Dear Sir/Madam,

It was our pleasure welcoming you at the **AWA Linerless Label Seminar 2014**. Your participation was highly appreciated and we hope that the event was beneficial for you and your organization.

Included, please find the proceedings of the event. We would like to thank our sponsors and speakers for their valuable contribution to the program and making this industry platform possible.

**Platinum Sponsor:** UPM  
**Gold Sponsors:** Bluestar Silicones, Catchpoint Ltd., Dow Corning Corporation, ETI Converting Equipment, Evonik Industries AG, Mondi, Wacker Chemie AG  
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We welcome and thank you for your comments and suggestions for improvement as they contribute to further developing our event format. If you have not provided your comments yet, please complete the feedback form at the end of this document and submit it to us.

Thank you again for your participation in the seminar. We wish you all the best and look forward to welcoming you again at one of our future events.

Do not hesitate to contact us if you have any queries.

With kind regards,

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W [www.awa-bv.com](http://www.awa-bv.com)
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SEMINAR PROGRAM – Wednesday March 19, 2014

The Linerless Label Market Overview
Jackie Marolda, Vice President & Senior Consultant, AWA Alexander Watson Associates

The Evolution of Linerless
Craig Bevan, Linerless Sales Director, Coveris

Linerless Labels - A Silicone Producer’s View
Georg Michels, Product Line Manager Surface Technologies EMEA, Evonik Industries AG

Films for Linerless Labels
Richard Southward, Market Development Manager - Labels, Innovia Films

Ritrama Core Linerless Solutions®
(R)evolution in the Labeling Industry
Tomas Rink, President, Ritrama S.p.A

LightSmart™, an Activatable Linerfree Technology
Ronald Wiegers, Research Associate & Geert Jan Kolkhuis Tanke, Director, Labeling and P&A, Avery Dennison

Coating & Converting Machinery
- Bert Janssen, Sales Manager DACH, Benelux, ETI Converting Equipment
- Paul Beamish, Managing Director & Owner, Ravenwood Packaging
- Roelof Klein, Commercial Manager, MAAN Group
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Application Machinery
- Mauro Fadiga, Director Systems Division, Arca Etichette
- Paul Beamish, Managing Director & Owner, Ravenwood Packaging
- Mike Cooper, Business Development Director, Catchpoint Ltd

Broaden our Horizons
Mike Cooper, Business Development Director, Catchpoint Ltd
Jackie Marolda, Vice President & Senior Consultant, AWA Alexander Watson Associates

Delegate List

List of AWA Upcoming Events 2014 and Overview Reports

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Feedback Form

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Silver Sponsors:

Media Sponsors:
<table>
<thead>
<tr>
<th>Company Profile:</th>
<th>EVONIK Industries AG</th>
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</thead>
<tbody>
<tr>
<td>Annual turn over:</td>
<td>€ 13.4 billion</td>
</tr>
<tr>
<td>Headquarter(s):</td>
<td>Essen, Germany</td>
</tr>
<tr>
<td>Key Operation(s):</td>
<td>Evonik - the creative industrial group from Germany - is one of the world's leading specialty chemicals companies.</td>
</tr>
<tr>
<td>Number of employees:</td>
<td>33,300 (2012)</td>
</tr>
<tr>
<td>Application markets:</td>
<td>Consumer Specialties</td>
</tr>
<tr>
<td></td>
<td>Resource Efficiency</td>
</tr>
<tr>
<td></td>
<td>Specialty Materials</td>
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</tbody>
</table>
Linerless Labels – A silicone producer’s view

Georg Michels
Amsterdam, March 2014
1. The enthralling idea of Linerless

2. Where is the Linerless Technology today

3. Linerless – The next challenges
Label construction

Standard PSA Label
- Facestock
- Pressure sensitive adhesive
- Silicone
- Release liner = WASTE

Weight distribution
- Facestock: 39%
- Adhesive: 13%
- Silicone: 1%
- Liner: 47%

Cost distribution (material)
- Facestock: 38%
- Adhesive: 7%
- Silicone: 19%
- Liner: 36%
In the end - the release liner is wasted!

Ways out:
• Reduction of liner grammage / gauge
• Change of liner substrate, e.g. glassine paper vs. boPP film
• Re-use of release liner
• Recycling of release liner

Better alternative:
Don’t use a release liner at all!

*38 billion m² Release Liners / 50% (Label Application) * approx. 10 c€/m² = 1,6 billion €

1,6 billion* € are thrown away!
For Europe, the annual consumption of release liners is estimated to be around 400,000 metric tons, the majority of this is going into landfills.

Try to estimate your costs for the handling and disposal of release liners.
The Linerless concept – No waste

**Linerless Label**
- Silicone
- Facestock
- Pressure sensitive adhesive

**Weight distribution**
- Facestock: 78%
- Adhesive: 21%
- Silicone: 1%

**Cost distribution (material)**
- Facestock: 77%
- Adhesive: 21%
- Silicone: 2%
The idea is simple – get rid of the release liner and coat Evonik TEGO® UV Silicones on the printed face stock.

This simple idea offers significant advantages

• No release liner waste
• No release liner cost
• More labels per roll
• Less transportation costs
• Less downtime in label production

Increased Sustainability

Less Cost
## Savings potential

<table>
<thead>
<tr>
<th></th>
<th>Traditional label</th>
<th>Linerless label</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost per label</td>
<td></td>
<td>No cost for liner</td>
</tr>
<tr>
<td>Transport cost</td>
<td></td>
<td>Up to 50% less</td>
</tr>
<tr>
<td>Storage</td>
<td></td>
<td>Up to 50% less</td>
</tr>
<tr>
<td>Reel change</td>
<td></td>
<td>Up to 50% less</td>
</tr>
<tr>
<td>Waste disposal</td>
<td></td>
<td>No waste</td>
</tr>
</tbody>
</table>

Go out and estimate your savings potential!
1. The enthralling idea of Linerless
2. Where is the Linerless Technology today
3. Linerless – The next challenges
Standard label production process - simplified -

Base Liner → Evonik Silicone Coating → Adhesive Coating → Laminating → Face Stock → LAMINATE

Laminate → Printing → Die Cutting → Matrix Removal → Slitting + Rewinding = Label Roll → Dispensing
Market player can have more than one role!

<table>
<thead>
<tr>
<th>Processes</th>
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<tbody>
<tr>
<td>Release liner producer</td>
</tr>
<tr>
<td>Silicone Coating</td>
</tr>
<tr>
<td>Laminate producer</td>
</tr>
<tr>
<td>Adhesive coating + laminating</td>
</tr>
<tr>
<td>Label printer</td>
</tr>
<tr>
<td>Printing, die cutting, slitting and re-winding</td>
</tr>
<tr>
<td>Label user</td>
</tr>
<tr>
<td>Labeling on the packaging</td>
</tr>
</tbody>
</table>
Matrix removal/rewinding might/might not happen

Roles are changing
- Linerless Labels will require a change of the label printer. He needs to in-source silicone and adhesive coating and do the quality control.
- Some technologies move the cutting to the applicator.

Technological challenges
- How to die cut without a release liner?
- How to dispense without a release liner?
What’s out in the market?

- **Hand**
  - Direct Thermal Print Labels

- **Machine**
  - Micro-perforation
  - Process Liner
  - Straight Edge Guillotine

**Dispensing**
Linerless direct thermal print labels

- Thermal sensitive face stock material (paper, film)
- Release Coating is applied on top of the thermo sensitive facestock
- Adhesive is coated on the backside when the label is wound on itself like a tape
- Printable by thermal printer after siliconizing (limited color options)
Main applications are scales in supermarkets, luggage tags and logistic labels where the dispensing and application is hand fed.

**Advantages for the label user**
- Fewer roll changes due to 50% more labels per roll
- Handling advantages -> no need to staple sales slips
- Variable label size
- No waste
- Cost effective

**Disadvantages for the label user**
- Special print equipment needed with non-stick coated carrier rollers and knifes

Linerless direct Thermal Print Labels is the biggest and fast growing application (45% = 150 Mill m²).

(Source: AWA Associates)
Relatively thick paper (100 – 300 gr/m²) or film (80 - 100 gr/m²)
Substrate is pre-printed
Pattern/Stripe coating of silicone and adhesives
Produced as a linerless roll label
Label is cut with a simple knife/ guillotine in the applicator
Variable information printing prior to dispensing possible
Printer buys/needs a COMAC coating machine
Label user needs a NOBAC applicator (various types) for various label size
Ravenwood is well established in the market

- 10 years of experience in the market, more than 1,000 applicators sold
- Often used in fresh food and variable information printing
- Form is limited to rectangular, but no waste at all
- Speed is limited to 70 to 180 labels per minute
- Printing and coating of the label roll at the printer
- Die cutting shortly before dispensing with a process liner
- No limitations in shape as the standard die cutting process is used
- Die cutting process is moved to the label user/dispenser
• Printing, coating and die cutting of the label roll at the label printer
• Micro perforation die cutting offers a wide range of shapes (but not everything is possible)
• Low investment, easy to handle linerless dispensing module available
Linerless applicator for existing Avery/Herma applicators covers the majority of primary labels market

- Low investment (< 20,000 €)
- Dual capability for linerless/standard labels (switch takes less than a minute)
- Maximum speed of 35 meters/minute, high speed solution is in preparation
## TEGO® RC Silicones - irresistible for linerless applications

<table>
<thead>
<tr>
<th>Linerless challenge</th>
<th>TEGO® RC Radical Silicones offer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Label printer needs to siliconize himself</td>
<td>Low investment, easy to use technology</td>
</tr>
<tr>
<td>Siliconizing coating often needs to be integrated into existing printing lines</td>
<td>Compact technology (UV) for narrow web machines</td>
</tr>
</tbody>
</table>
| In-line coating and curing | Instantaneous curing  
Consistent easy release |
| Various substrates needs to be siliconized | Perfect curing and anchorage on thermal sensitive paper, printed surfaces and films |
Linerless labels - The power of UV - TEGO® RC Silicones

Open the link and scroll down to the video.
1. The enthralling idea of Linerless
2. Where is the Linerless Technology today
3. Linerless – The next challenges
Direct Thermal Print and Ravenwood are well established systems that will continue to grow in the coming years.

Catchpoint and ETI are still in the introductory phase of the life cycle.

Catchpoint and ETI are attacking the Primary Label Market.

For Primary Labels more success stories like the STOKO® example are needed.

Cost saving and sustainability are an unbeatable argument in favor of linerless labels.
Reach out and develop your Linerless success story with us

Headquarters in Essen / Germany
Global sales (●) and distribution network

Production facilities for RC Silicones (●)
RC technical service centres (●)
For more information please visit our website
www.evonik.com/tego-rc

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