓ Reduction of excess film length next to seal (RES & CIR)
- ✓ Cut & Seal in one process step (RES & CIR)
- ✓ Minimum heat impact on product (RES & CIR)
- ✓ First bag sellable at machine start-up (RES & CIR)
- ✓ Enables higher machine output (RES & CIR)
- ✓ Operational & Job safety (RES & CIR)
- ✓ High temperature dynamics (mainly CIR)
- ✓ Active seal cooling (mainly CIR)
- ✓ Independence of bag size (CIR)
- ✓ Reduces energy consumption (RES)

# ROPEX supports your Challenges

- ✓ Tailored components fitting your target system
- ✓ Integration engineering support
- ✓ On-site machine start-up support
- ✓ Attend at customer acceptance test
- ✓ Help to meet regulations
- ✓ Support on process validation
- ✓ Training and coaching of operational staff
- ✓ Creation of customized documentation



# Impulse Sealing Technology by ROPEX

1-1 What we do

1-2 Case Study

1-3 ROPEX impulse technology at a glance

1-4 Your advantages with us

1-5 **This is ROPEX**

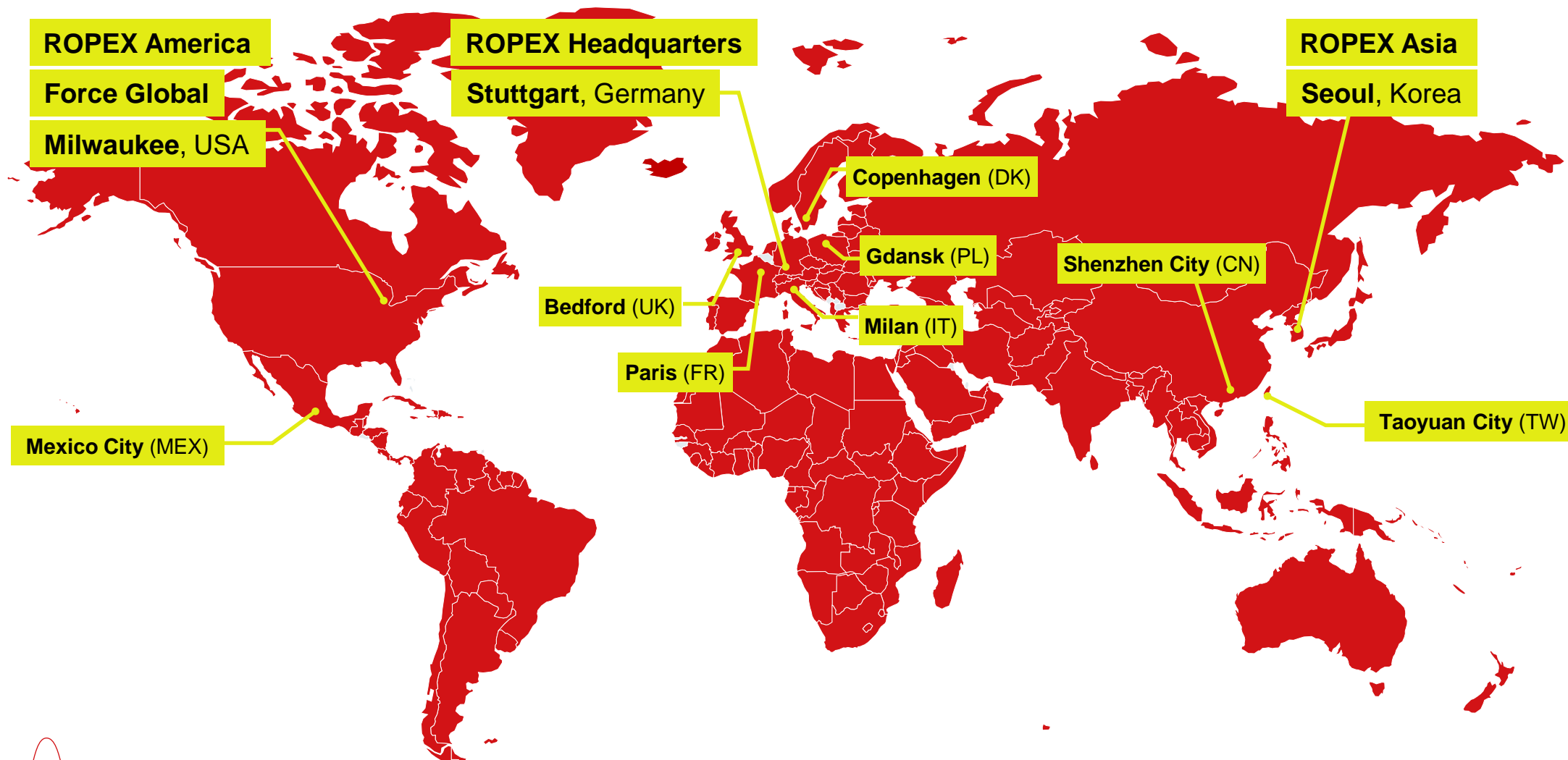
# ROPEX

## Facts & Figures



- Founded 1976
- Located in 20 km North of Stuttgart
- ~80 Employees in Germany, North America and Asia
- 1/3 customer engineering
- Research, Development, Production and Assembly - *Made in Germany*
- ~1200 active customers p.a. in ~70 countries
- Serving all industries world-wide
- Global partners for on-site support

# ROPEX weltweit





**Shaping together.**

**Growing together.**

**Being together.**