



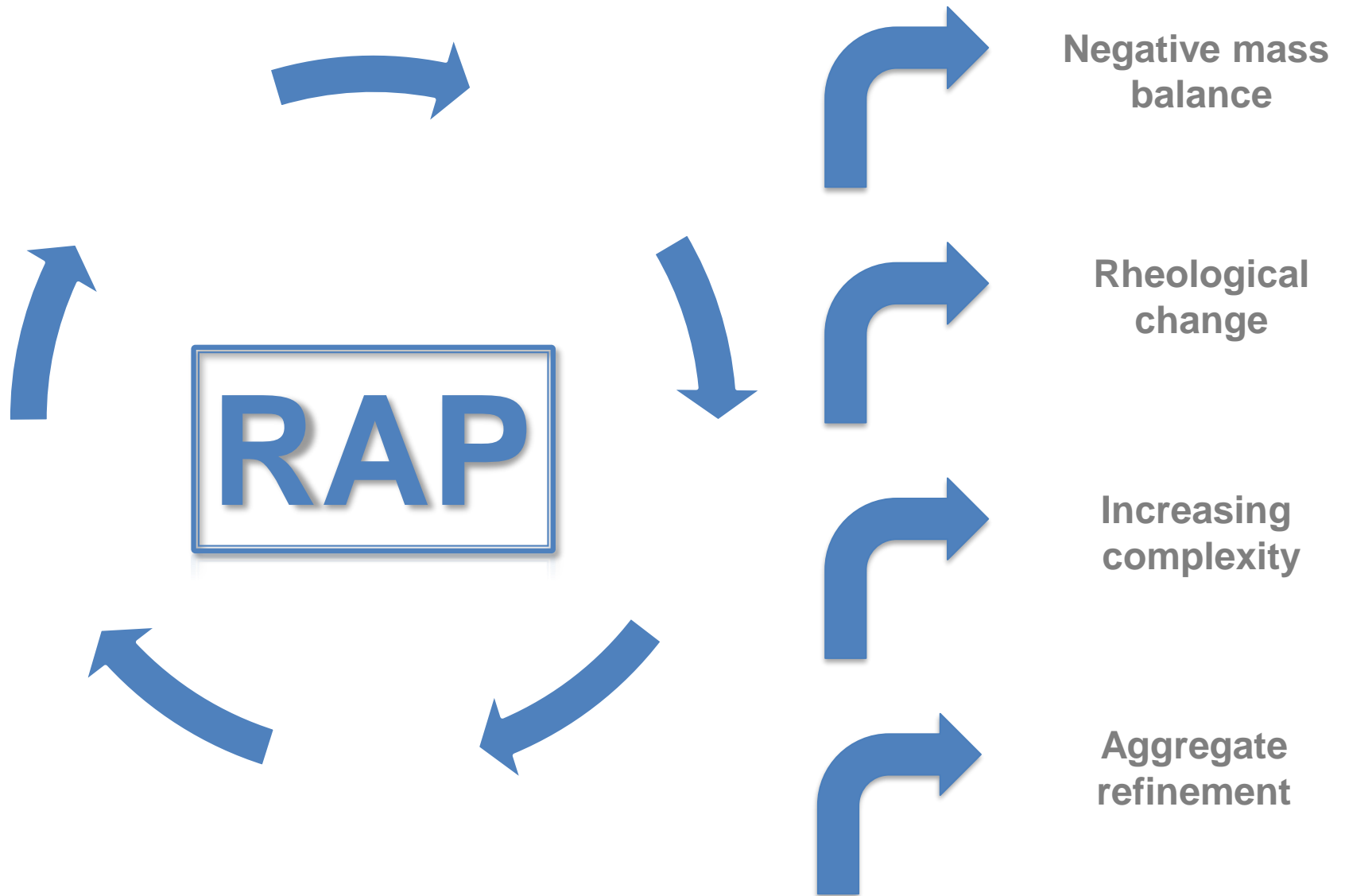
USE OF REJUVENATORS IN HOT RECYCLING

Knut Johannsen

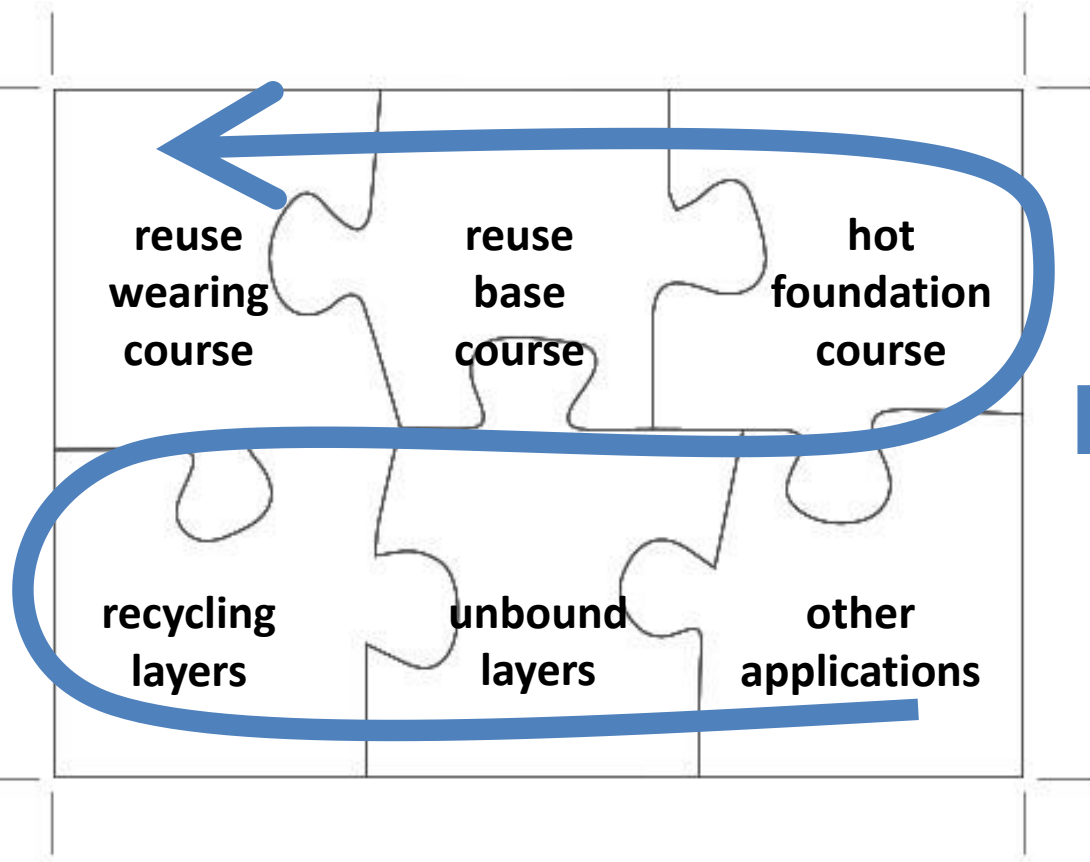


RECYCLING

What's that?



HOW SHOULD RECYCLING WORK?



**100 %-
concepts!**

- Site related
- Net related
- Within planning stage

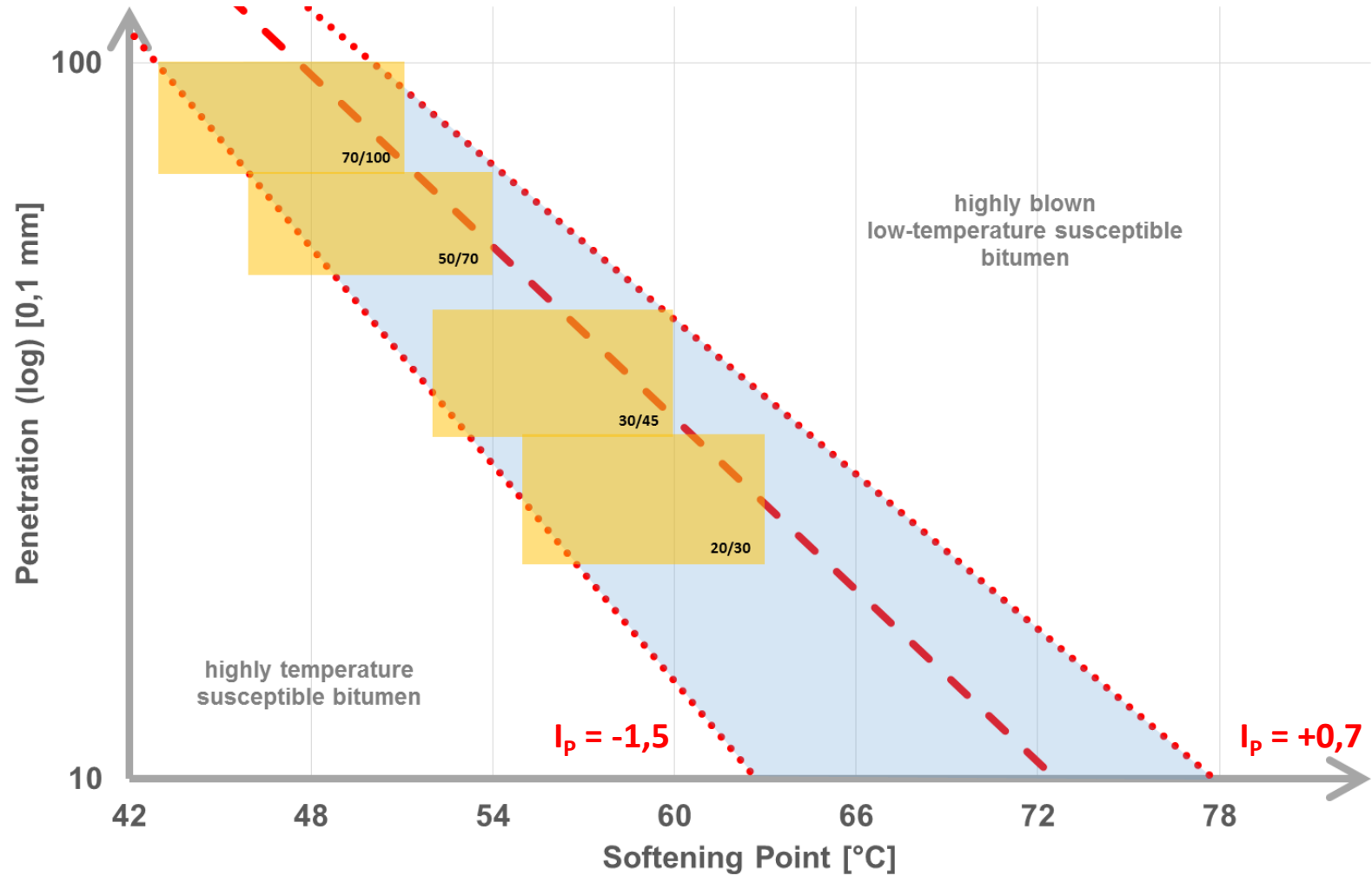
100 % RECYCLING BY EUROVIA

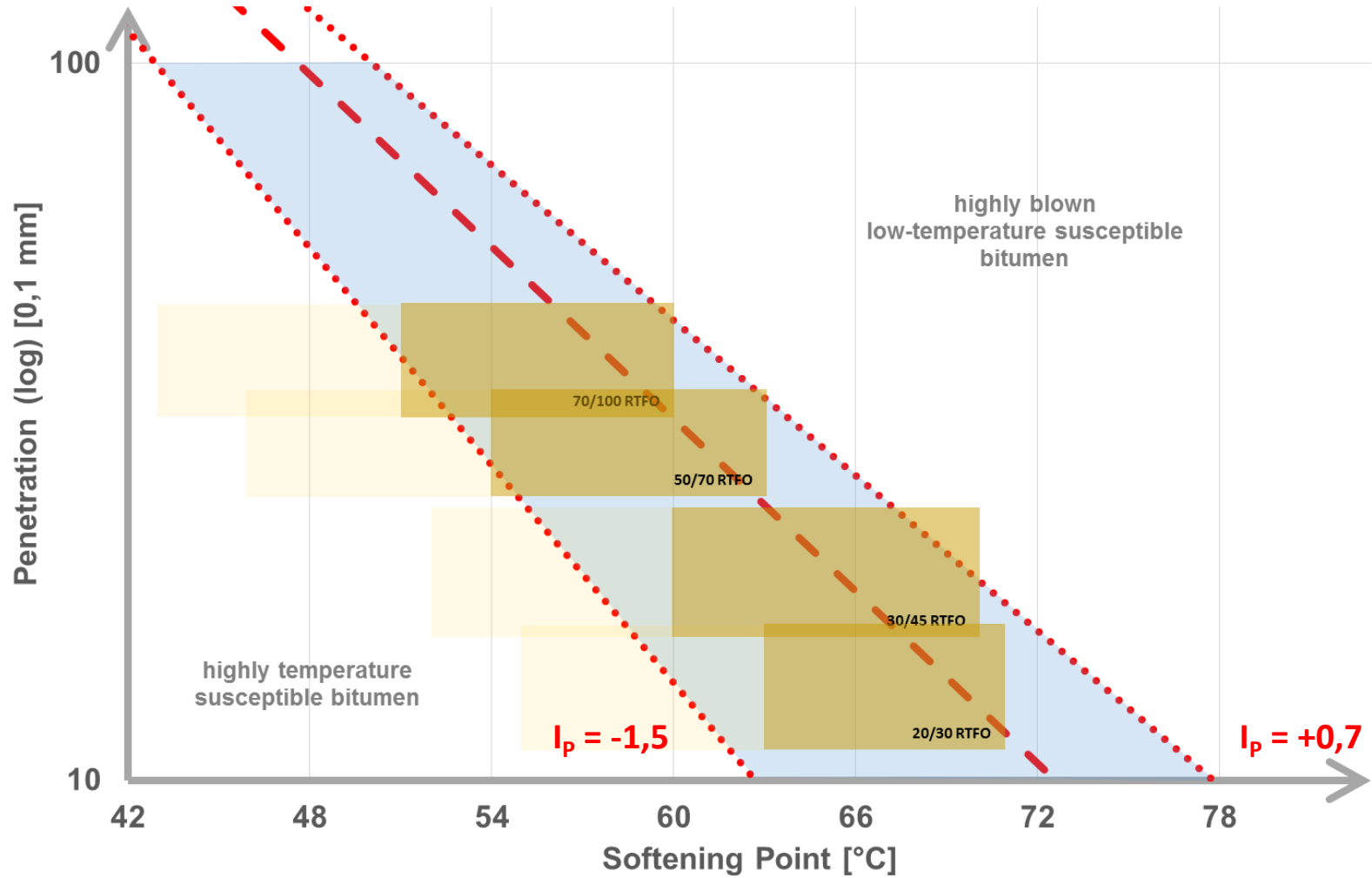


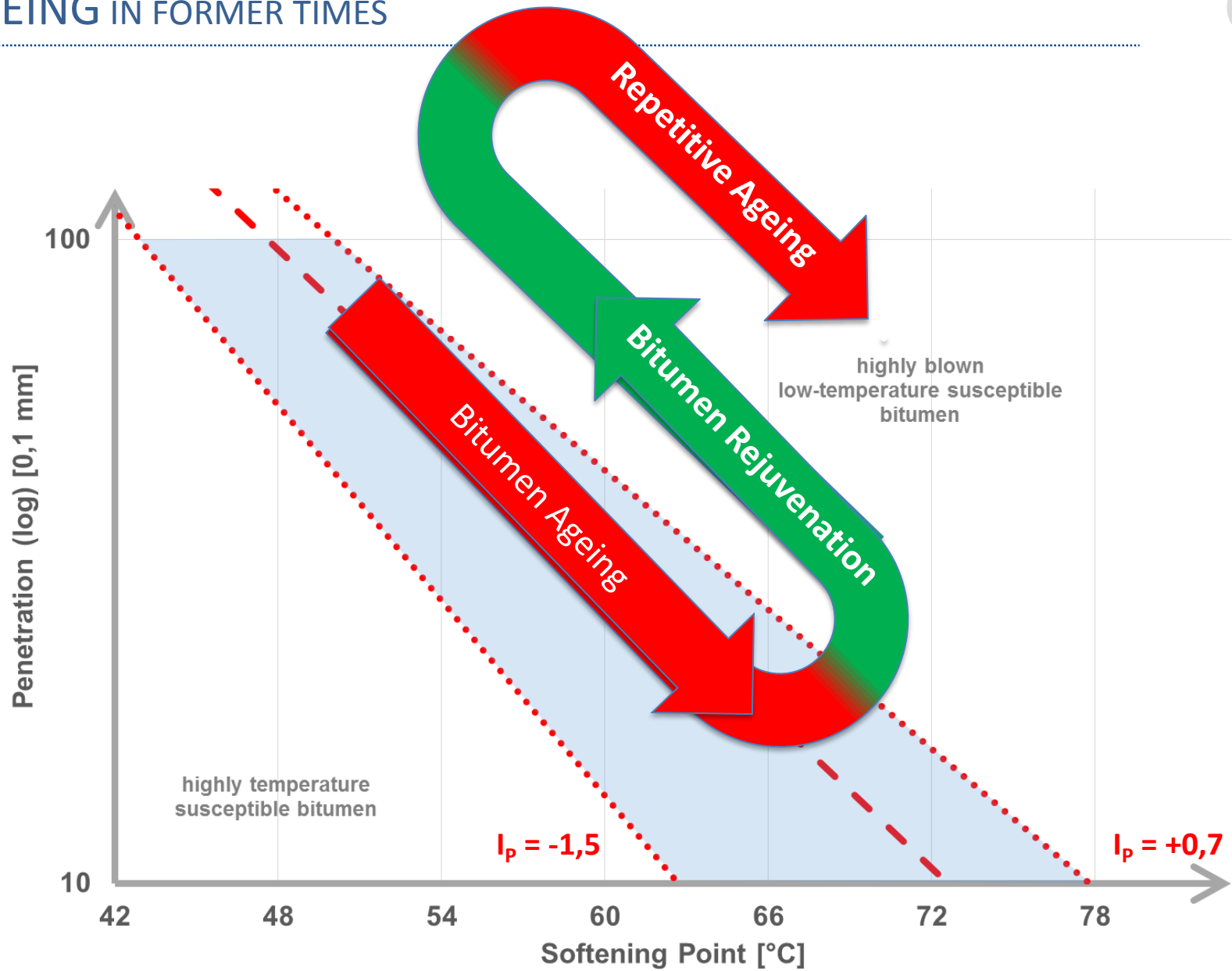


REJUVANTORS

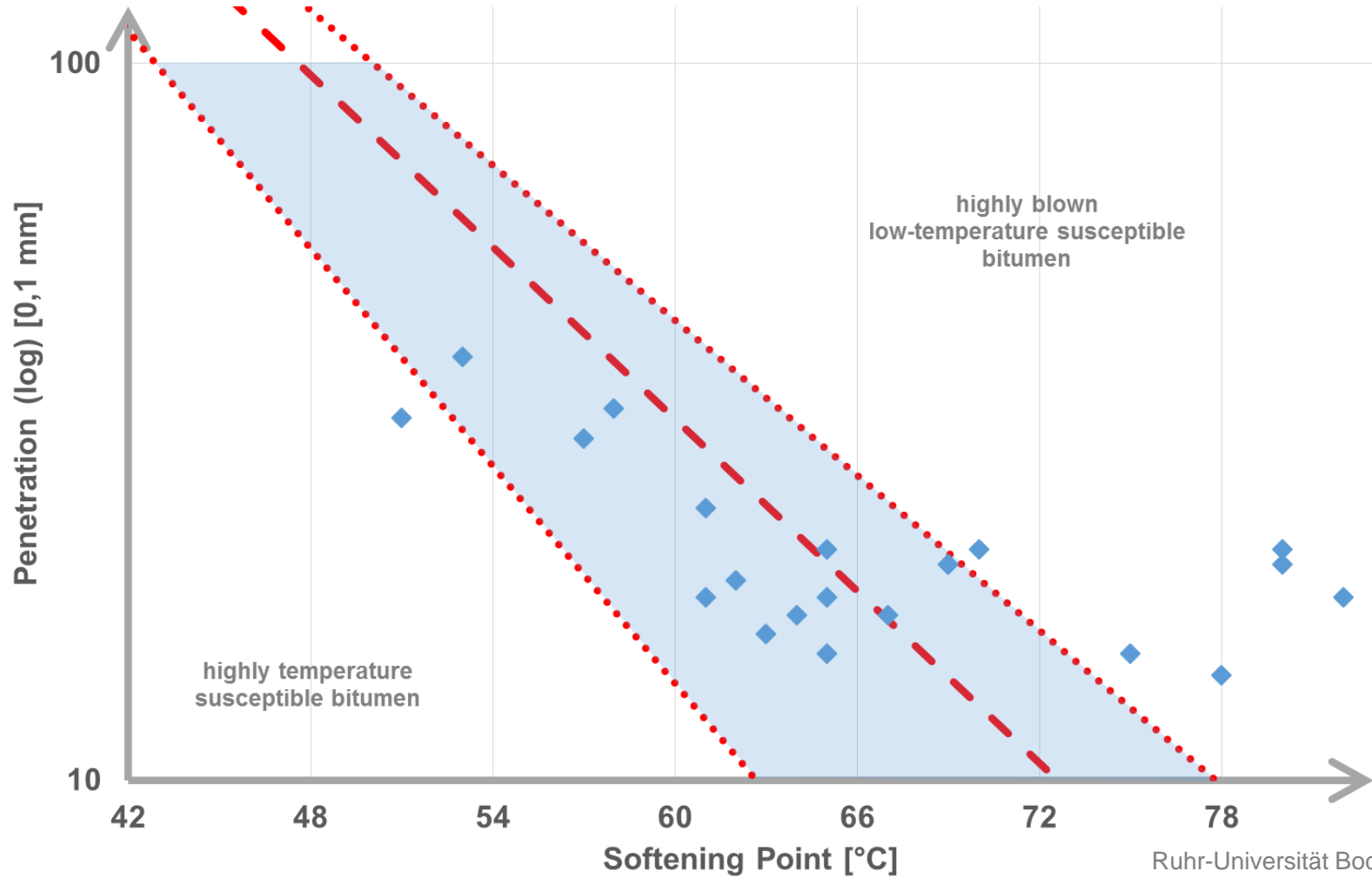
How does it work?



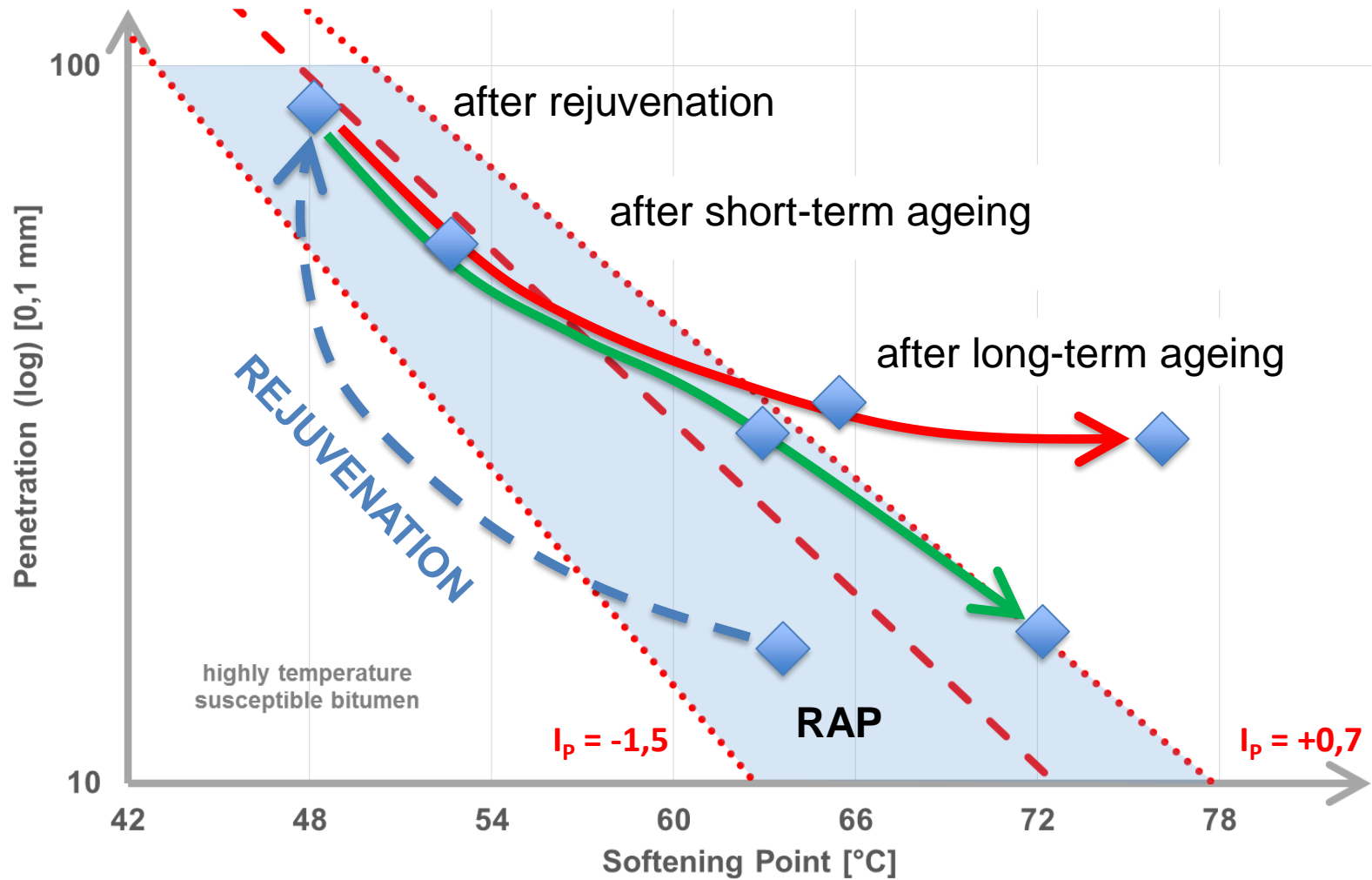




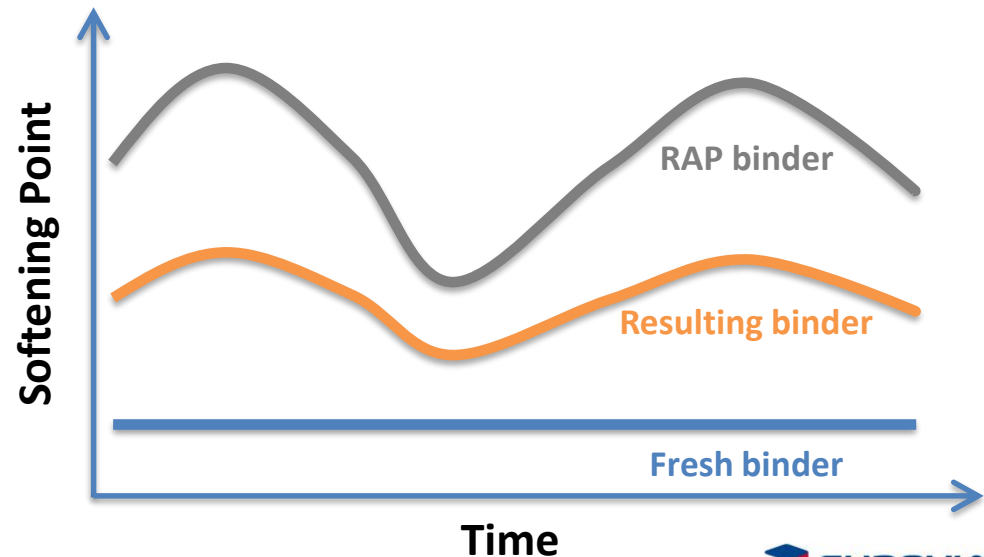
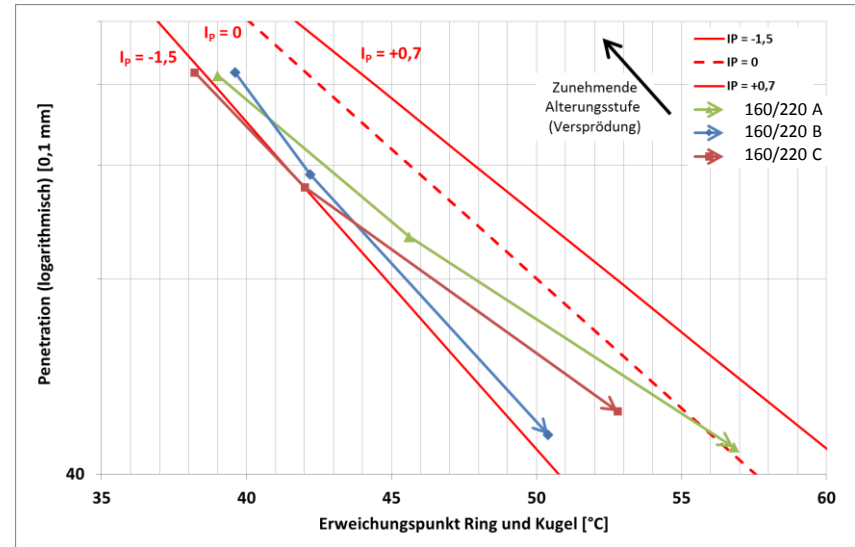
Variety of RAP



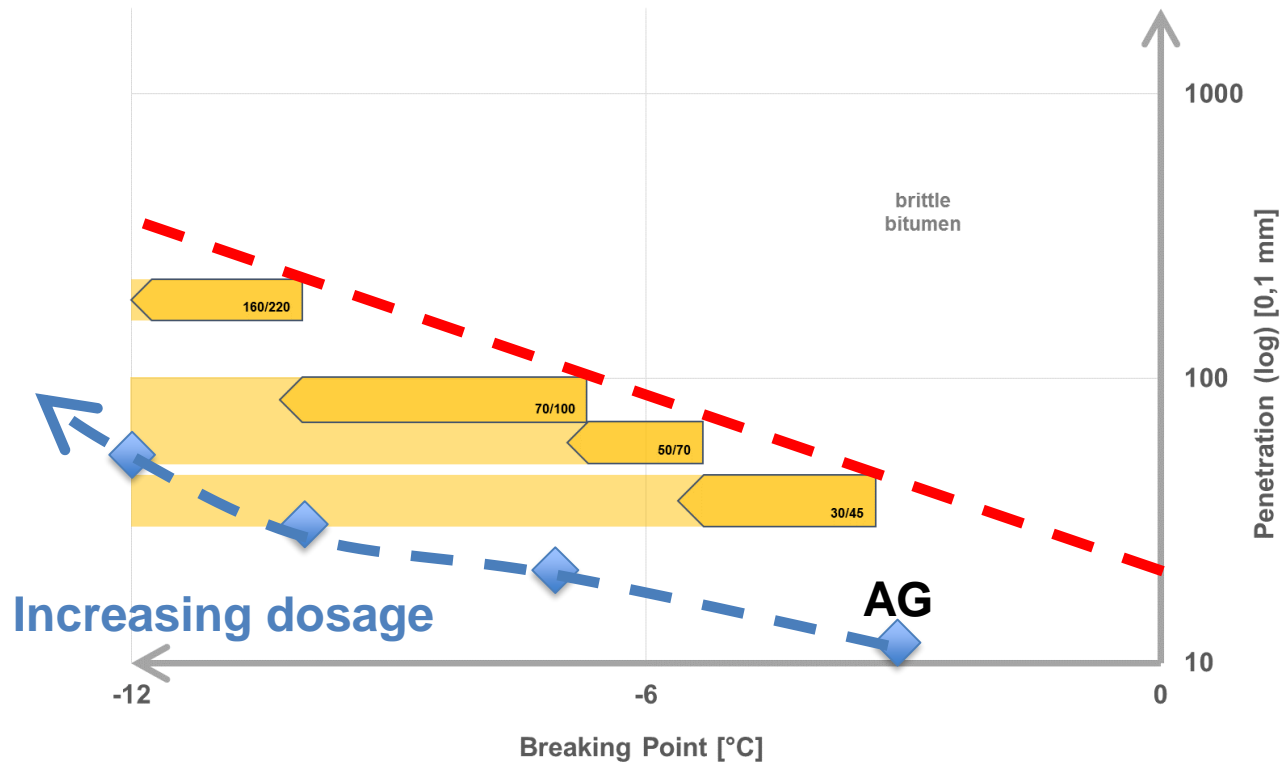
Variety of Rejuvenators



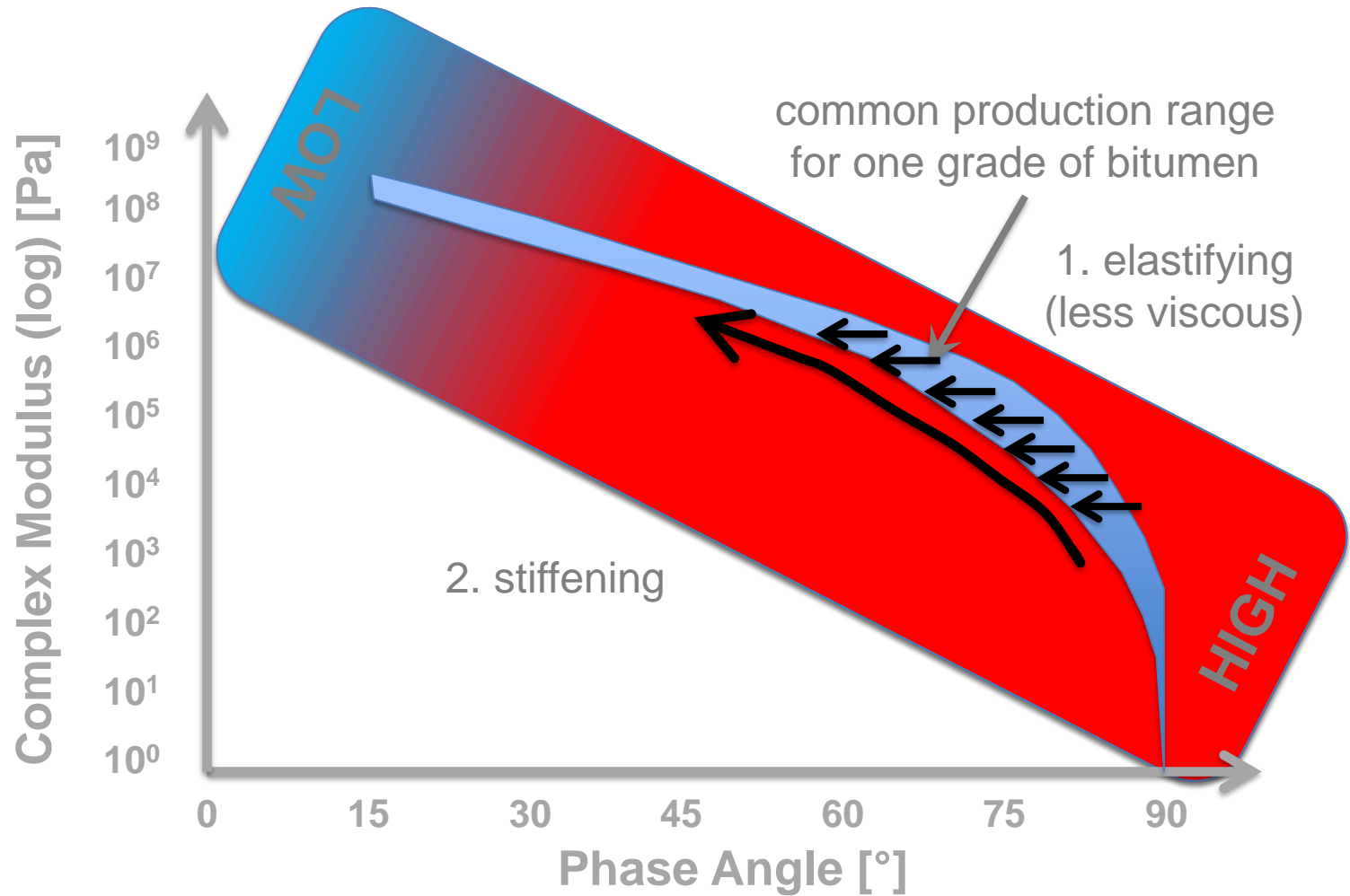
- The effect of a softer base bitumen could be neutralized by storage.
- Problem: Ageing behaviour of bitumen 160/220-binders is not really predictable.
- Softer binders can only decrease the variety in stiffness by soem degree



Not all products affect low temperature behaviour in the same way.

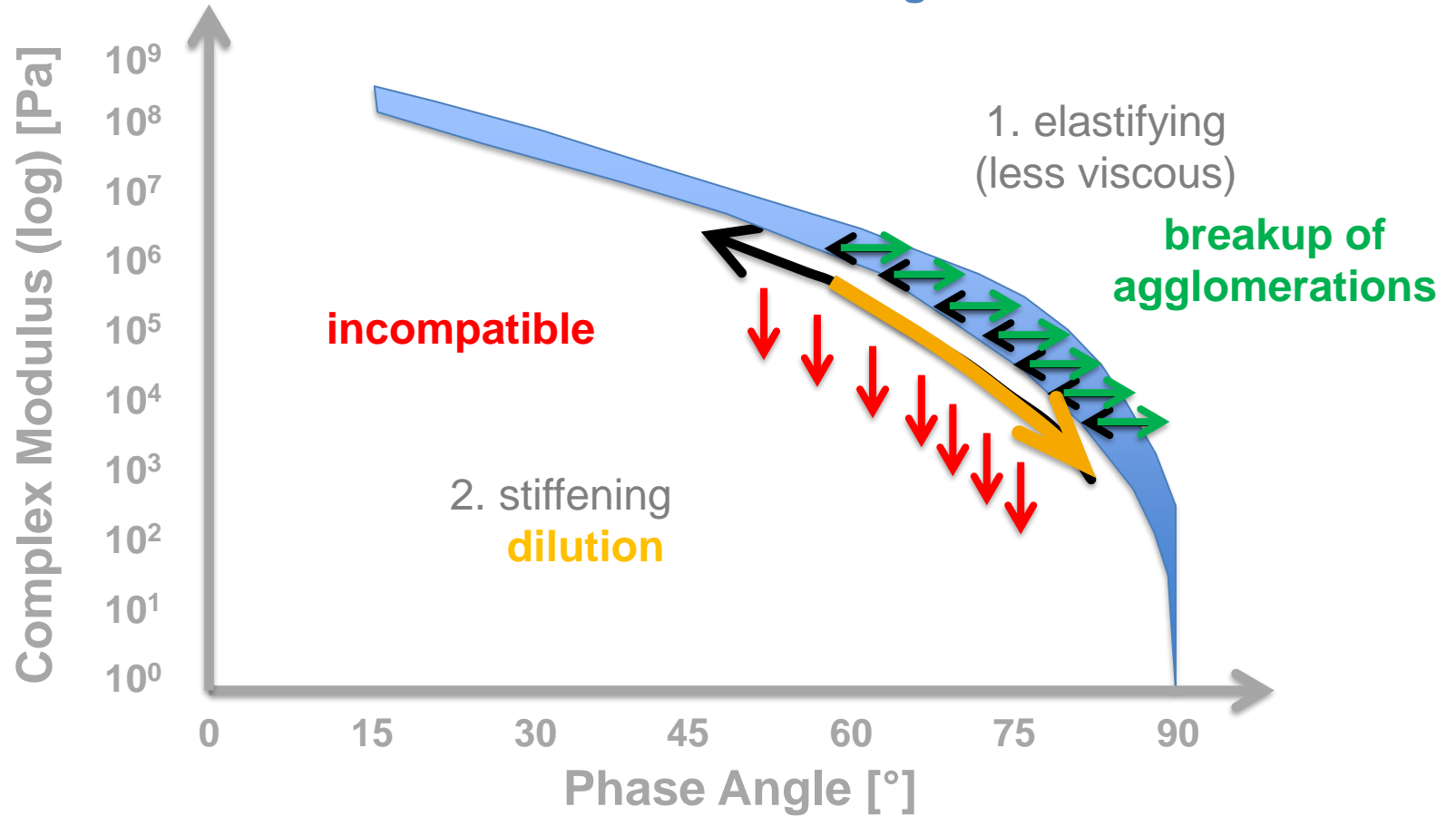


EFFECTS OF AGEING



EFFECTS OF REJUVENATION

There is no healing for oxidation.





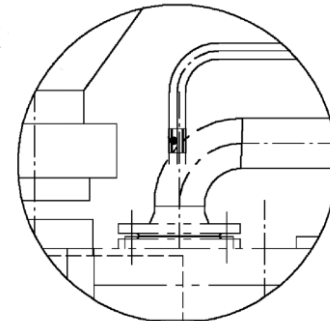
PRODUCTION

How is it working?

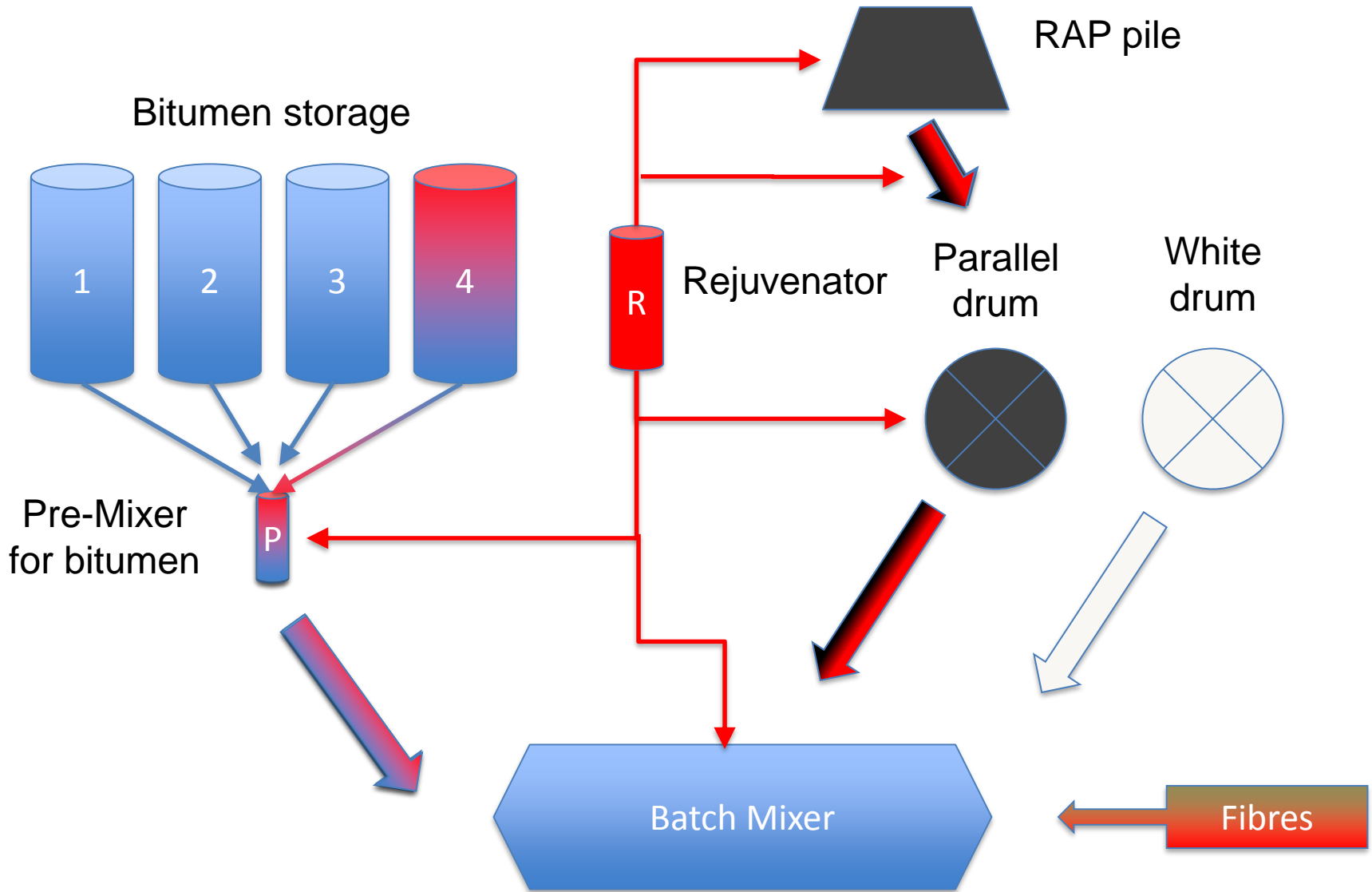
What is the right amount of dosing?

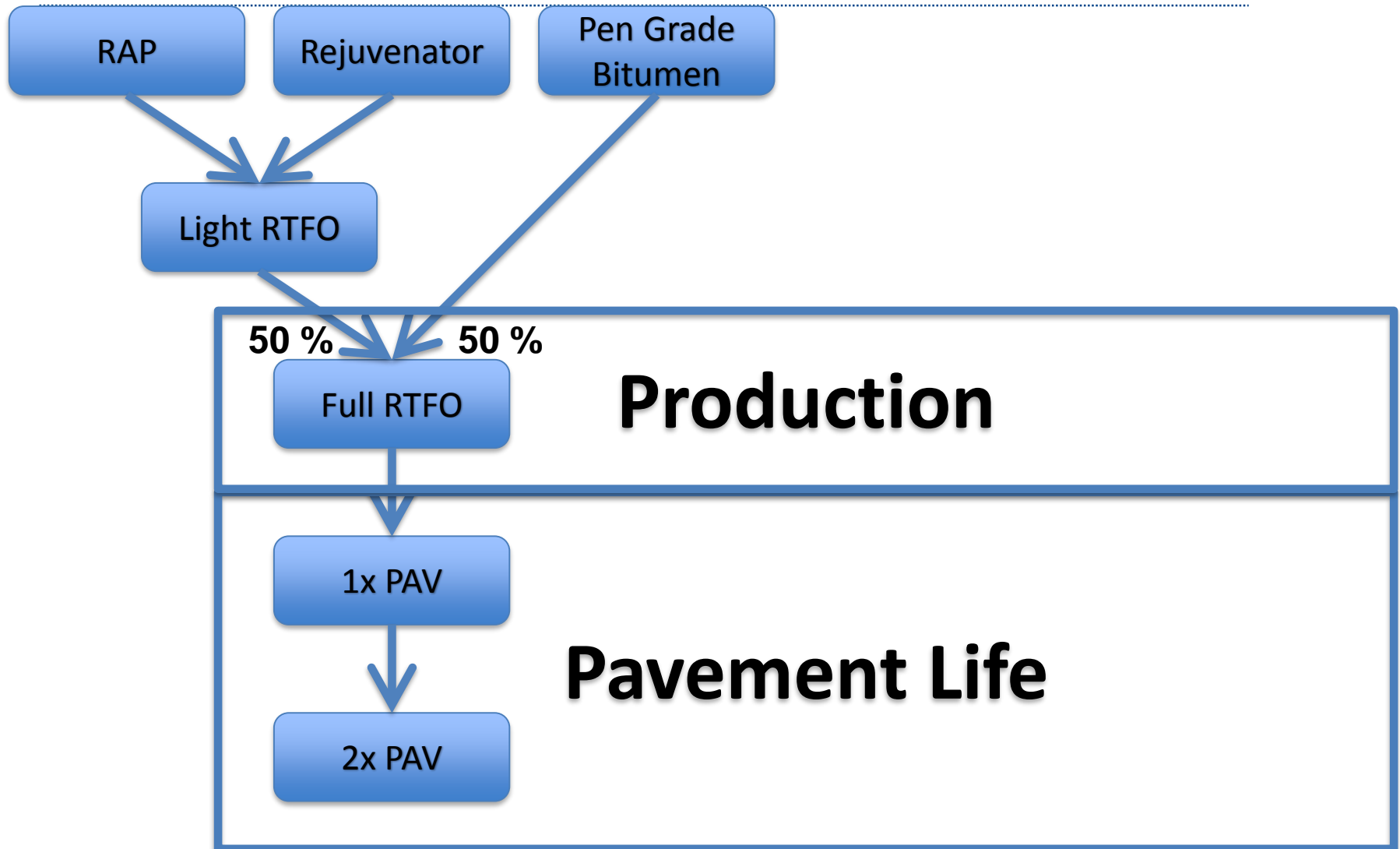
What is the right way of dosing?

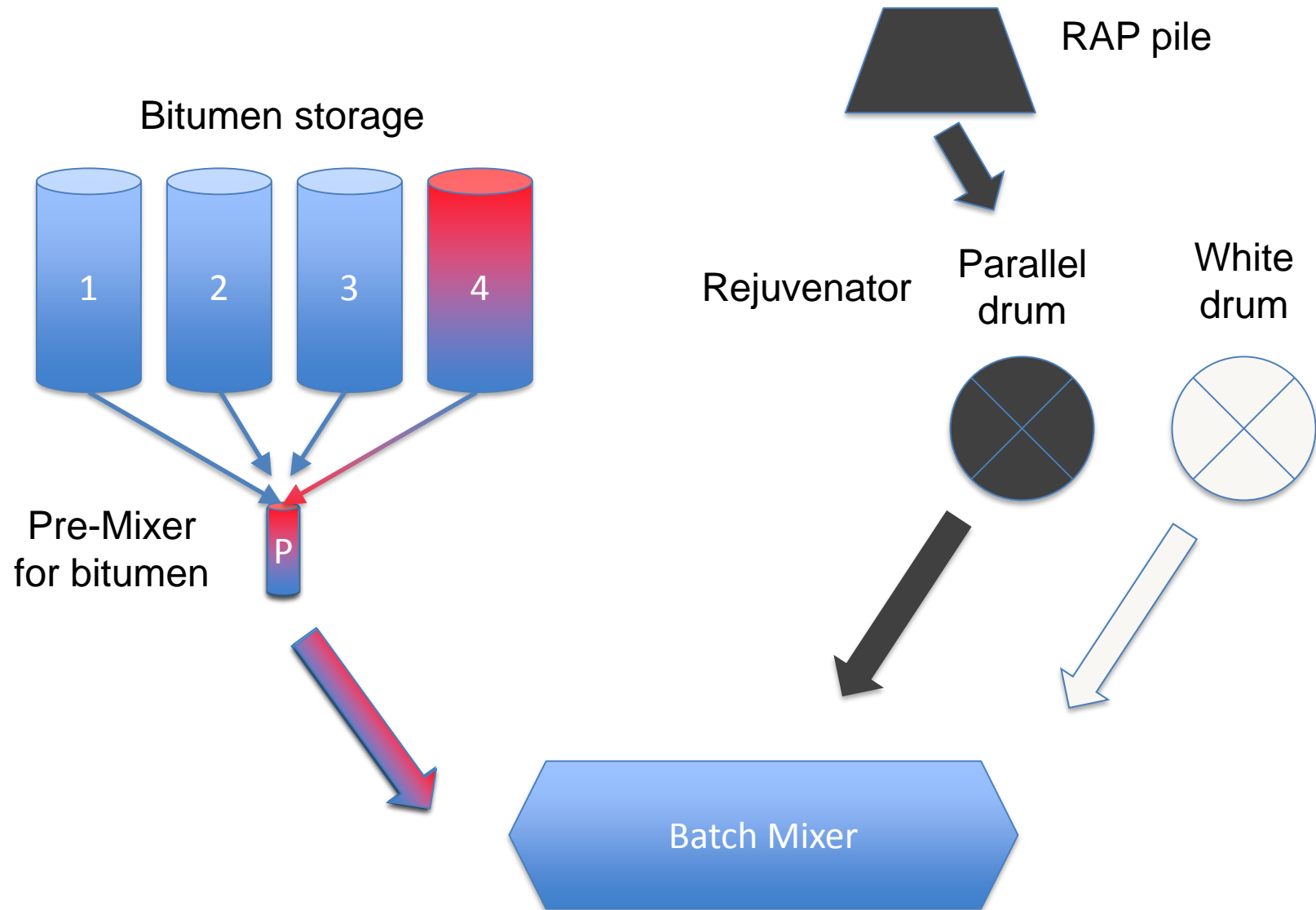
- onto the RAP pile
- into the bitumen tank
- directly to the pug mill
- into the parallel drum
- inline to the bitumen
- with the fibres
- ...?

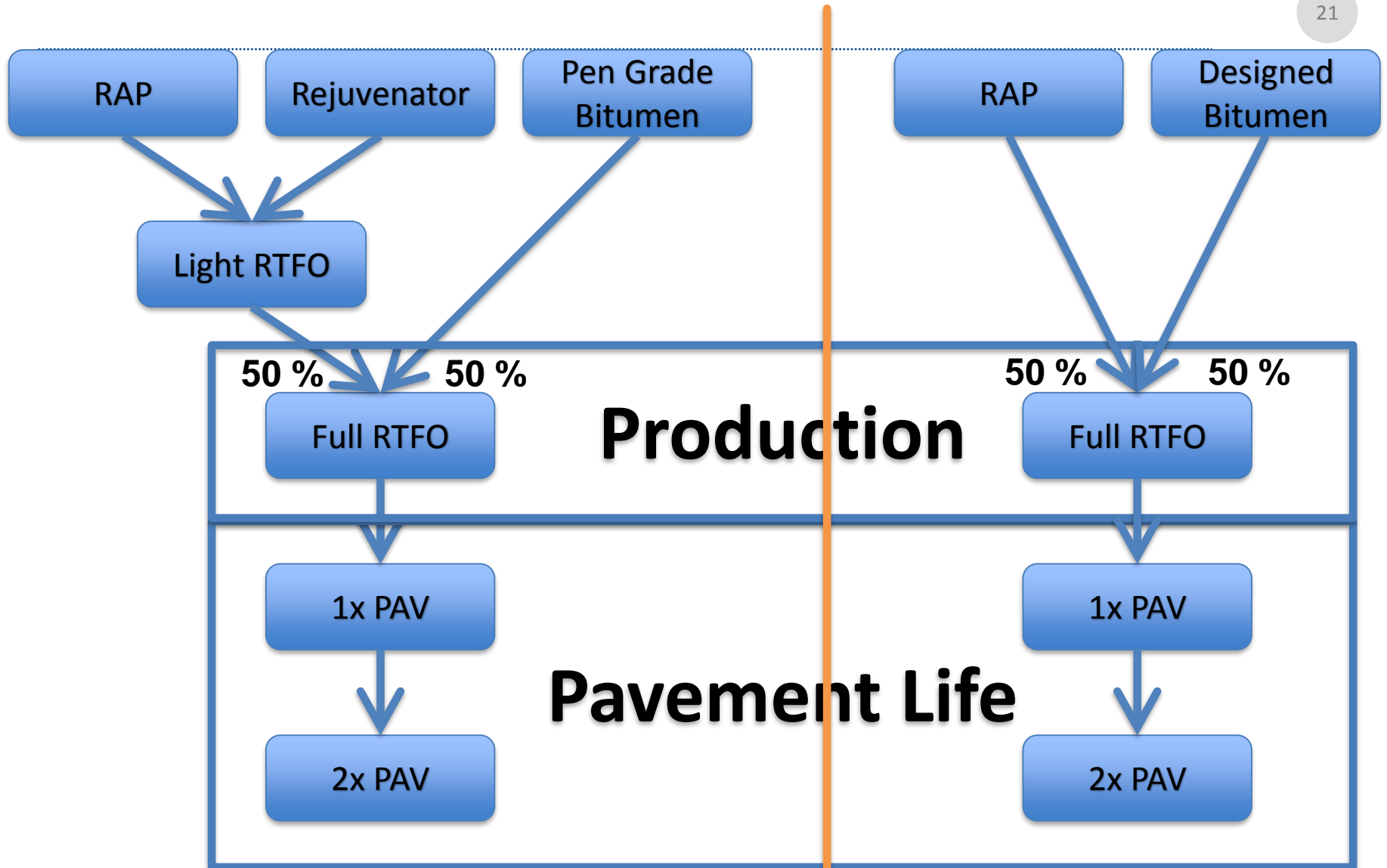


Pictures:
Arizona Chemicals
Amman Group
Benninghoven





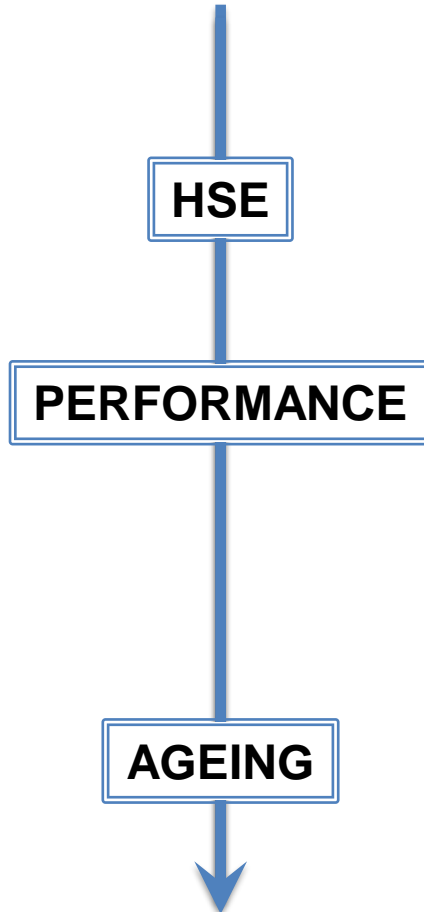






REGENERATORS

And now?



No REOBs
Only „green“ products
Observe the flash point

Find dosage for RAP
- Contractual requirements
- Performance requirements

Test for ageing
specifically adapted to your production
and always until proposed end of life time

ASPHALT INDUSTRY

ROAD OWNER

Health and Safety

HSE

Environment

PERFORMANCE

RAP
Binder

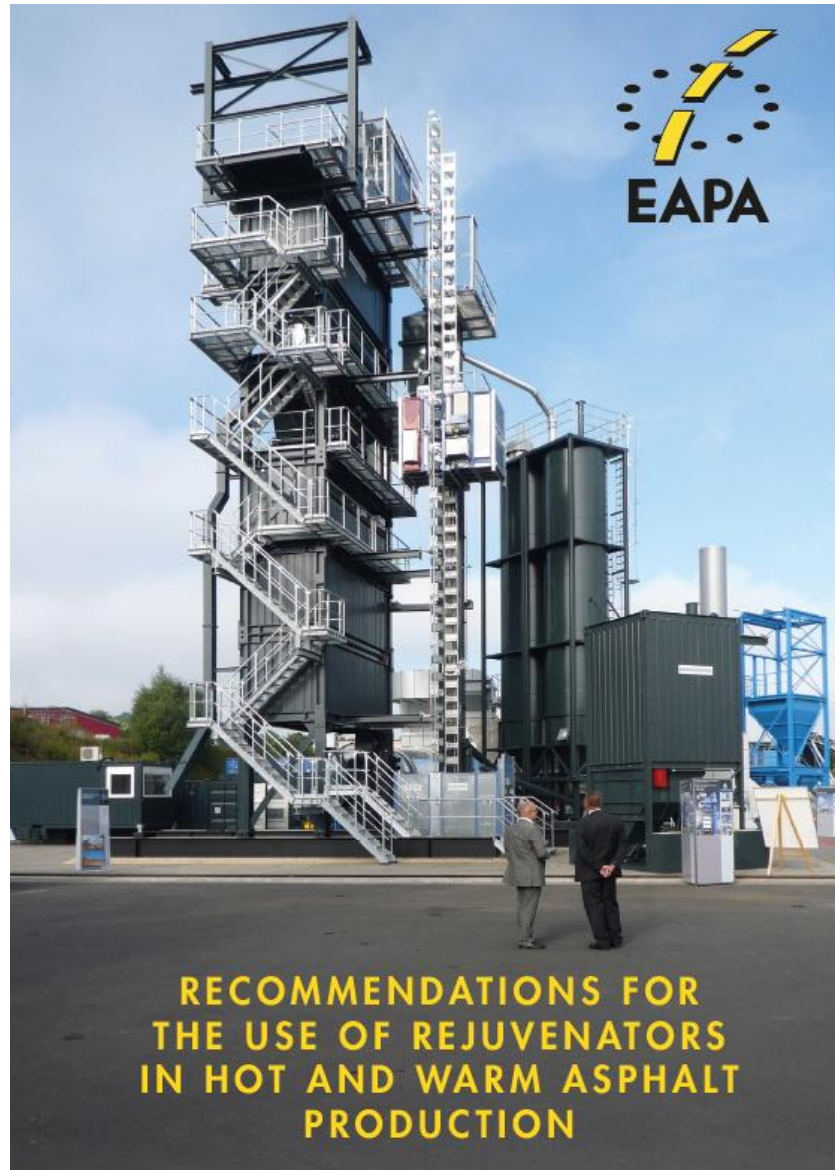
Binder
Asphalt

AGEING

Short term
Middle term

Middle term
Long term





A promotional poster for the 7th E&E Congress. The background is a gradient of yellow and blue with dynamic, curved lines. At the top center is a stylized graphic of two overlapping curved shapes. The main text is in bold, black, sans-serif font. A yellow callout box in the bottom right corner contains text about the abstract submission deadline. At the bottom, the words "INVITATION AND CALL FOR PAPERS" are written in large, white, bold, sans-serif font.

7th E&E CONGRESS
EURASPHALT & EUROBITUME

MADRID 12-14 May 2020
Palacio Municipal de Congresos de Madrid

ASPHALT 4.0 FOR FUTURE MOBILITY

Deadline for submitting abstracts is October 30, 2018

INVITATION AND CALL FOR PAPERS