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PACKAGING IS CHANGING.
IS YOUR EMPTYING CHANGING AS WELL?
Adaptive blister emptying for the requirements of the PPWR

Are you familiar with the new “Packaging and Packaging Waste Regulation” (PPWR)?

And more importantly: Are your current emptying processes prepared for it?

A whitepaper for production, engineering, quality assurance and technical decision-makers.

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1. The rules are changing

Pharmaceutical packaging systems are undergoing a fundamental transformation.
With the PPWR and the increasing focus on recyclable mono-material blisters, not only materials and designs are changing – but the entire process chain.

2. The material behaves differently

For blister emptying, mechanical behavior is critical: stiffness, elasticity, recovery behavior and separation characteristics differ significantly from conventional composite materials.

The result:
Established processes are reaching their limits – particularly in terms of process stability, product protection and reproducibility.

3. The machine must respond

The new generation of emptying systems addresses these changes with adaptive mechanics, precise control systems and integrated process monitoring.

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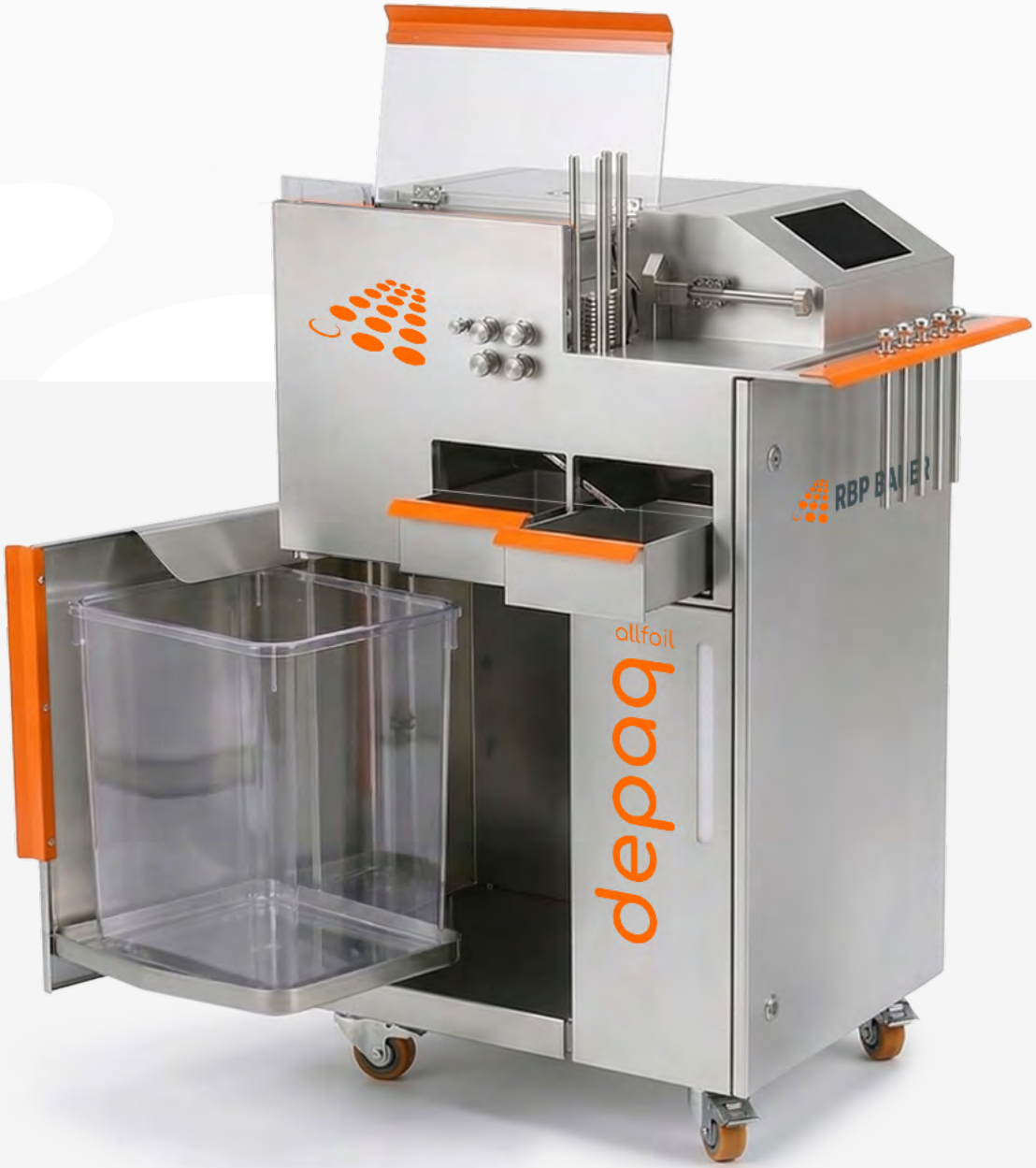
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allfoil

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Introducing depaq allfoil

From stable composite materials to dynamic mono-materials.

Existing emptying systems are optimized for defined material properties. Mono-material blisters fundamentally change this basis – and require adaptive process control.

With the new RBP BAUER depaq allfoil, you are not just reacting – **you are prepared.**
You secure your processes – **even with changing material properties.**

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Conventional blister vs. mono-material blister

Why existing processes must be rethought

	Conventional blister (composite)	Mono-material blister (PPWR-driven)
Material composition	Multi-layer (e.g. PVC/Alu, Alu/Alu)	Single material (e.g. PP, PET)
Stiffness / Flexibility	Defined stiffness	Often more flexible or elastic
Return behavior	Low recovery (material remains deformed)	Partially highly elastic
Trench characteristics	Defined delamination	No classic delamination
Force required for opening	Relatively constant force requirement	Variable, material-dependent
Process stability	High process stability	Initially lower / variable
Product protection (tablets, etc.)	Controlled product protection	Risk due to uncontrolled deformation
Machine Request	Mechanically optimized, low adaptability	Mechanical + control-based adaptability
Need for digitization	Optional digitalization	Essential

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From material challenge to machine requirements
Significantly altered opening and separation behavior → **Force application must be adapted**
Elastic recovery behavior → **Controlled opening becomes more complex**
Lack of delamination → **New opening mechanisms required**
Variable material properties → **Adaptive force profiles necessary**
Unstable process conditions → **Higher control requirements**
Increasing demands on product protection → **More precise guidance and force control required**
The consequence: **A mechatronic approach replaces purely mechanical solutions.**

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Executive Summary

- Mono-material blisters change mechanical properties
- Conventional emptying systems reach their limits
- Process stability decreases with variable materials
- Adaptive systems provide new reliability
- Digitalization increases efficiency and transparency

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Mono-material blisters change the process – not just the packaging.

When material behavior, opening characteristics and recovery forces change, the emptying technology must actively respond.

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Stability through intelligence

Predictive Maintenance
Data-driven maintenance instead of reactive service interventions.

Integration into production environments
Seamless connection to existing IT and production systems.

Remote service
Faster support, reduced downtime, more efficient service.

Process monitoring
Transparent condition data, clear parameters and reliable diagnostics.

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Adaptive emptying as the new standard

1. Adaptive force profiles

Material-specific process control instead of rigid mechanics.

2. Precision mechanics

Controlled opening sequences and minimized product stress.

3. Intelligent control systems

Process monitoring, diagnostics and reproducible parameters.

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Deblistering
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