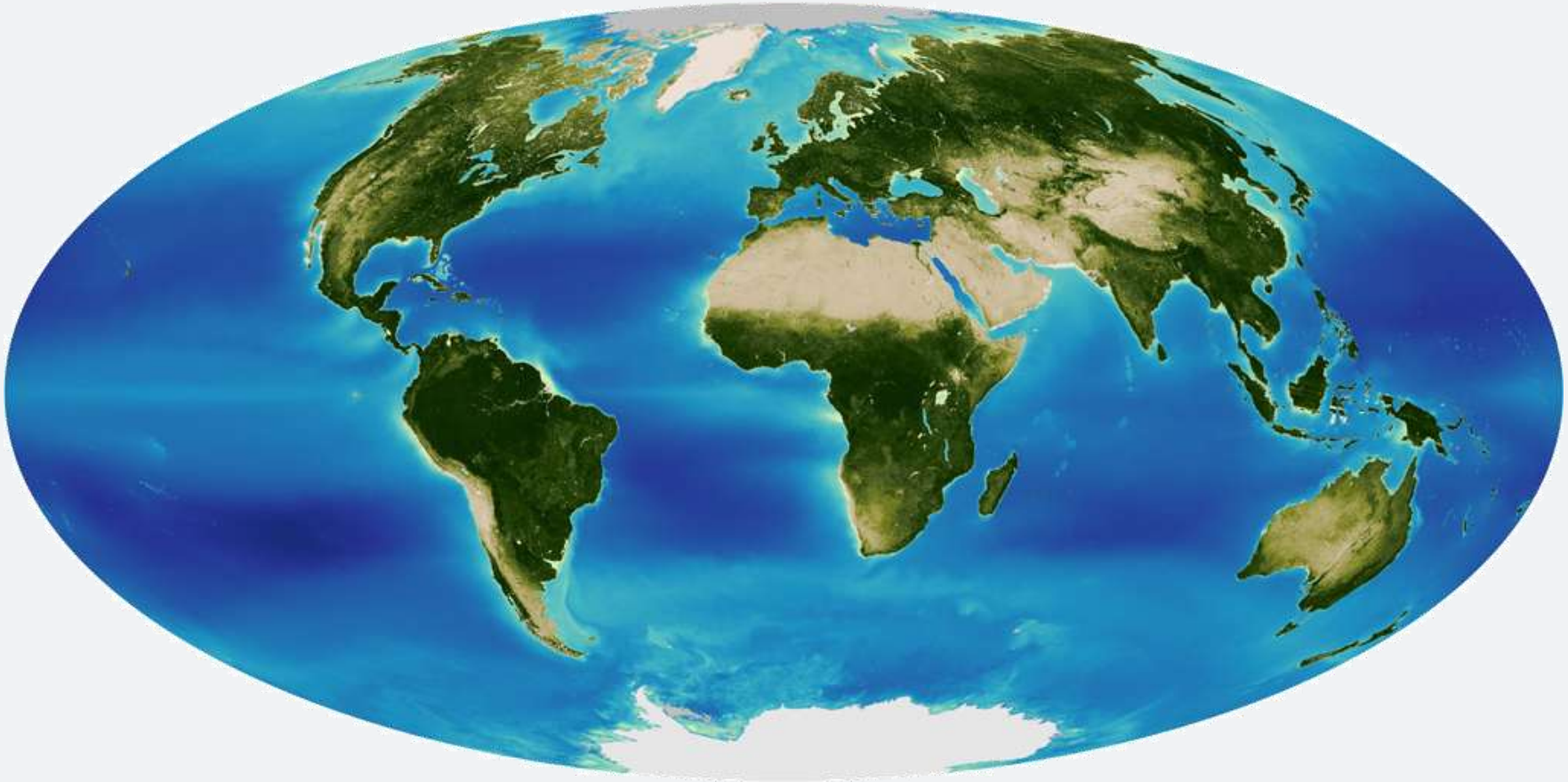
Developments in Asphalt Plant and Equipment

Andreas Biedermann

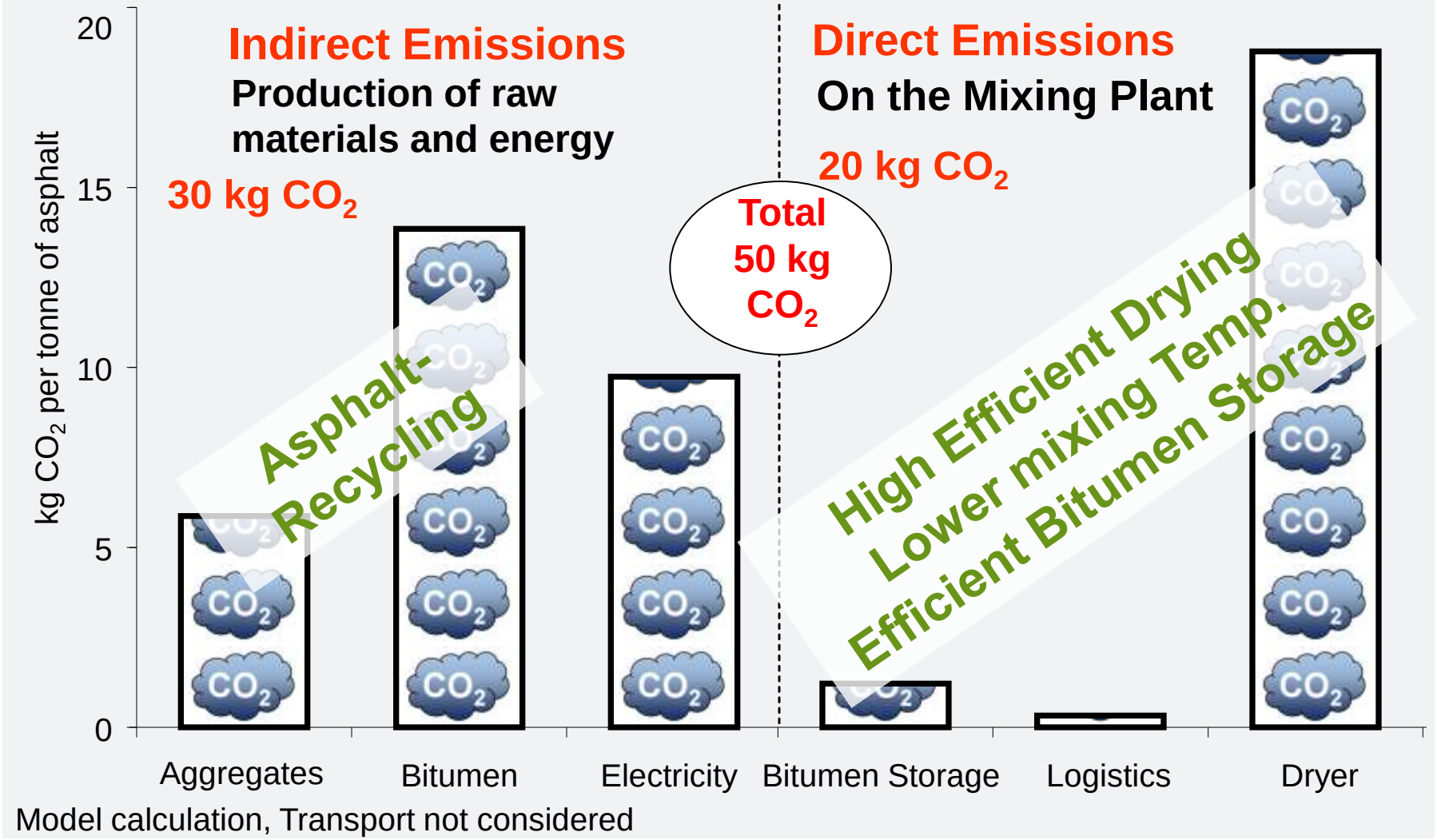
Ammann Group Worldwide

Our Planet



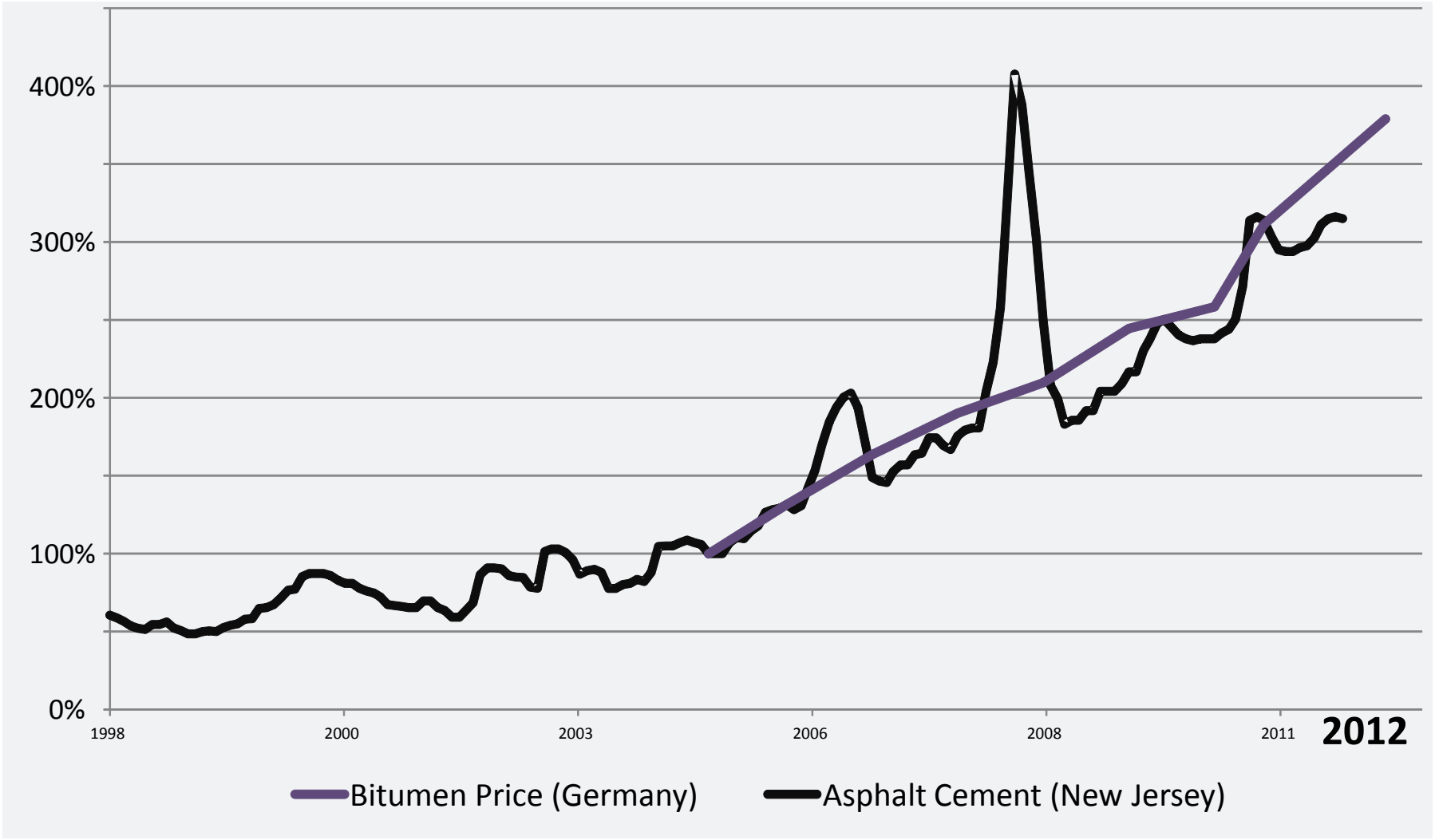
http://maptd.com/

CO_2 Emission per Tonne of Asphalt



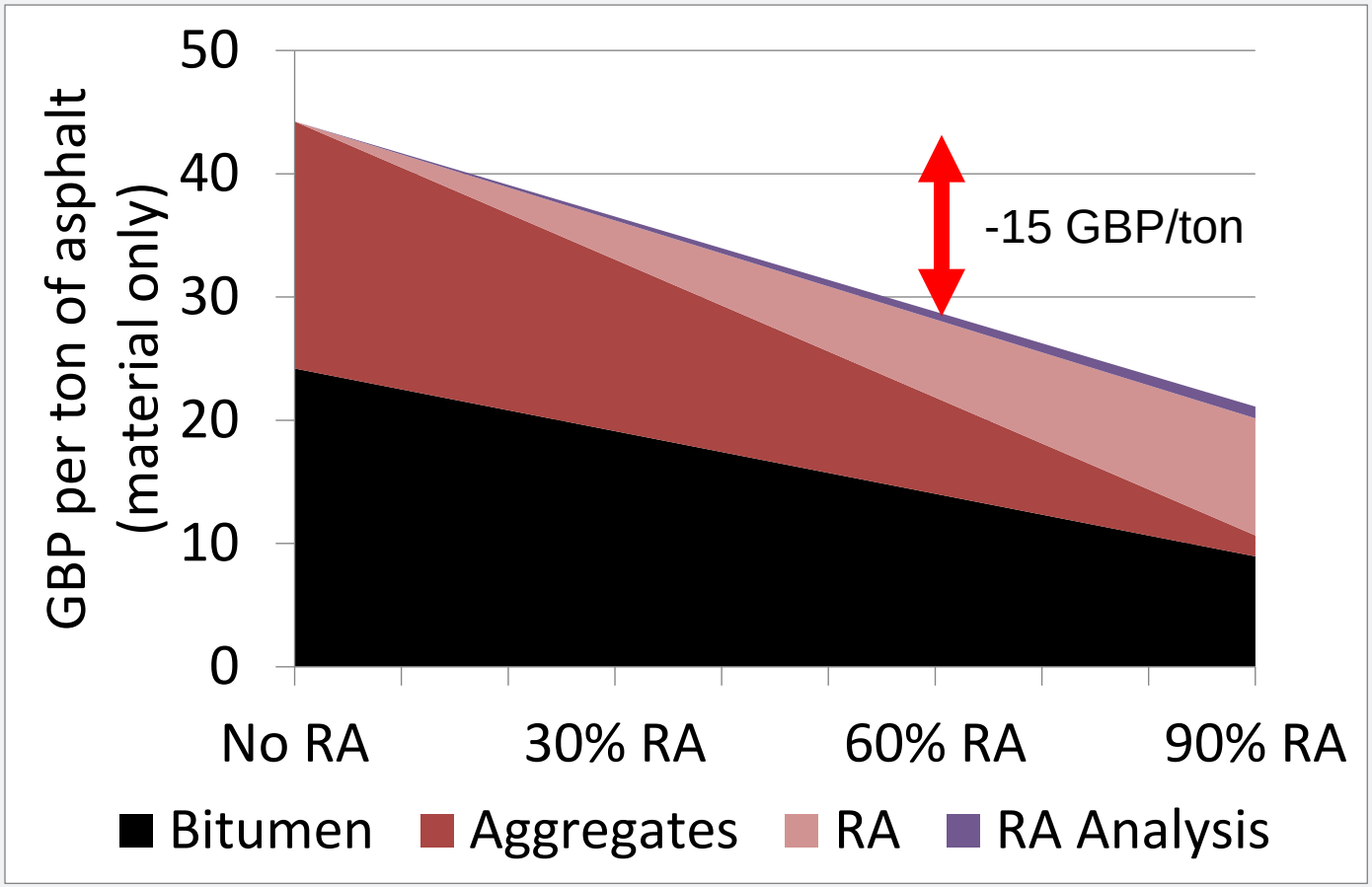
Model calculation, Transport not considered

Prices Since 2005: Bitumen +200%



Road Construction - Keeping the Asphalt in the Road

Cost Benefits from Recycling Asphalt (RA)



1’500’000 GBP less material costs per year

Estimated costs

Reclaimed Asphalt – Valueable Resource

Different Techniques To Keep the Asphalt in the Road

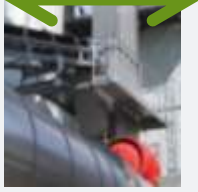
dedicated counter flow drum

parallel drum

in drying drum

in pug mill

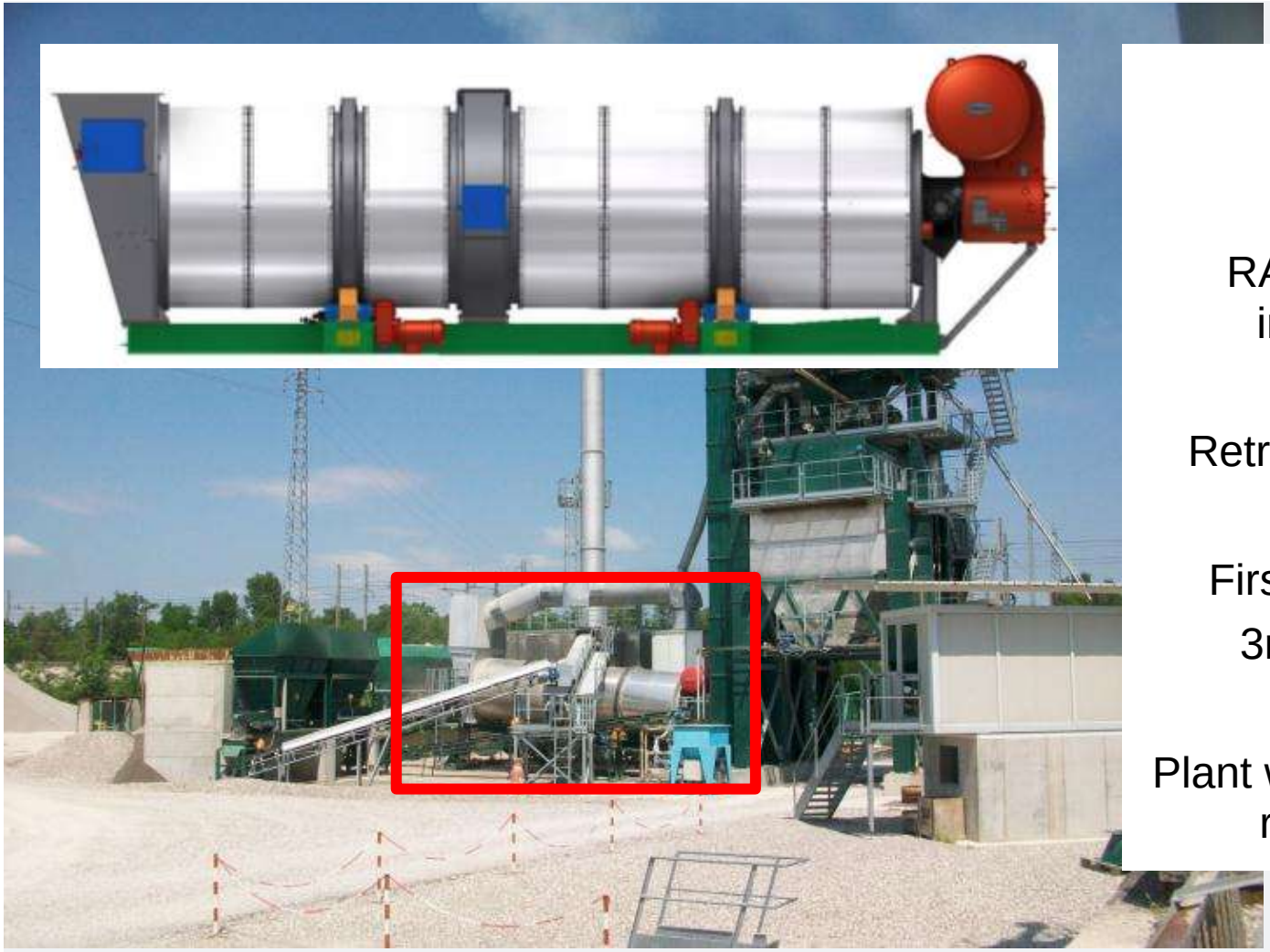
in elevator



0% 25% 50% 75% 100%

Possible Ratio of Reclaimed Asphalt

RAH 50 – Combined Asphalt Recycling - North-East Italy



Example

RAH 50:

RAP-cold feed in dryer drum

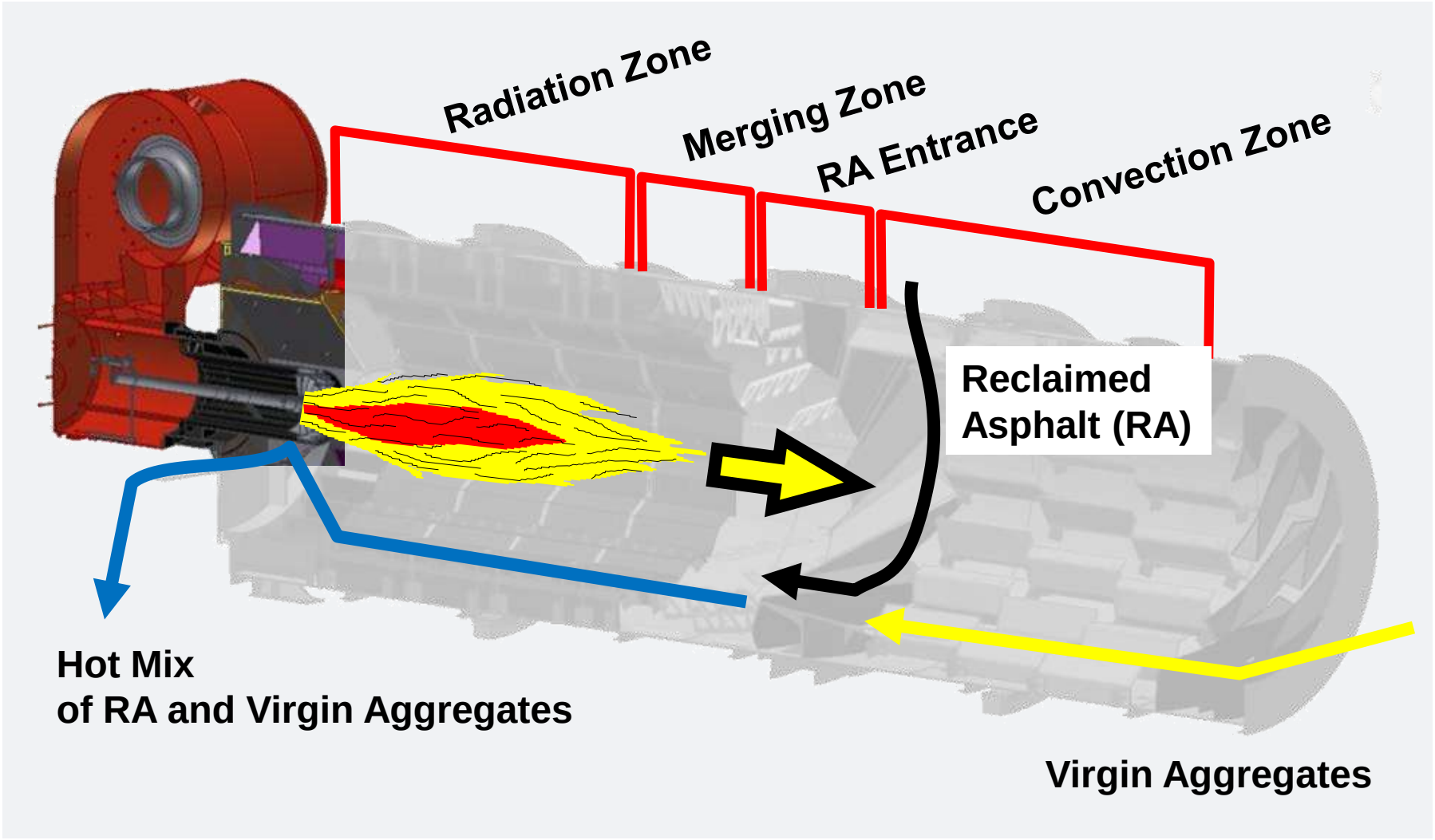
Retrofit on CB 210

First Installation:

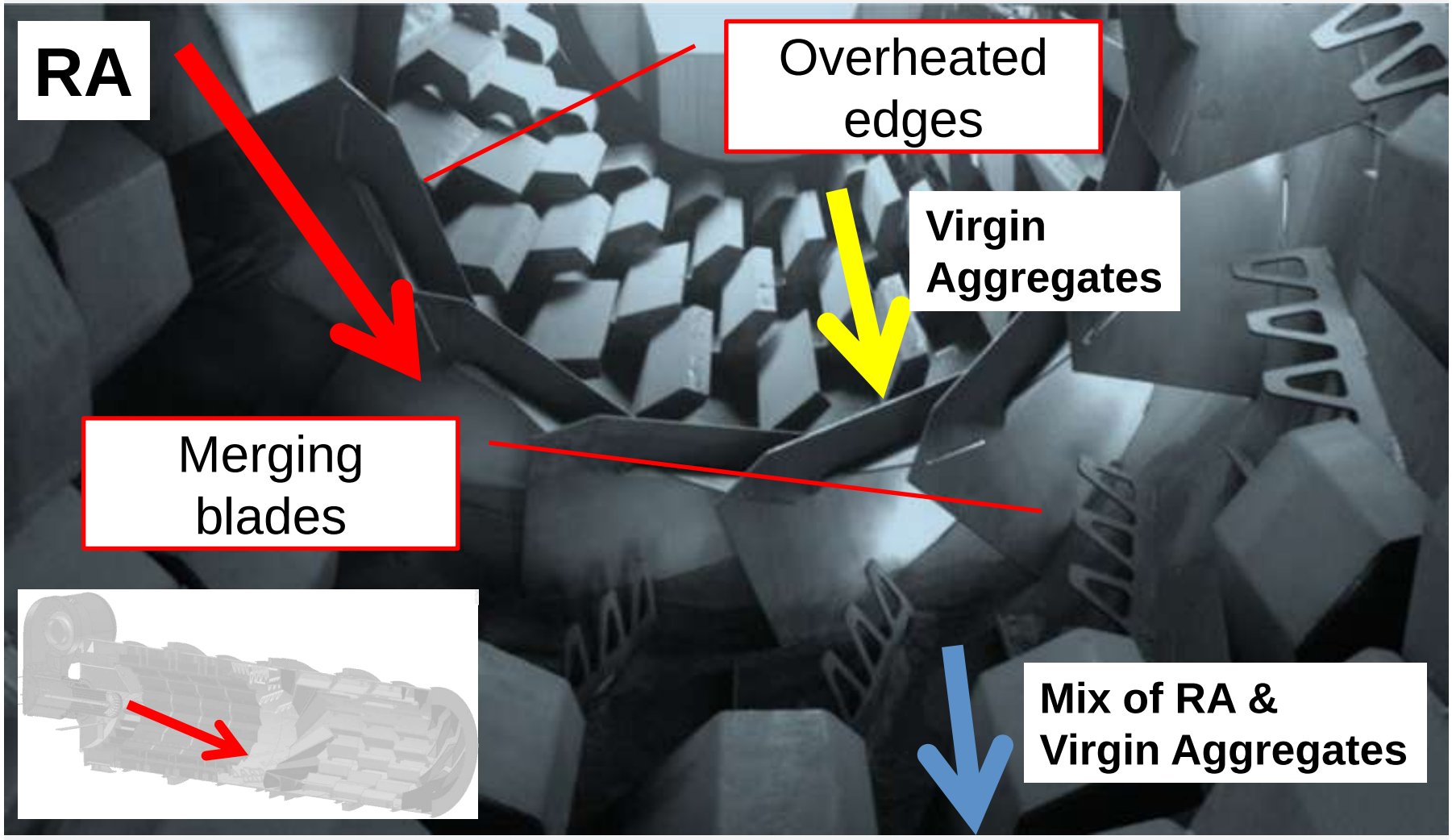
3rd may 2010

Plant with existing cold recycling line

RAH 50 – Gentle Heating of Reclaimed Asphalt



Merging of Reclaimed Asphalt (RA) & Virgin Aggregates

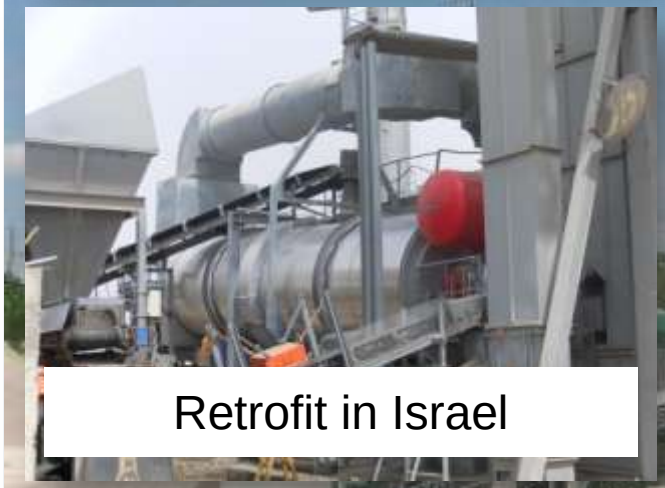


RAH50 – Retrofit and New Installation

CB 150 with RAH50

Retrofit in Cyprus

CB 210
with RAH50



Retrofit in Israel

20+ RAH 50 drums

in operation / delivery

Rejuvenating Reclaimed Bitumen

http://www.comedix.de

Goals of Using Additives

- Low viscosity of binder during asphalt production
- Lower stiffness during compaction

- Higher stiffness at high service temperatures
- Lower stiffness and faster relaxation at low service temperatures

- Substitute a portion of the bitumen

- Improve adhesion and/or coating

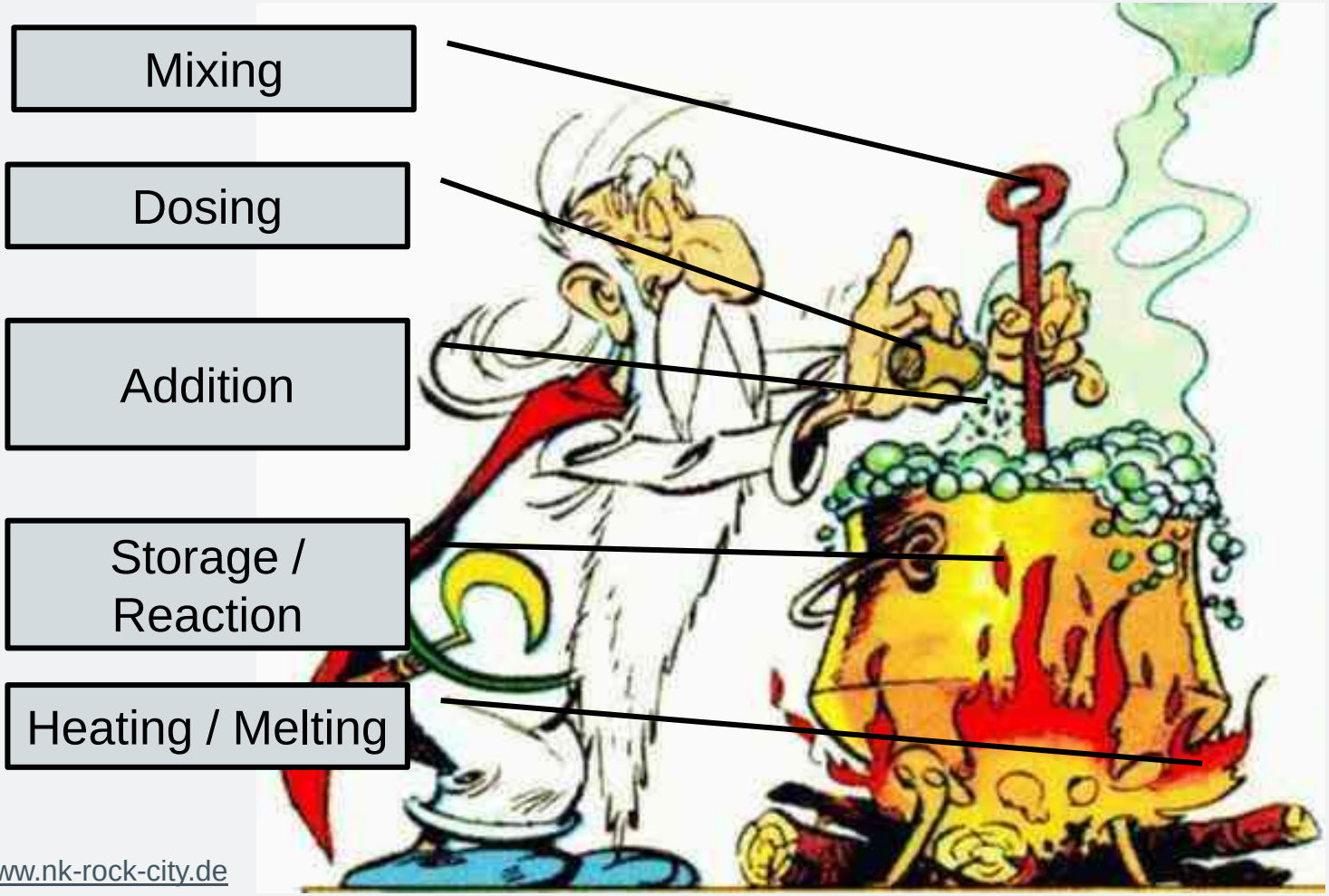
- Colorize binder

- Reduce fumes from bitumen

- Reduce or improve foaming

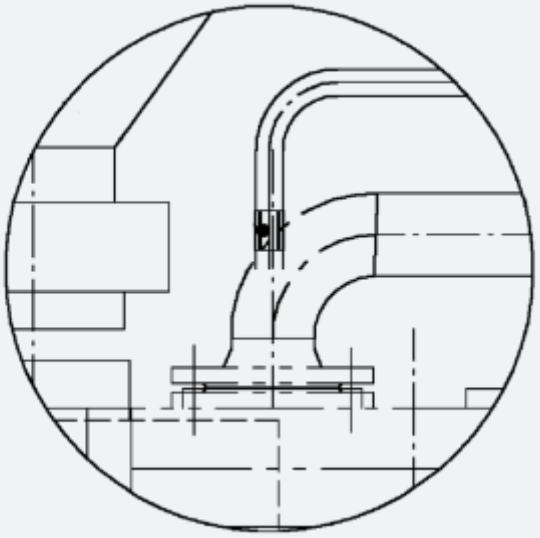
- Rejuvenate bitumen
- Reduce sticking in plant

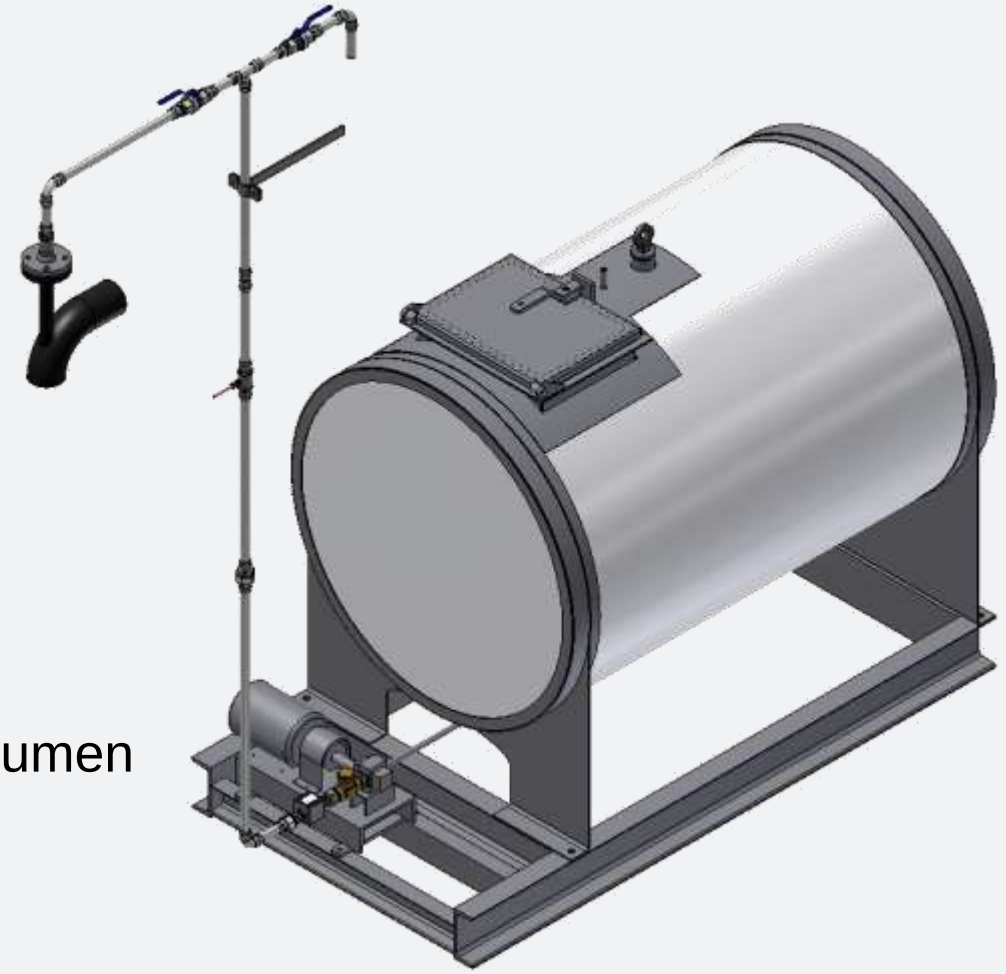
Working With The Magical Essence



www.nk-rock-city.de

Dope Addition System

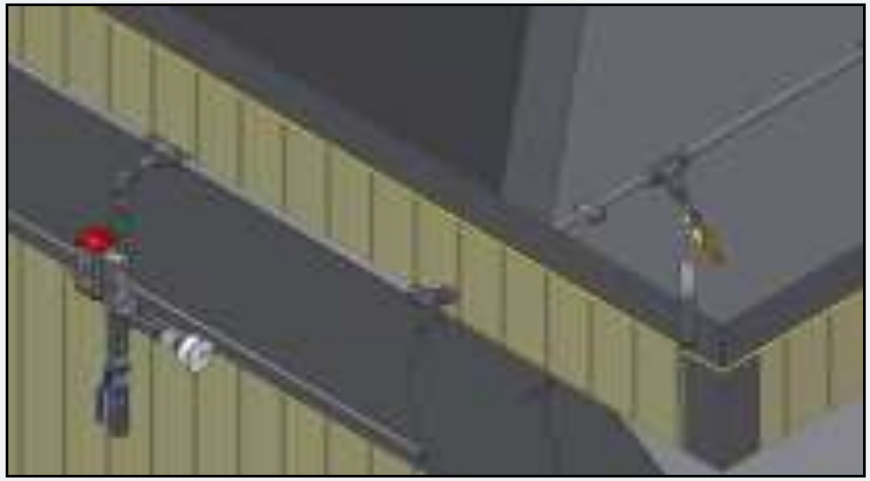


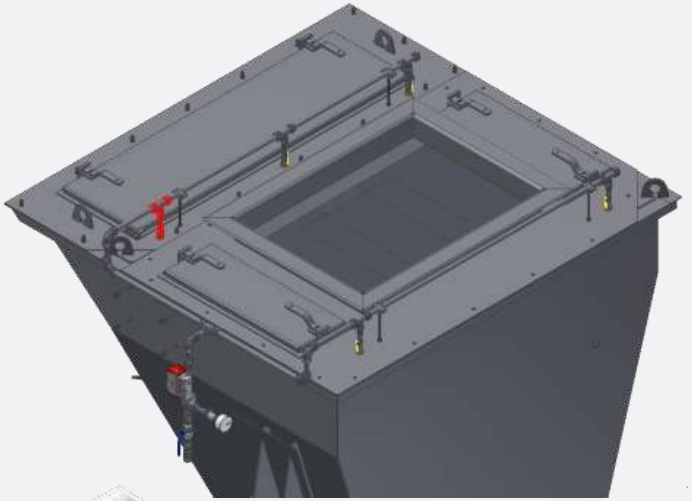


Standard Configuration:
12 l/min
3 tons of asphalt with 5% bitumen

Into Bitumen Stream / Scale

Process Oil Addition



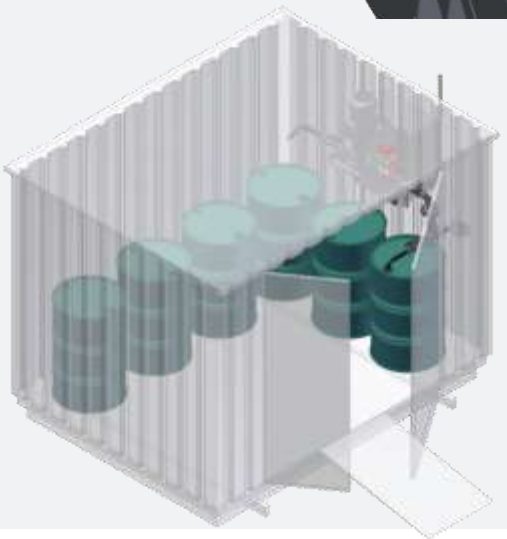


Continuous or batch-wise addition

- Heated system

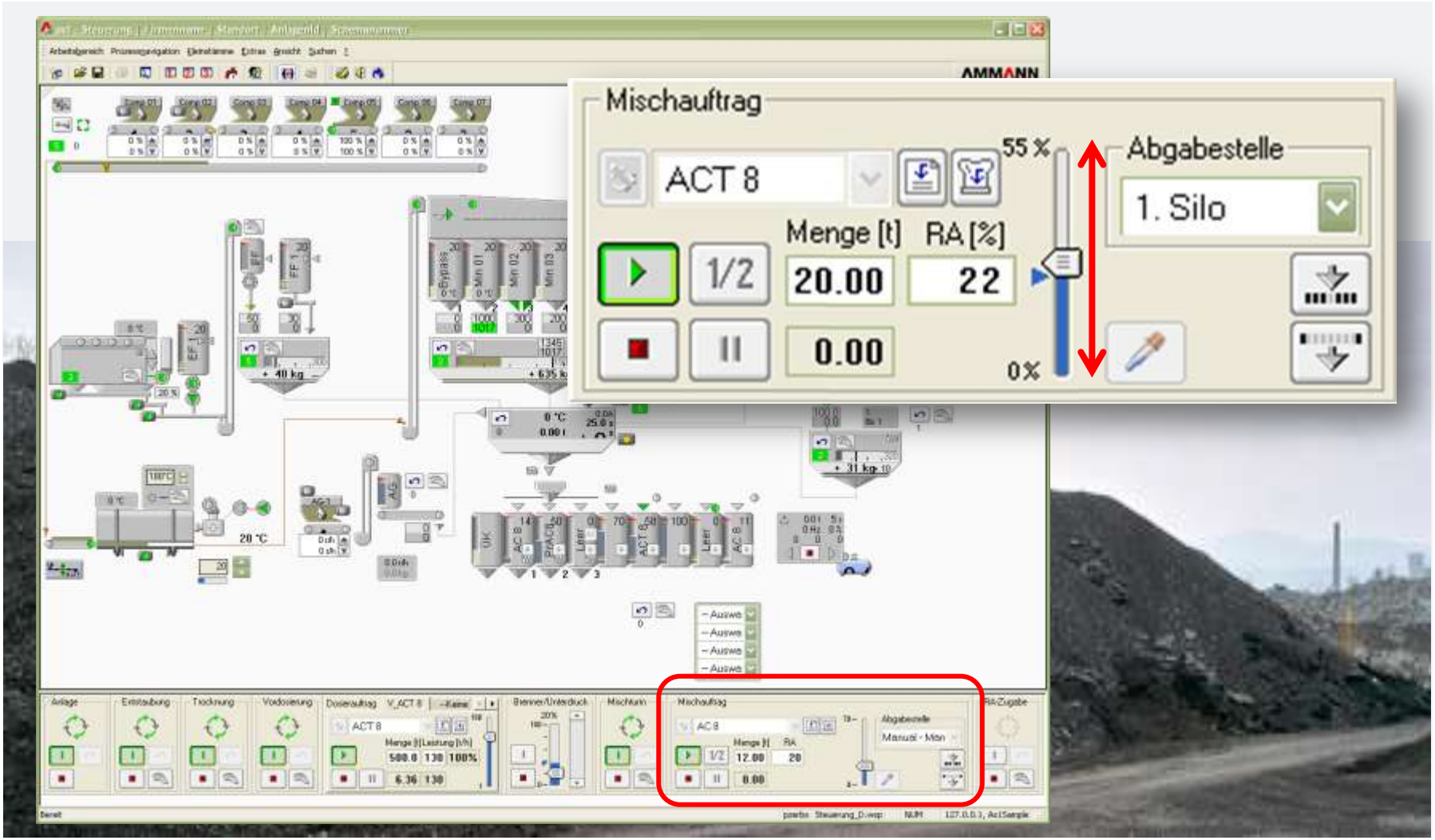
Addition Points:

- RA drum
- RA chute / silo
- Mixer

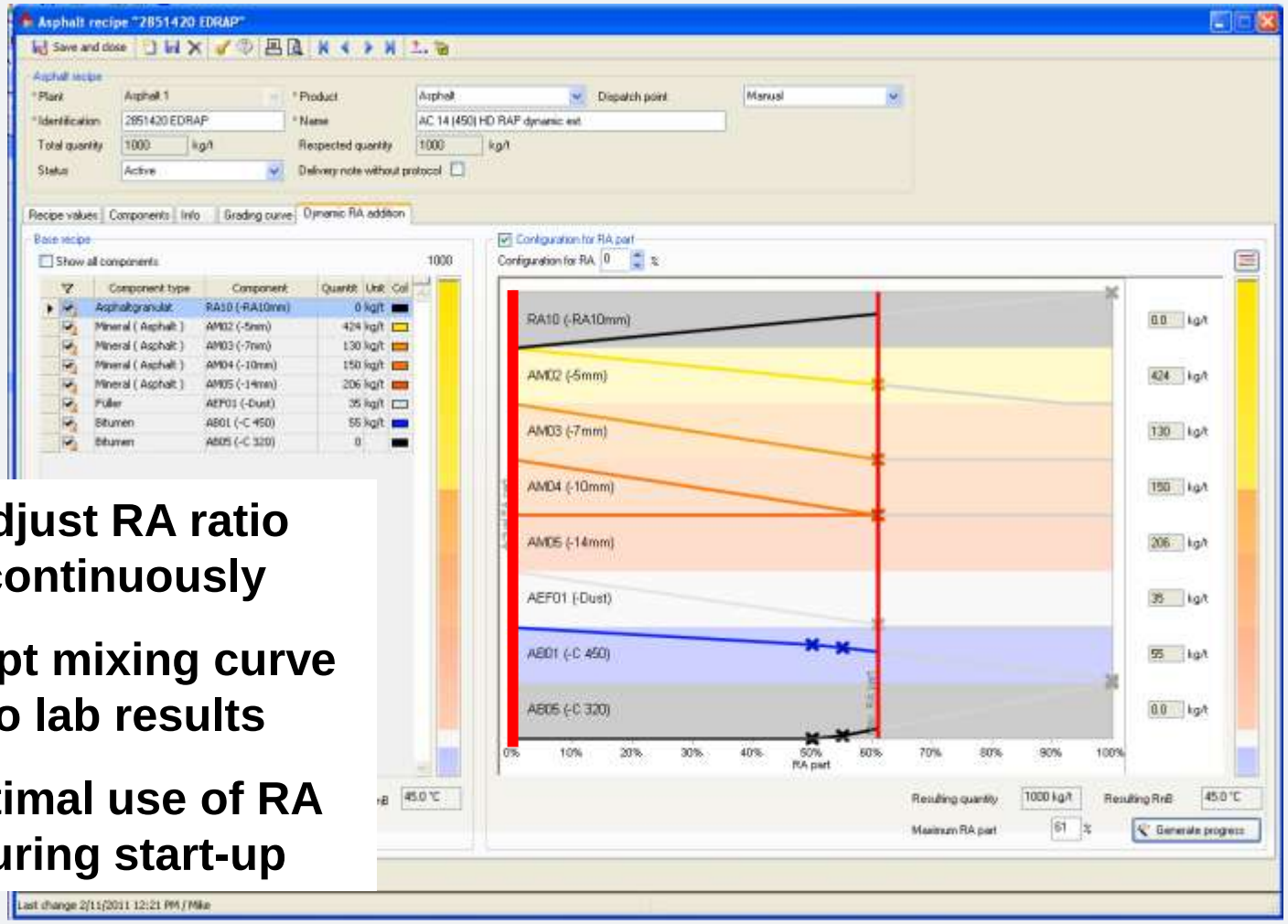


Bitumen Modification Plant - Moditek

Varying the Addition of Reclaimed Asphalt



Dynamic RA Addition – Optimal Use of Recycling



Adjust RA ratio continuously

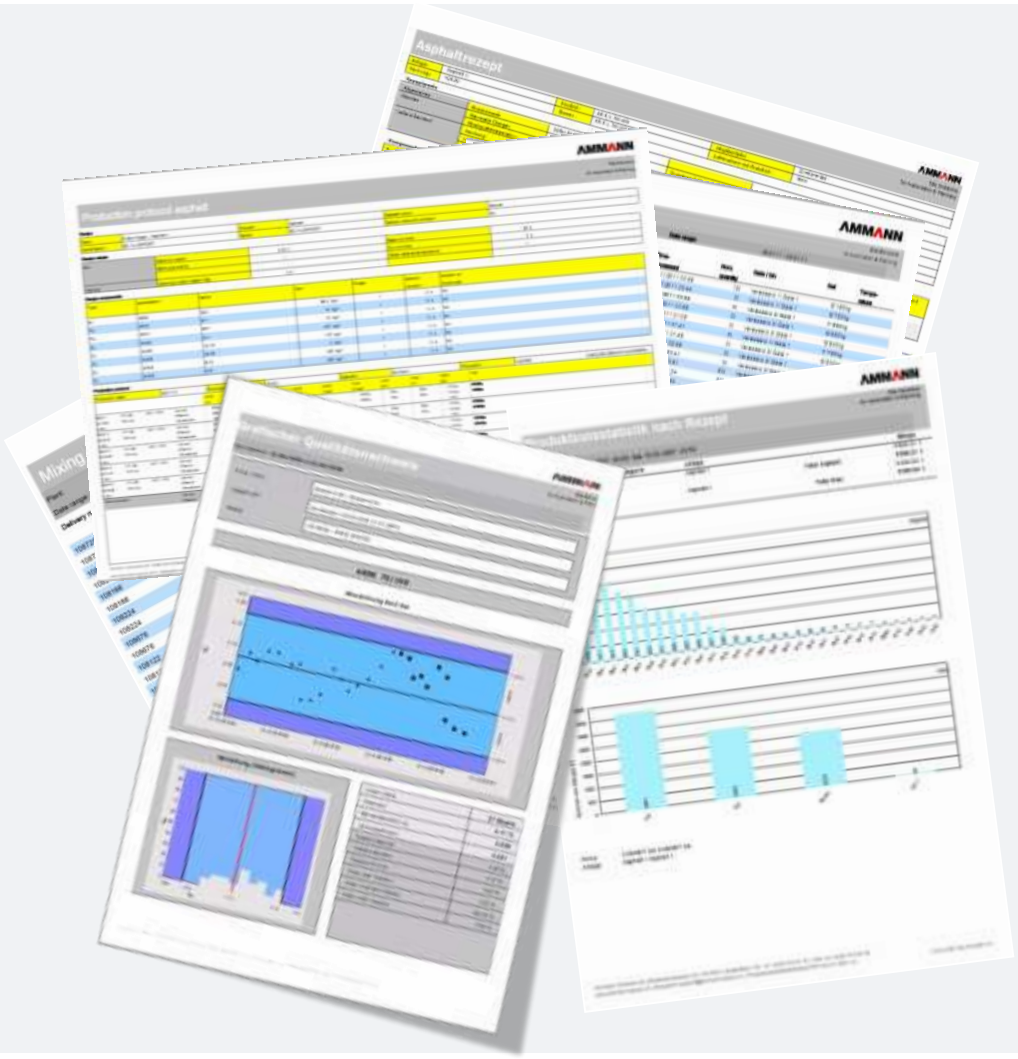
Adapt mixing curve to lab results

Optimal use of RA during start-up

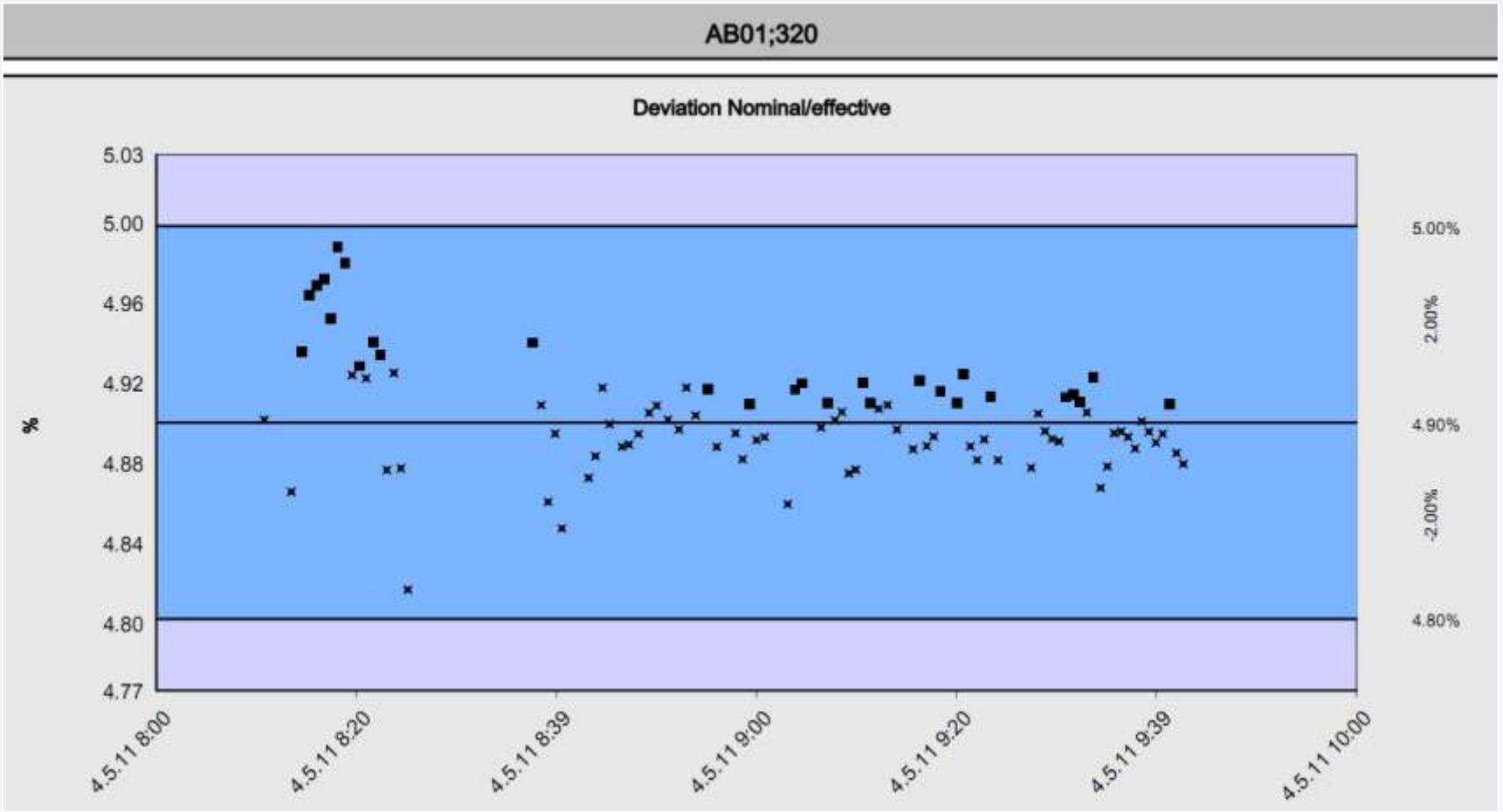
Documented Quality

Protocols

Statistics & listings



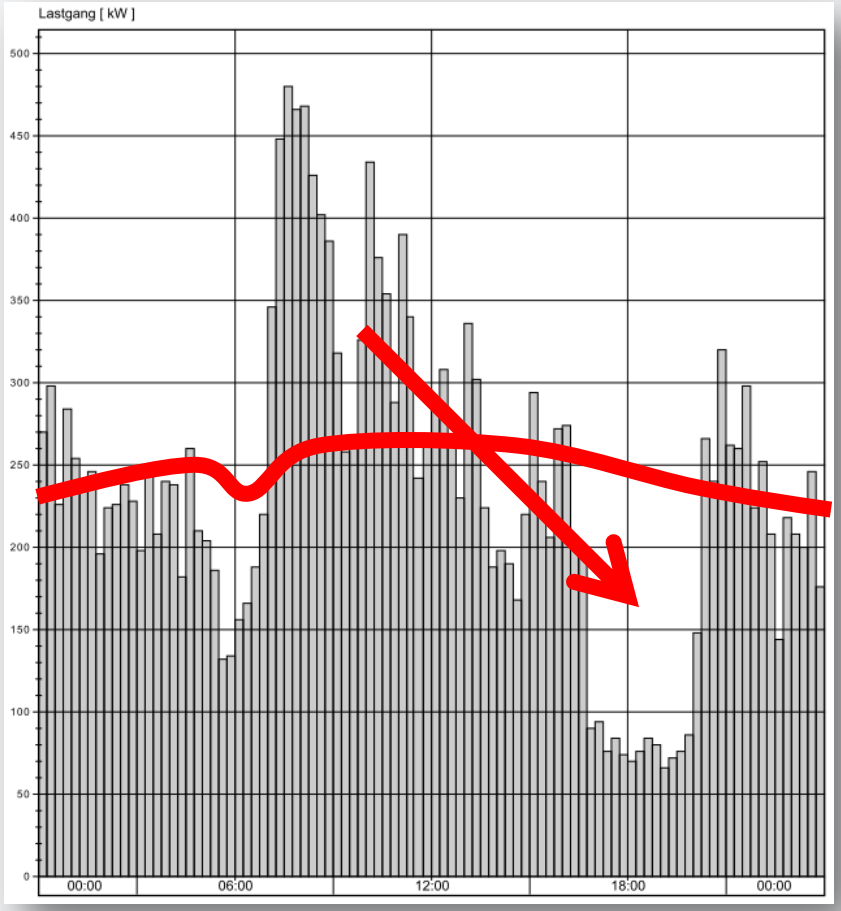
Integrated Quality Control Reports



Peak Load Management – for cost saving

Unit price [kWh]

+

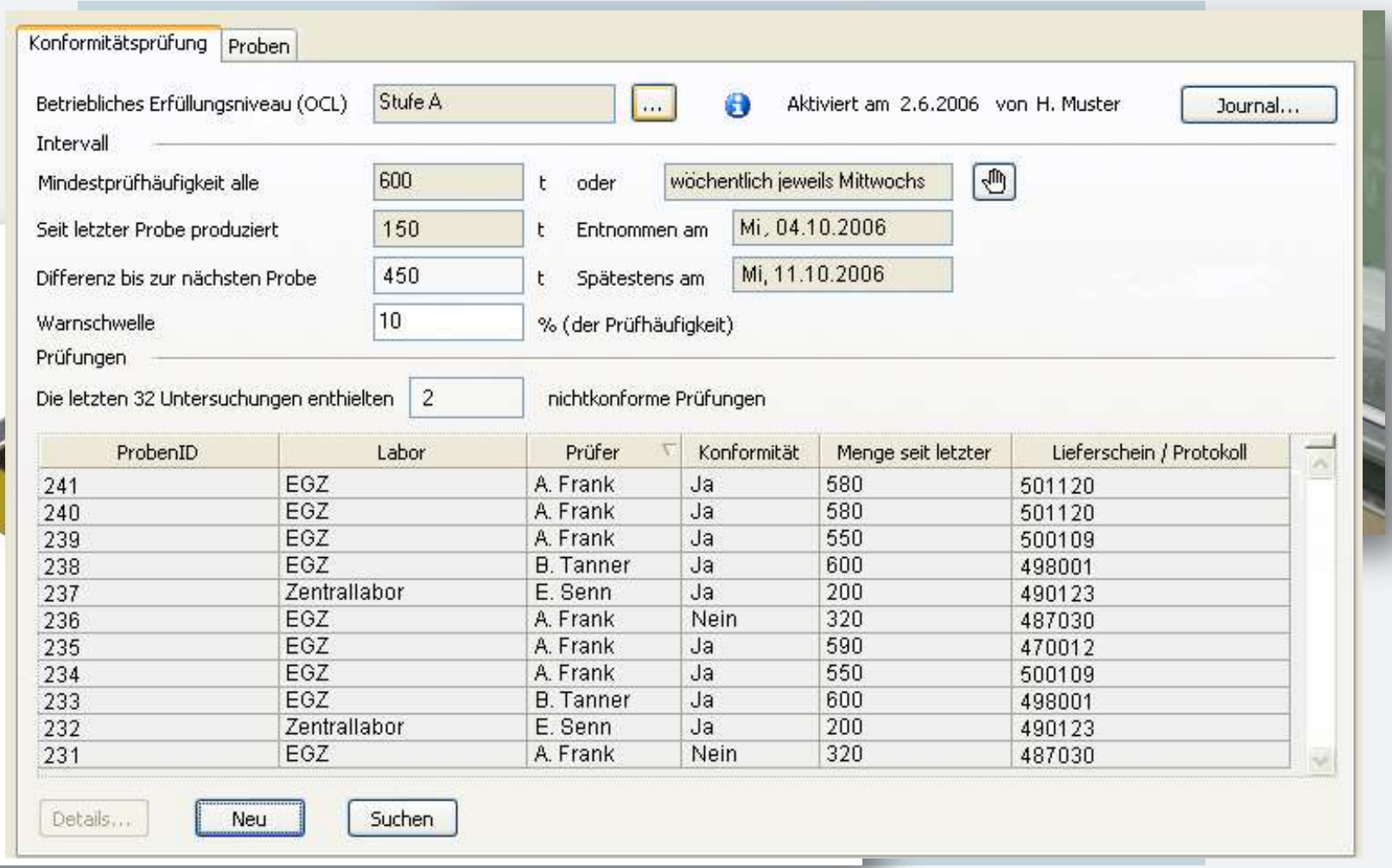


Peak load price [kW]

Power peaks cost money

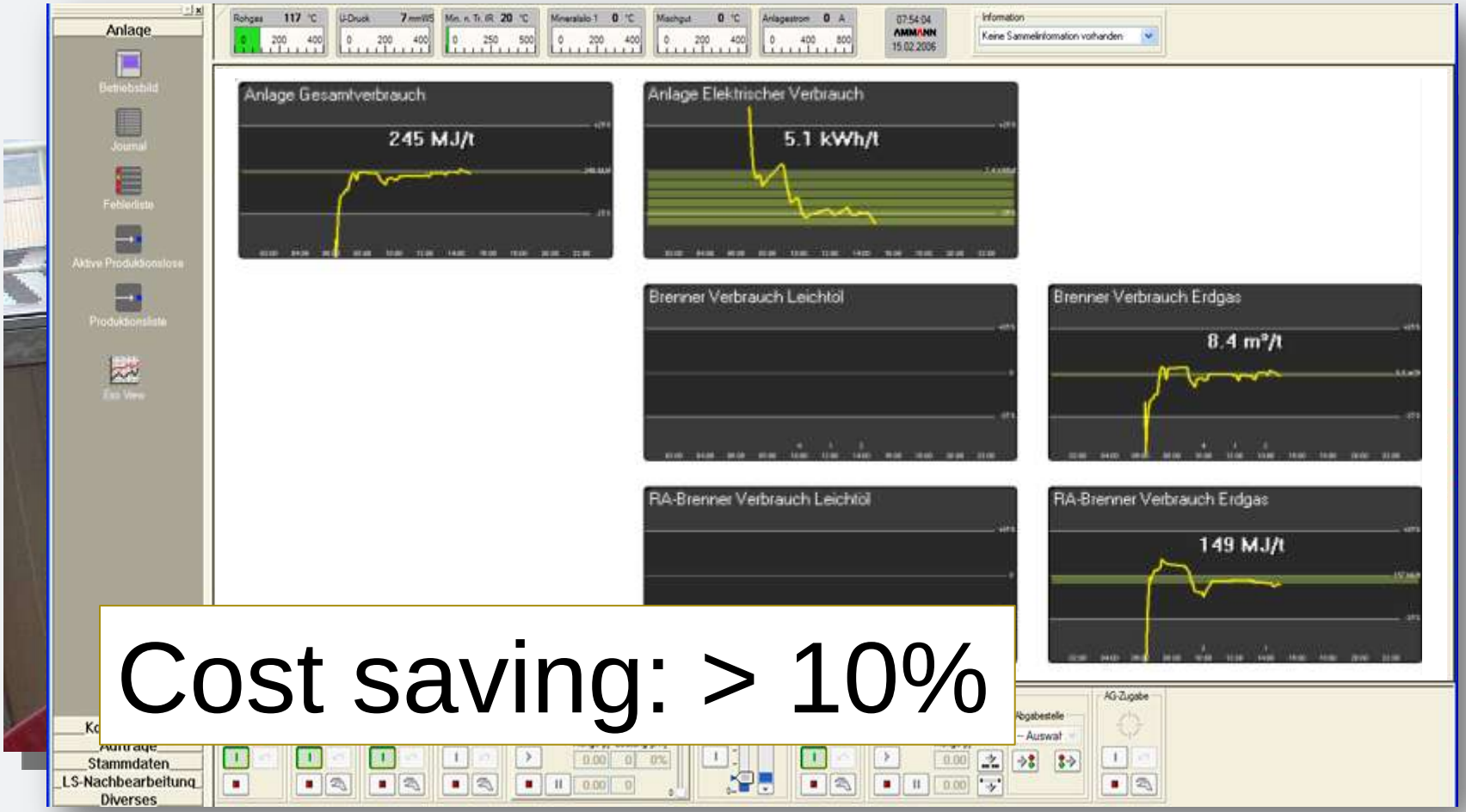
Savings up to 30%

Sample planning and taking



ProbenID	Labor	Prüfer	Konformität	Menge seit letzter	Lieferschein / Protokoll
241	EGZ	A. Frank	Ja	580	501120
240	EGZ	A. Frank	Ja	580	501120
239	EGZ	A. Frank	Ja	550	500109
238	EGZ	B. Tanner	Ja	600	498001
237	Zentrallabor	E. Senn	Ja	200	490123
236	EGZ	A. Frank	Nein	320	487030
235	EGZ	A. Frank	Ja	590	470012
234	EGZ	A. Frank	Ja	550	500109
233	EGZ	B. Tanner	Ja	600	498001
232	Zentrallabor	E. Senn	Ja	200	490123
231	EGZ	A. Frank	Nein	320	487030

Knowing the Process - Online

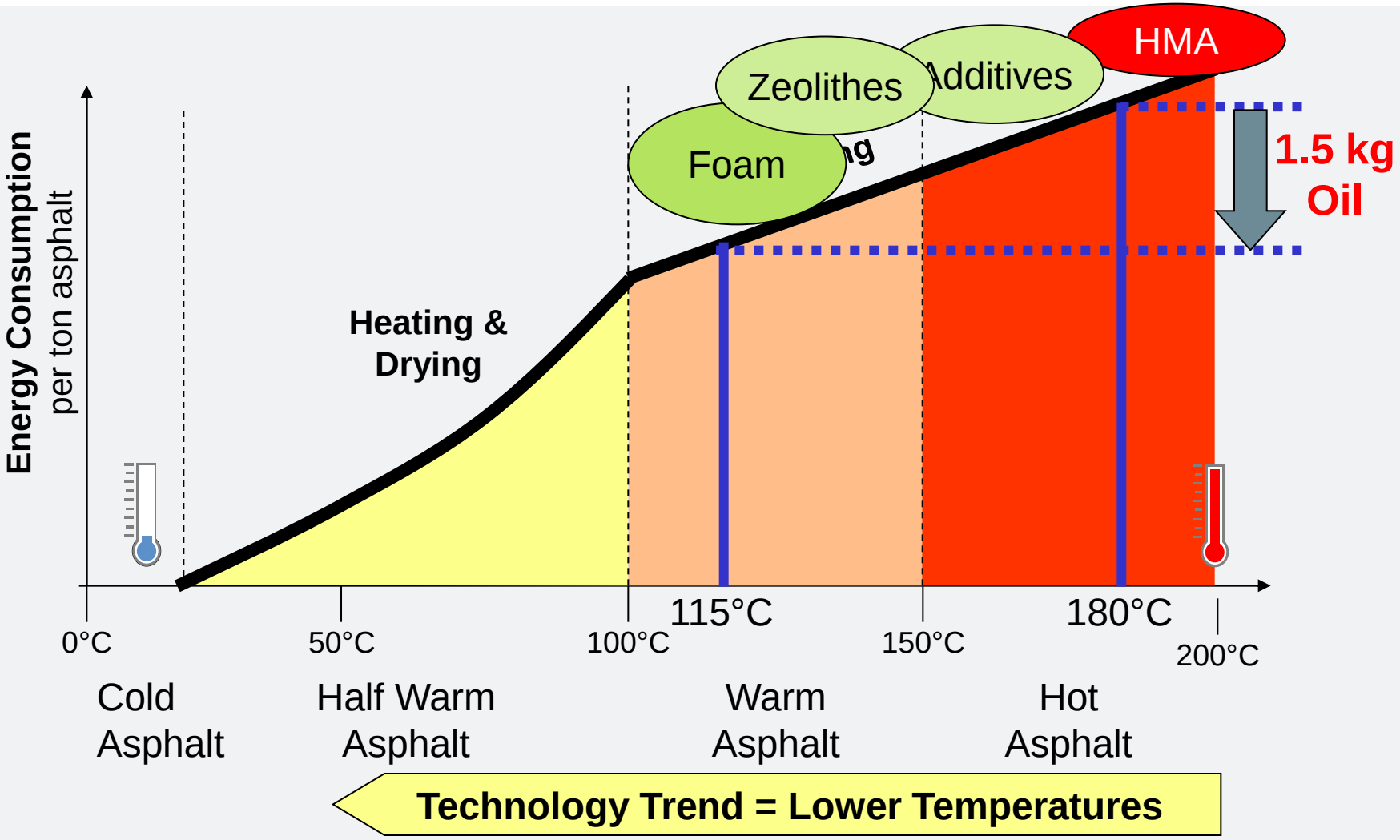


Planning of maintenance interval

Don’t wait until it breaks…

Maintenance task	Jul. 2010			Aug. 2010			Sep. 2010			Oct. 2
	10	20	01	10	20	01	10	20	01	10
Another Special Test										
Skip door lubrification										
Check Belt tention										
Check belts										
Clean foam bar										
Go into weekend										
Mixer test										

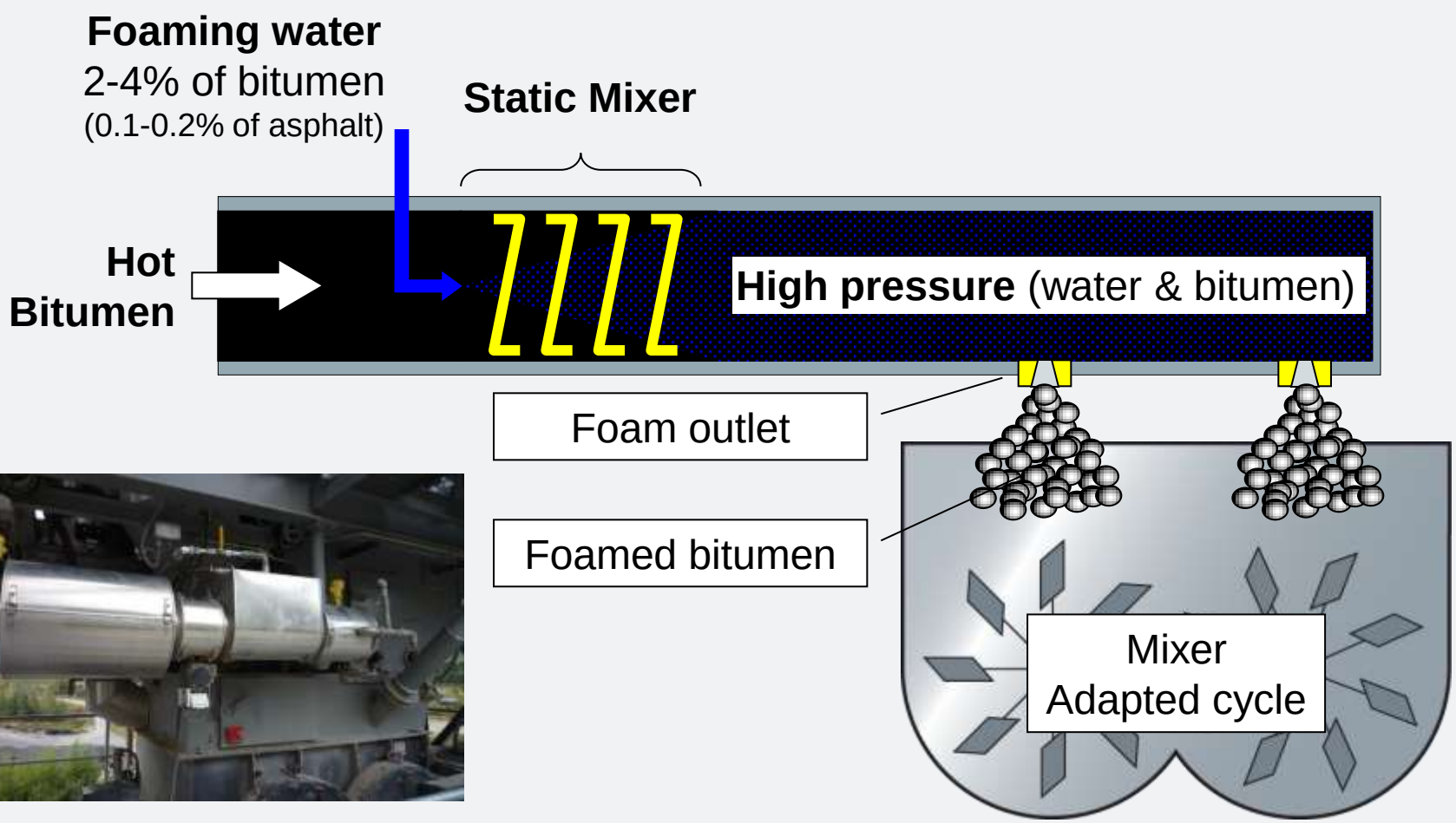
Low Temperature – Highest Quality with Lowest Energy



Low Temperature: On Plant and On Construction Site!

	Temperature Reduction	
	On Plant	On Job Site
Foam Based	++	++
Wax Based	+	(+)
Zeolithes	+	++

Ammann Foam Generator – Basic Principle



Bitumen Foaming

Hot Bitumen

160°C

1 litre

5 % of asphalt

+

Cold Water

2 - 4%

0.03 litre

0.15% of asphalt

+

Fine Distribution

=

Bitumen Foam

20 litres

water: <0.05% of asphalt

Switzerland – Foam Bitumen - AC T 22 N - 2011

Hot Mix Asphalt

Foam Asphalt (115°C)

Same crew, same plant, same equipment
About 50% RA (cold and warm addition)
Equal number of roller passes

Why Ammann Foam?

Low Running Costs

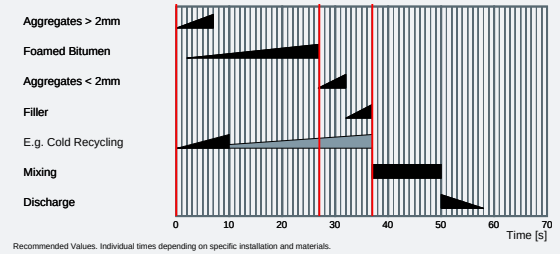
- Energy savings, lower emissions on site
- No license fees
- Use ordinary bitumen, no additives required

Low Investment

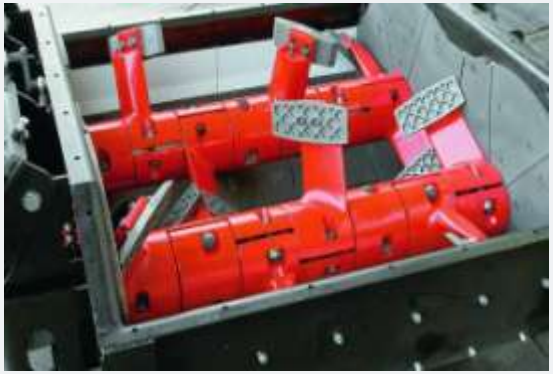
- Use existing bitumen pipes

Flexibility

- If desired, add additives in binder scale
- Continuous and batch mixing plants



Recommended Values. Individual times depending on specific installation and materials.



The Stadium – Where it all comes together

Keeping asphalt in the road.

Gently adjust RA addition.

Know the process - Online!

Low Temperature Asphalt
Highest quality – lowest energy

Productivity Partnership for a Lifetime

www.ammann-group.com