Heat-Sealing Technology
Peel-Off Solutions for the Metal Packaging Industry
1 Introduction of Gebrüder Leonhardt Blema Kircheis

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1 Introduction

TRADITION

• established in 1861 by engineer, inventor and pioneer Erdmann Kircheis
• today the oldest existing manufacturer for metal packaging machinery worldwide

INNOVATION

• modern facilities
• engineering, parts manufacturing and assembly all on site in Germany
• experience and flexibility
• 100 % family-owned and -managed
1 Introduction

**Product range (metal packaging)**

- complete end lines
- traditional deep-drawn steel can lines
- three-piece can making lines for food and aerosol cans
- twist-off and PT-cap making high-speed equipment
- high-speed embossing equipment for food and aerosol cans
- seaming equipment
- heat-sealing machines for metal ends and cans
1 Introduction

Product range (composite can making)

- membrane sealing machines
- cardboard bottom sealing machines
- composite can making machines

MARKET LEADERSHIP
Technology
Peel-off explained
2.1 Peel-off explained

**Peel-off / Easy-Peel**

_key advantages for the customer_

- very low opening forces (7..15 N)
- no risk of injury
- easy access to the product
- tamper evidence
- modern image to the can

C O N V E N I E N C E
2.1 Peel-off explained

**Peel-off membrane**

- **Environment**: O₂, water vapour, dust, light
- **Protective / Print Layer**: Al, SiOₓ, EVOH, PVDC, xPET
- **Barrier Layer**: PE, PP, sealing lacquer
- **Sealing Layer**: inside of package, N₂, flavours, water vapour

**Retortable** - heat-sealing to PP-coated or lacquered tinplate

**Non-retortable** - heat-sealing to plain or lacquered tinplate
Technology
Heat-sealing explained
2.2 Heat-Sealing explained

Heat-Sealing

is the firm joining of a thermoplastic sealing layer of a packaging material to a suitable partner using

- Energy
- Time
- Pressure
2.2 Heat-Sealing explained

**Heat-Sealing**

by means of heated contact tooling only

**disadvantages:**

- heat-dissipation through the metal (excellent heat conductor)
- the heat is supplied from outside and is not created within the sealing layer

→ bad distribution of heat, long sealing times
→ danger of burning the membrane or tinplate lacquer
2.2 Heat-Sealing explained

**Heat-Sealing**

using *inductive pre-heating*

advantages:

+ usage of stored energy within the metal for the sealing process
+ gentle and controlled temperature distribution
+ very short sealing times of ~ 80 ms

**HIGH PERFORMANCE**
2.2 Heat-Sealing explained

**Heat-Sealing**

using *elastomeric heat-sealing stamps*

**advantages:**

+ compensation of irregularities of the sealing surface
+ sealing over welding-seam possible

**RELIABILITY**
Applications and Equipment
Peel-off end
3.1 Peel-off end (POE)

- classic peel-off solution for metal packaging
- membrane sealed to preformed metal ring

+ retort-applications possible
+ can be seamed by traditional
  and available equipment
+ proven solution with many
  applications
- high initial investment
- high material cost
3.1 Peel-off end (POE)

- new development – transparent retortable peel-off ends
e.g. for fish cans
- introduced in Europe for premium sprats in oil products
3.1 Peel-off end (POE)

next generation machine RHO IV from Blema Kircheis

- indexed machine in rotary design
- performance up to 300 epm
- round and non-round formats up to D127
- fully servo-driven working stations and state-of-the-art process monitoring
  + high flexibility due to quick format change system and modular design
  + high reliability
  + ability to run retort and transparent membranes
  + economical price and small footprint

Available in 2014
3.1 Peel-off end (POE)

**turn-key solution by Blema Kircheis**

- end line for round or non-round formats
- transfer press for ring forming
- heat-sealing machine
- conveying and bagging
Applications and Equipment
Direct-sealed metal can
3.2 Direct-sealed metal can

membrane sealed directly to the top of the can

+ huge material savings (omission of ring)
+ savings in equipment / initial investment
+ no reduction of opening diameter

leak tightness (helium flow rate):

max. \(2 \ldots 3 \cdot 10^{-7} \text{ (mbar \cdot l) / s}\)

burst pressure up to 1.2 bar
3.2 Direct-sealed metal can

Metal Can Sealing Machine **RHO III**

- continuously running turret design
- performance up to 300 cpm
- optional integrated plastic capping module
- optional membrane embossing
3.2 Direct-sealed metal can

• won acclaimed German Packaging Award in 2013

**Best Packaging Machine**
3.2 Direct-sealed metal can

**PROCESS**

- **MEMBRANE COIL**
- **MEMBRANE EMBOSsing**
- **MEMBRANE CUTTING**
- **CAN BODY**
- **HEAT-SEALING**
- **OVERCAP APPLICATION**
- **DIRECT-SEALED CAN** *(OPTIONAL WITH OVERCAP)*
- **PLASTIC OVERCAP**

**OPTIONAL**
3.2 Direct-sealed metal can

**ledge-sealing** – direct-sealing of a membrane to a ledge created from the can by deep beading and flattening
3.2 Direct-sealed metal can

**GAMMA II Modular Can Maker**

1) deep beading module
2) bead flattening module

**RHO V Metal Can Sealer**

direct sealing to recessed ledge
Applications and Equipment
Push’n’Peel
3.3 Push’n’Peel

**Push’n’Peel**

- patented technology by Blema Kircheis
- unique twist to easy-peel

![Push'n'Peel image 1](image1.png)

push’n’peel end

![Push'n'Peel image 2](image2.png)

push’n’peel direct-sealed can
3.3 Push’n’Peel

- stackability
- inner pressure supports sealing area
  → reliable closure
- plastic cap for protection and reclosability

sealed can with inner roll
sealed can with outer roll
can with outer roll sealed on the roll
Thank you very much for your attention!

contact information:

Sebastian Leonhardt

s.leonhardt@blema-kircheis.de

www.blema.de