



New converting methods – laser die-cutting

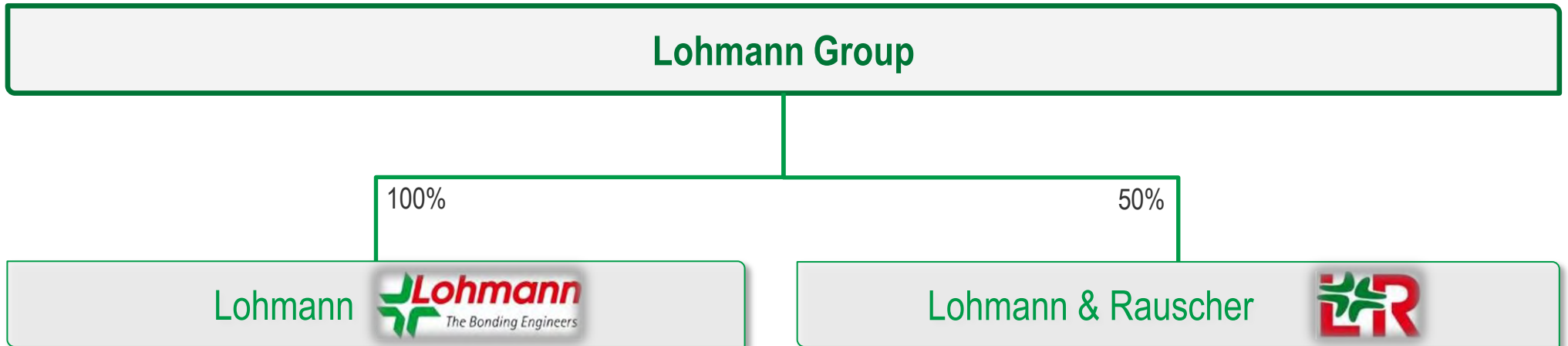
P.Harendt, E-AE, 2018



Agenda

- Lohmann – The Bonding Engineers
- General overview Converting-methods
- New converting method – Laser die-cutting

The Lohmann Group – Structure



Facts & Figures:

- Founded in 1851
- Employees worldwide: ~1800
- International Subsidiaries: 29
- Sales Partners in more than 50 countries



Facts & Figures:

- Founded in 1998
- Employees worldwide: ~4000
- International Subsidiaries: 36
- Sales Partners: 130



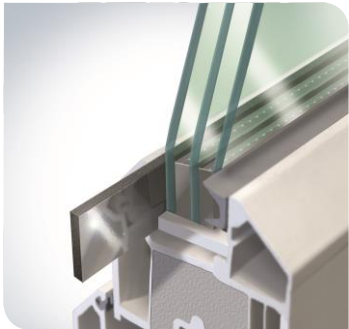
Lohmann Group – Think globally, act locally!



**Available in all key markets:
our production technologies.**

- Sales Office, Coating & Converting
- Sales Office, Converting & Die-cutting
- Sales Office

Lohmann – Market Segments

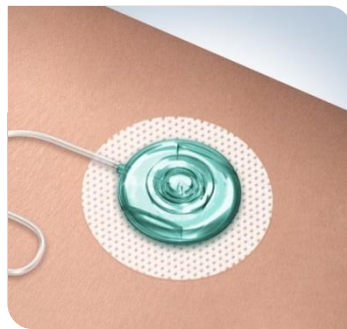


**Building &
Renewable
Energies**

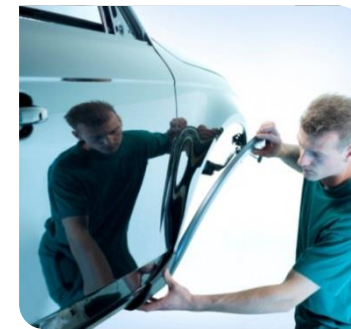


**Consumer Goods
& Electronics**

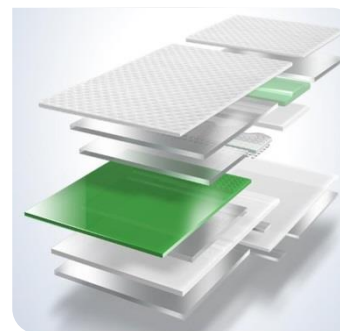
Medical



Transportation



Graphics



Hygiene

Flexibility by Lohmann means: individual performance modules

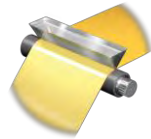
Or everything from a single source



Polymerisation



Formulation



Coating



Converting



Laminating



Die-cutting



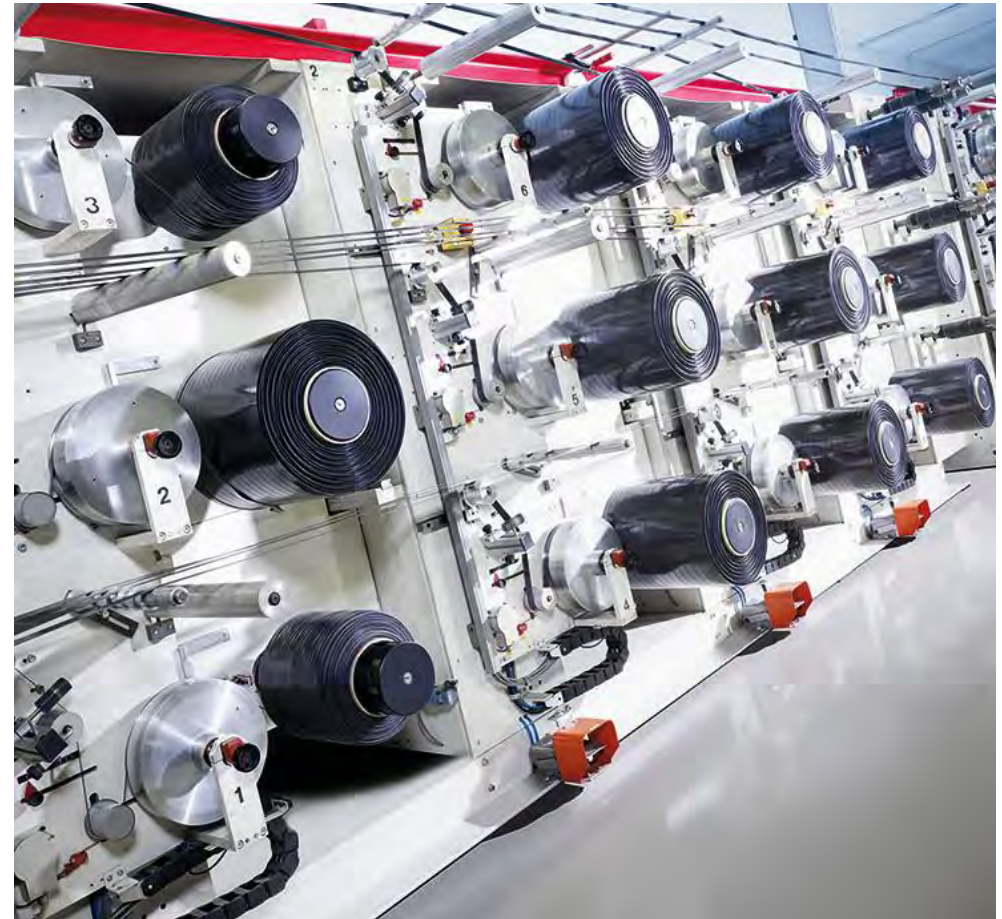
Testing



Applying



Pick & Place

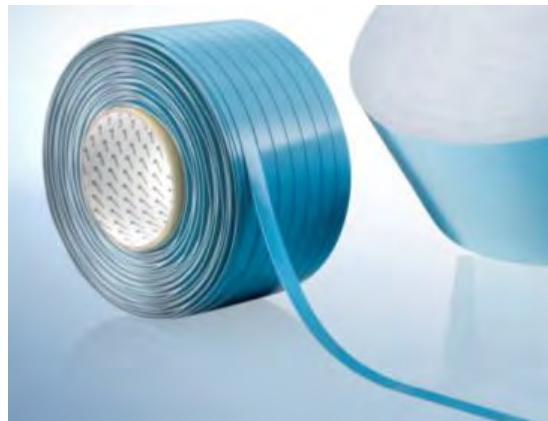


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Customer benefits of converted tapes

- Ability to do pre-converting of bonding solution in customized designs
- Qualified application process by pre-defining the bonding areas in thickness, width and design
- Wide range of tools and equipment available for manual up to fully automated assembling processing



Converting technology: Rolls



- Converting in rolls by crush-cutting, razer-blade, shear-cutting or lathe-slitting
- Linear meter from e.g. 5m up to e.g. 200m
- Tolerances in width depending on cutting-system +/- 0,5mm down to +/-0,2mm

Converting technology: spools



- Tape length up to 10.000 m depending on material
- Width from 3 mm to e.g. 25 mm
- Width tolerance: $\pm 0,1$ mm
- Converting on 180mm, 300mm and 380mm core-width possible

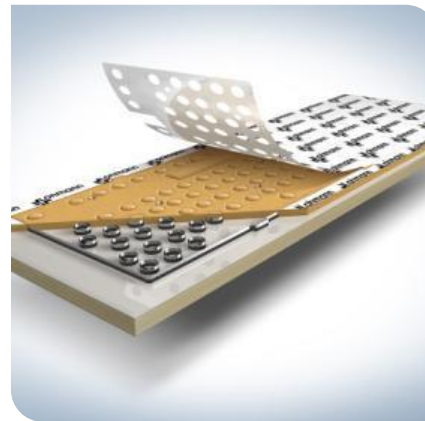


Converting technology: Die-Cuts

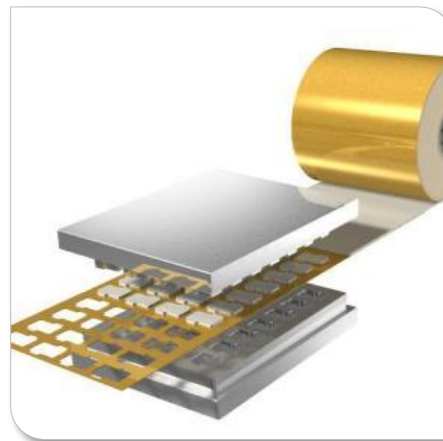


- From sheet for large designs like front panels in white goods
- From roll-to-roll for high volume, small designs, multilayer solutions
- Full-metal-die for high-end applications with tightest tolerances
- Laser cutting for e.g. prototyping

Flat bed



Full metal Die



Rotary



Laser cutting

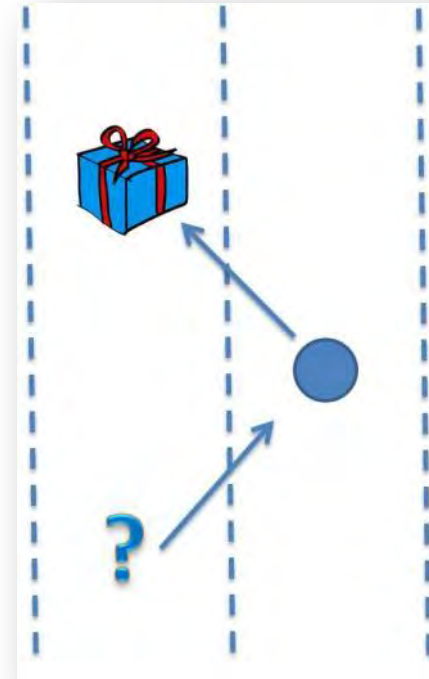


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Laser die-cutting in a roll-to-roll process

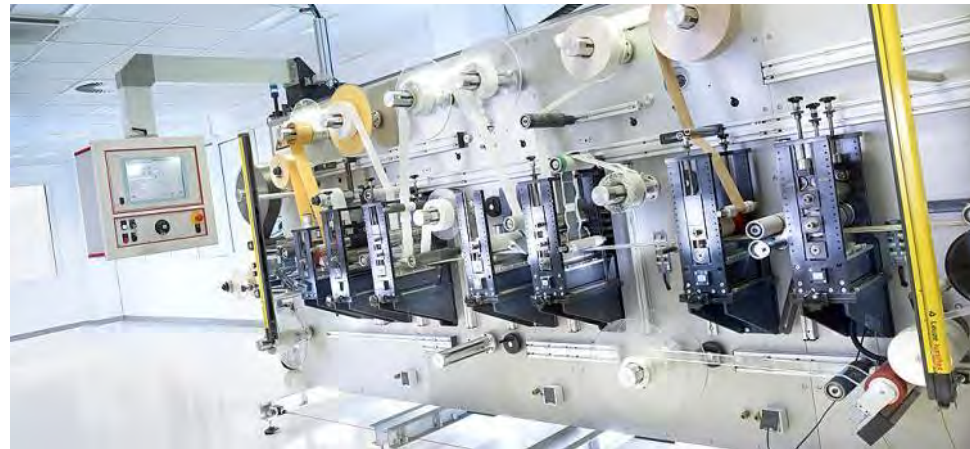
- Laser technology is used in various industries for decades to cut metal, plastic, textiles etc.
- Roll-to-roll laser-cutting is used in e.g. label industry for many years
- By cross-industry-thinking Lohmann developed together with a leading science-institute an integrated approach for double-sided PSA's laser die-cutting



Laser die-cutting in a roll-to-roll process

For high precision contour solutions

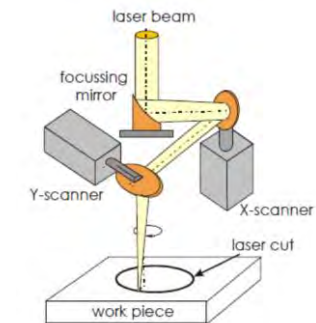
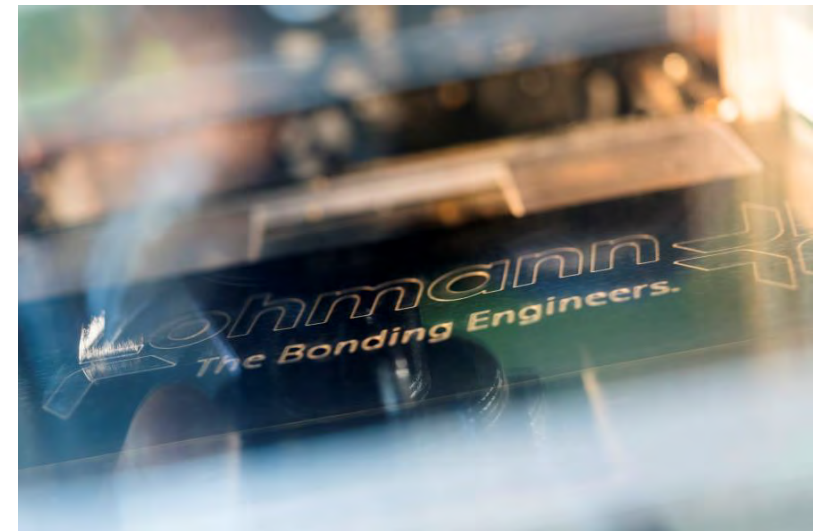
- Combination of various geometries and material layers
- Rotary die-cutting technology
- Compatibility for up to 6 stations
- Integrated surface pre-treatment (e.g. Corona)
- Optional: inline measuring
- Optional: inline print
- Tolerances +/- 0,20 mm
- Widths: 150, 175, 220, 350, up to 500 mm



Laser die-cutting in a roll-to-roll process

Lohmann's unique way to combine the most sophisticated laser cutting techniques with well-established rotary die-cutting technology enables...

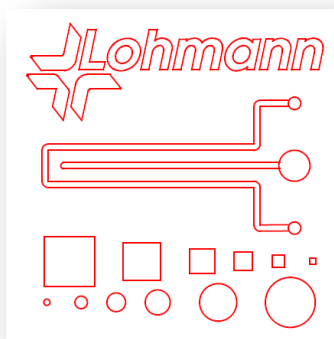
- ... reinforcement spine widths < 1mm
- ... most precise corner outlines
- ... holes from 0,1mm
- ... contour accuracy +/-0,1mm
- ... micro perforations and structurings
- ... unlimited format lengths



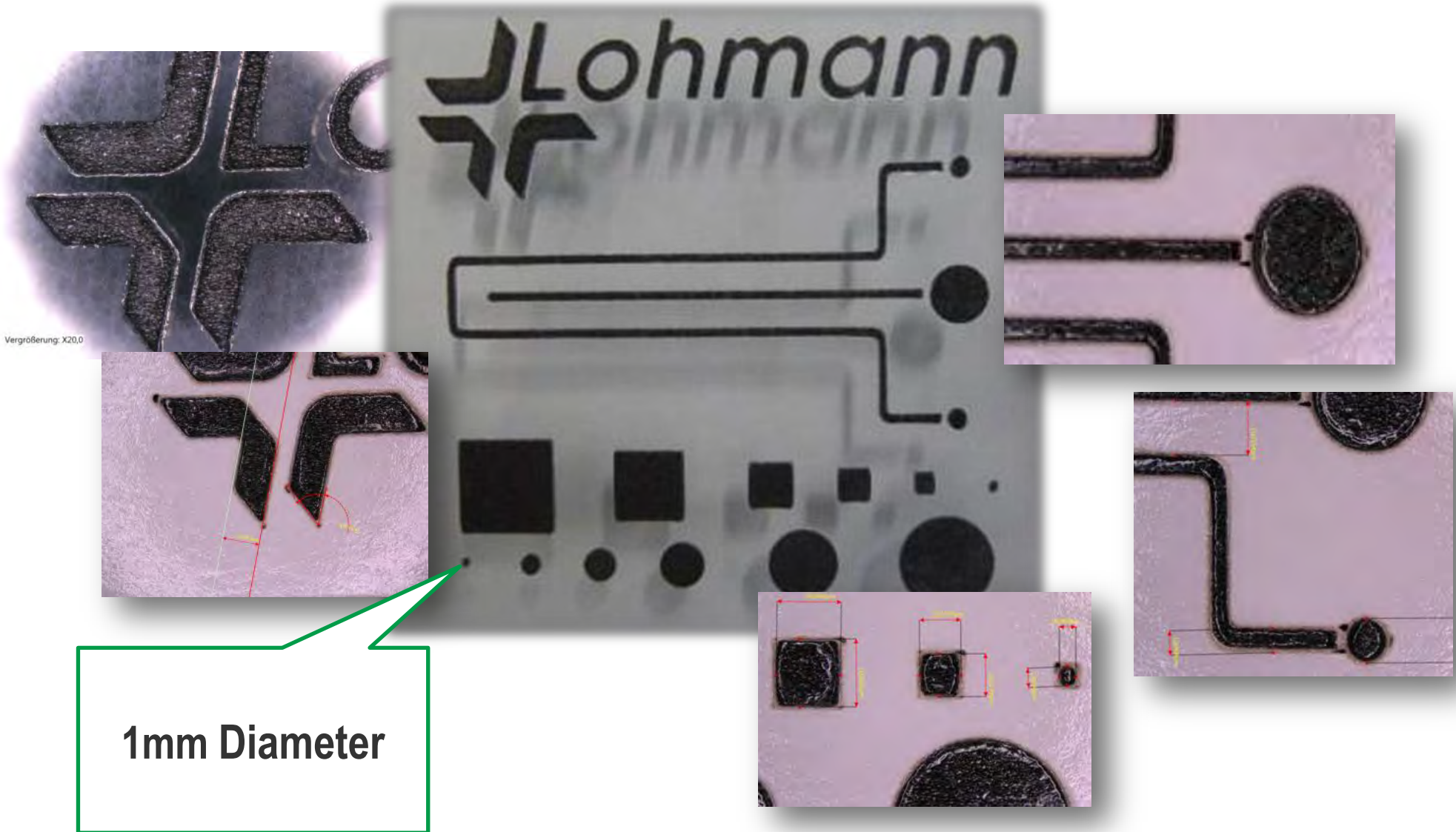
High tech laser die-cutting

Customer benefit:

- Design-freedom for miniature solutions
- Micro channels within the layers
- Cutting of sensitive materials
- Controlled blade clearance for critical disepnding designs
- Optimized ridge widths
- Solutions from rapid prototyping to serial designs



In detail (20x magnification)



Laser die-cutting in action



Laser die-cutting unlimited format length



Many thanks for your attention !

