And now Australia sets the Global Standard for Sustainable Road Construction
Presented by Rolf Jenny
Senior Vice President Ammann Group

Leadership in Sustainable Road Construction
AAPA Resolution 2011
National and state road authorities
Supporting new technologies
Road construction companies
Investing in new technologies
Equipment Manufacturing R&D new technologies

Global Trends in Asphalt Industry
- Road maintenance and RAP usage gains importance
- Government finances are even under more pressure
- Pressure to reduce carbon footprint is strongly increasing
- All environmental issues are getting fundamental importance: noise, fumes, outer, dust, emissions from stack, etc.
- Health & Safety needs 100% compliance

The asphalt industry has to respond to this requirements.

National and state road authorities are supporting
Maximising the Re-use of Reclaimed Asphalt Pavement: Binder Blend Characterisation

Key Drivers for Australian Asphalt Producers
- Flexibility to cater all market requirements
- Workplace Health and Safety
- Egress work areas and accesses
- Reduction in Maintenance costs
- Software Tools for Energy Efficiency
- Noise reduction techniques
- Fume and Vapor Recovery

These key drivers have strongly influenced the development of “High Recycling Technology”
The 4 Main Elements of High Recycling Technology

1. New Approach for Asphalt Recycling
2. Highest Environmental Friendliness
3. Plant Management Systems for Best Efficiency and Quality
4. User Friendliness

New Philosophy in Asphalt Recipe Design

NO CHANGE IN SPECIFICATION OR QUALITY

RAP Handling – Correctly Sorted and Dry

Mainstream Virgin Materials, RAP Secondary

Avoid Aging of Bitumen with HRT

Coarse RAP Particles
- Larger aggregates
- Low content of bitumen
- Gentle heating in a new drying drum concept
- Heating during mixing process

Fine RAP Particles
- Finer aggregates
- High content of bitumen

HRT option Warm and cold addition in parallel
Warm and Cold Addition of RAP

Warm Addition:
- Up to 40%

Cold Addition:
- Up to 60%

Virgin Aggregates

Warm and Cold Addition Combined

Coarse Aggregates
- Warm Addition: Up to 40%

Combined Addition: almost 100%

Virgin Aggregates

Gentle heating in a new RAP Dryer concept

Hot gases
150°C
RAP Material
145°C

What brings the high energy efficiency and the gentle heating of RAP?
- New lifter design
- Drum length

Bitumen characteristics after heating

Average increase of the temperature of softening point R&B of 3°C.

The Main Elements of High Recycling Technology

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CO₂ reduction drives industry

1. High RAP content
2. Plant efficiency
3. Low Temperature Asphalt

50% reduction

Aggregate and bitumen processing
Fuel / electricity
Asphalt production
Industry Average
High Recycling Technology
Environmental Requirements

- Vapour recovery systems
- Cladding = Cleanliness, lower noise

Load Out – Emission Reduction System

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Monitoring Efficiency

Basis for energy & cost saving

Peak Load Management – for cost saving

Power peaks cost money

Integrated Quality Control Reports

Integrated Quality Control Reports

- Weighing accuracy
- Bitumen content accuracy
- Sample taking reminder
- Trending and analysis tools
- Etc.

Target vs. Tolerance
Planning of maintenance interval

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<th>Maintenance task</th>
<th>10</th>
<th>20</th>
<th>01</th>
<th>10</th>
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Time based

Event counter based

The Main Elements of High Recycling Technology

1. New Approach for Asphalt Recycling
2. Highest Environmental Friendliness
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4. User Friendliness

Accessibility and Safety

Option: Lift

Ample Space on Working Levels

HRT around the Globe

2013 Bauma - Worldwide attention
2013 - 1st plant in operation in Australia!
2014 - Globally 10 plants in operation
Topic for AAPA 2015?

Toward a CO₂ Neutral Asphalt Plant

<table>
<thead>
<tr>
<th>1. High RAP content</th>
<th>50 kg/t</th>
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<td>2. Plant efficiency</td>
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<tr>
<td>3. Low Temperature Asphalt</td>
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<td>50% reduction</td>
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<td>Renewable fuel</td>
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Industry Average High Recycling Technology

Wood dust as a fuel

<table>
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<th>CO₂ neutral &amp; renewable</th>
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<tbody>
<tr>
<td>Already proving itself</td>
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</table>

Wood Dust – Another step towards CO₂ neutral asphalt

Prototype is in operation

By 2014, a further 10 units will be in operation

See you at AAPA 2015

Australia can be proud for taking the lead into the High Recycling Technology concept.

Thank you for your attention