TECHNOLOGY

LOW-TEMPERATURE ASPHALT WITH AMMANN FOAM®

INNOVATIVE AND FORWARD-LOOKING

150 Years of Innovation
Since 1869

AMMANN

LOW-TEMPERATURE ASPHALT IS BECOMING INCREASINGLY POPULAR

INNOVATIVE AND FORWARD-LOOKING

Lowering the manufacturing temperature opens up new opportunities for asphalt as a construction material. Lower energy costs and less emissions are only part of the positive characteristics of low-temperature asphalt. Despite the growing number of varied solutions that have appeared on the market we believe that it is not enough to focus exclusively on a particular method of introducing additives or foam bitumen. The entire process chain is affected, starting with drying at a reduced temperature through to specific mixing sequences and on to the introduction of recycling. Ammann has focused their research and development on the complete manufacturing process for low-temperature asphalt with an injection device being simply the beginning. We would be pleased to advise you on how best to make this important step forward.

ENERGY EFFICIENT, LOW EMISSION AND CO_2-OPTIMISED

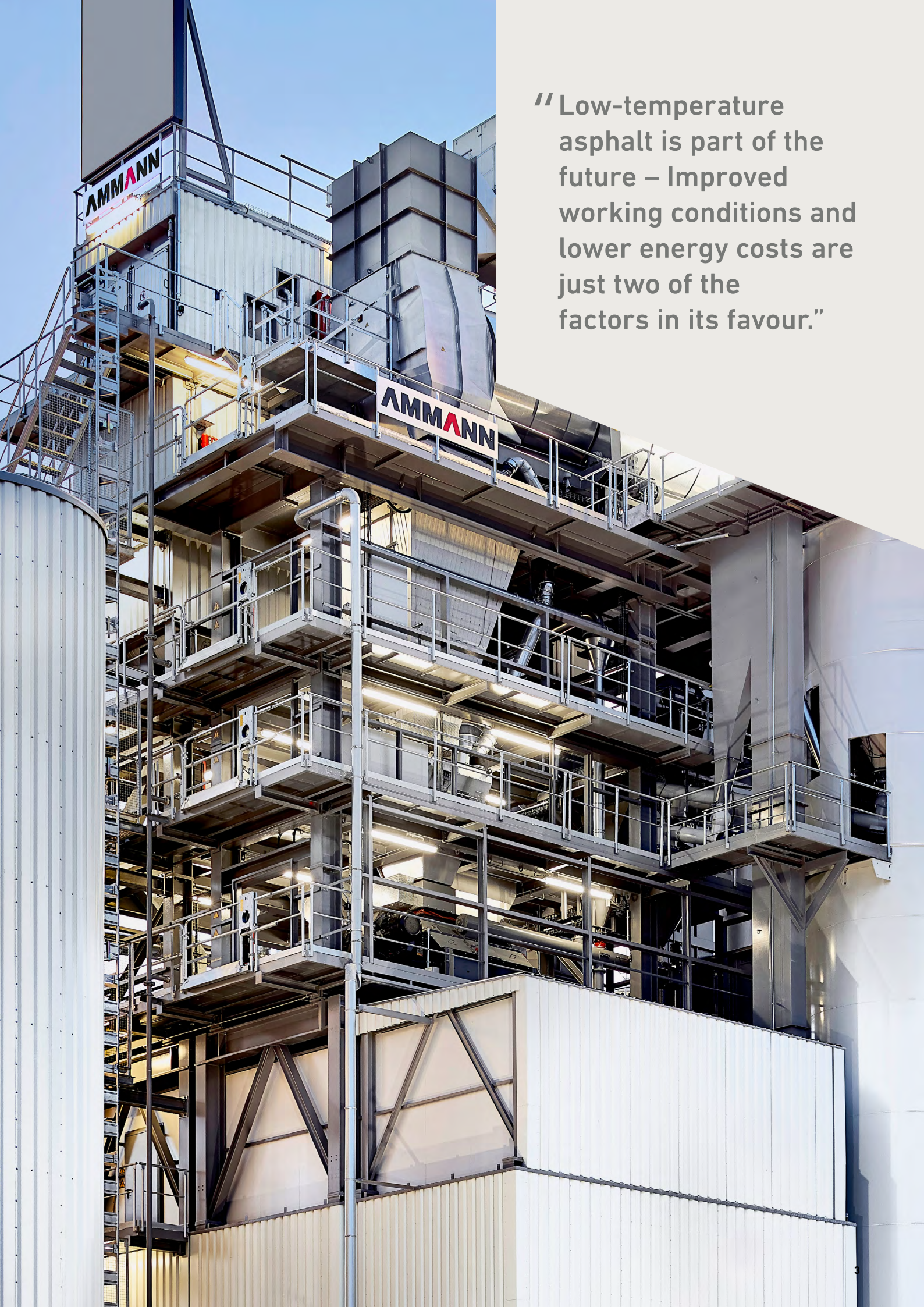
New technologies enable the manufacturing of asphalt at reduced temperatures. The energy consumption per tonne of asphalt and the emissions at the road construction site drop significantly. Whilst conventional asphalt is produced at around 170 °C, the low - temperature processes of today allow production temperatures of around 100 °C. Ammann offers various technologies for this. Foam bitumen, waxes and other additives, special bitumen or alternative mixing cycles can be suitable for use, depending on the application.

HIGHLIGHTS

- Same quality as hot asphalt
- Lower energy consumption
- Lower emission of CO_2 per tonne of asphalt
- Lower emissions at the road construction site
- Ideal supplement to recycling
- Reduction of bitumen ageing

WE OFFER VARIOUS DIFFERENT SOLUTIONS, DEPENDING ON THE DESIRED TECHNOLOGY, FOR EXAMPLE:

TECHNOLOGY	SAVINGS	PRINCIPLE	TECHNIQUE
FOAM BITUMEN	65 °C 5 kg CO_2 / t 1.5 kg oil / t	• Bitumen foamed with water • Mix and work with asphalt at lower temperatures	• Foam generator • Adapted mixing cycle
WAXES	50 °C 3.5 kg CO_2 / t 1 kg oil / t	• Addition of waxes to bitumen • Asphalt is easier to process at high temperatures	• Addition of waxes • Special bitumen available
ZEOLITE	40 °C 2.7 kg CO_2 / t 0.8 kg oil / t	• Bound water in special filler is released and makes the asphalt easier to process	• Addition of zeolites (similar to filler)



"Low-temperature asphalt is part of the future – Improved working conditions and lower energy costs are just two of the factors in its favour."

AMMANN FOAM® GENERATOR

THE IDEAL ADD-ON FOR ANY ASPHALT-MIXING PLANT

AMMANN FOAM®

Ammann is convinced that the future lies with low temperature asphalt. In cooperation with customers and laboratories, we have developed the Ammann Foam process. This process is based on the the foaming of bitumen with water and will be employed in our continuous and batch plants. Ammann foam works without any chemical additives and can also be retrofitted to existing plants with minimal effort.

HIGHLIGHTS

- Heating of the raw aggregate to approx. 115 ° C
- Perfect mix of bitumen and aggregates
- Compaction of the asphalt at low temperatures
- Foam generator can be integrated into continuous and batch plants
- Retrofitting to existing plants possible

THE FOAM GENERATOR

A foam bitumen installation enables you to expand the product portfolio of your mixing plant. The foam generator from Ammann enables the foaming of various different hardnesses of road construction bitumen and also polymer modified bitumen. It can also be used to manufacture cold base courses with 100 % recycled materials for example. This means that the use of foam bitumen optimally supplements the recycling feed in the mixer.

ACTION PRINCIPLE

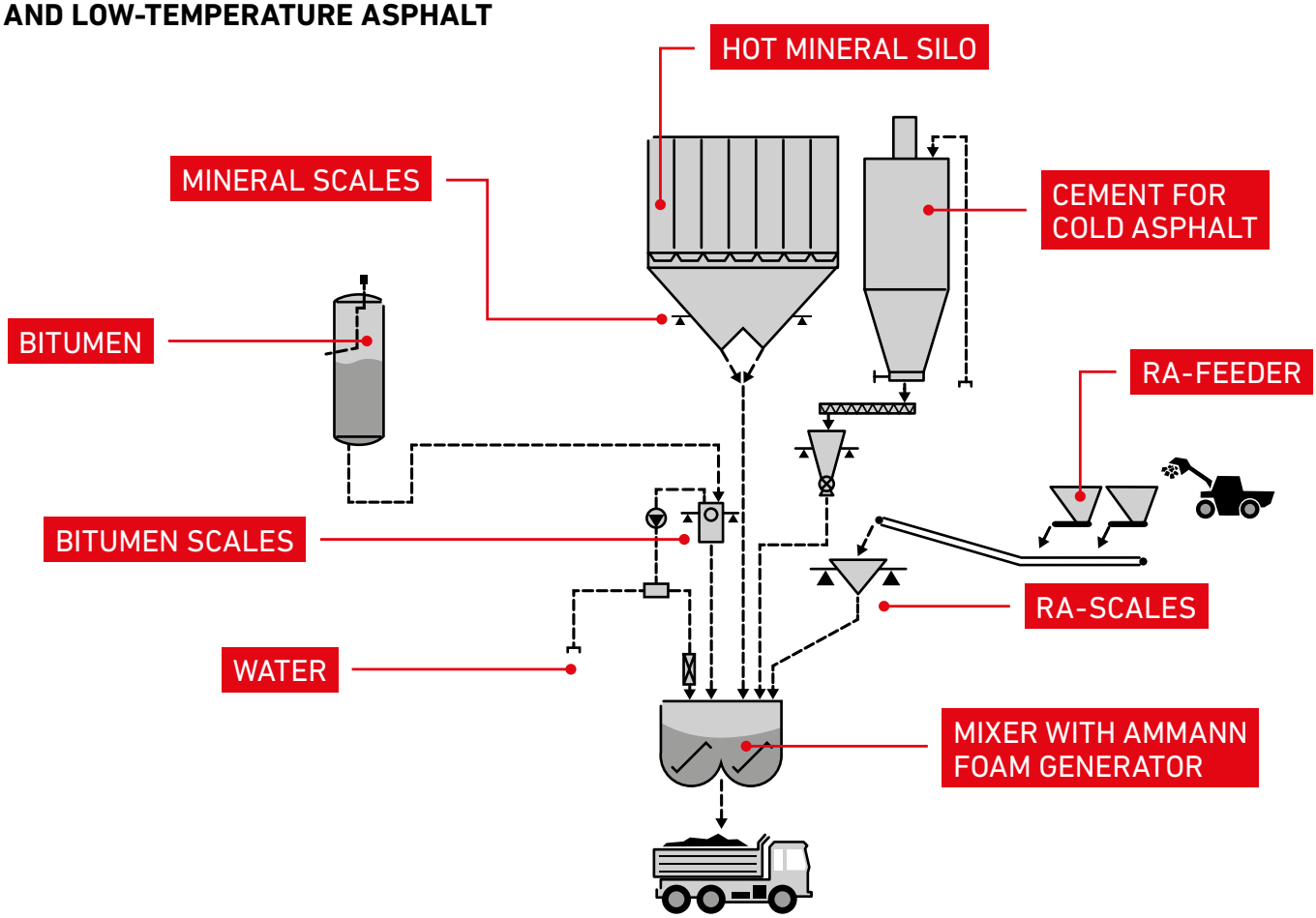
First hot bitumen is pumped into the foam generator. Cold water with no chemical additive is injected in under high pressure and mixed with the hot bitumen. This water/bitumen mix is then forced through the outlet. Immediately the mix leaves the foam generator the water expands and the so-called foam bitumen is created.

The foamed bitumen is fed into the mixer initially by means of injection nozzles.

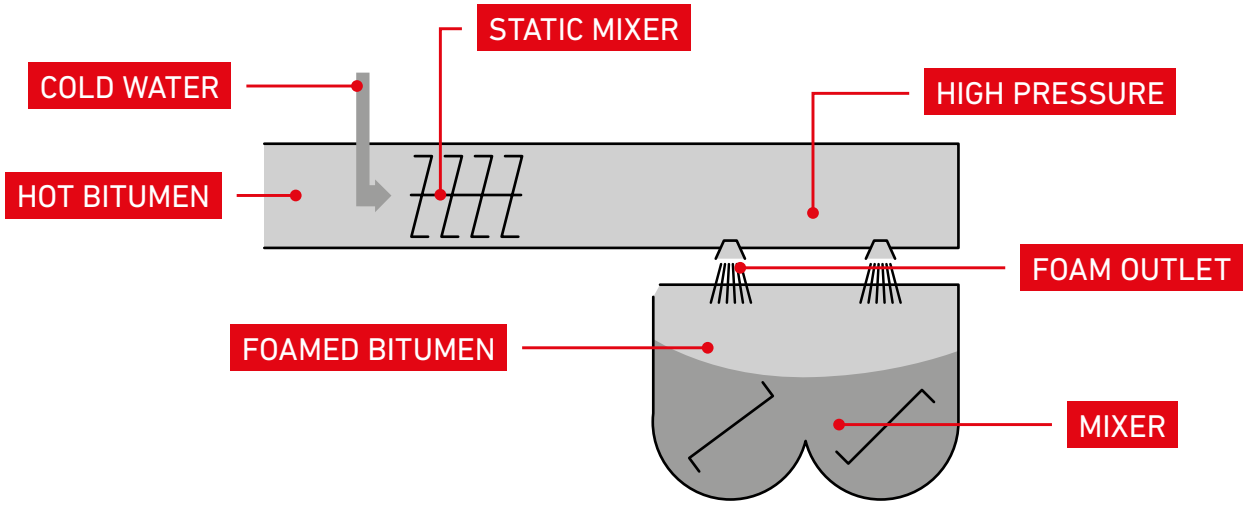
Exterior view: Mixer equipped with a foam generator.

Integration into the existing control system is also easily possible.

COMBINATION OF COLD ASPHALT AND LOW-TEMPERATURE ASPHALT



FOAM BITUMEN OF COLD OR LOW-TEMPERATURE ASPHALT



LAYING LOW-TEMPERATURE ASPHALT

The differences of the technologies becomes apparent during laying : The laying behaviour changes depending on the low-temperature technology applied. Whilst the foam-based system is compactable for a longer period, wax-based systems for example exhibit rapid hardening from a certain temperature.

LOWER EMISSIONS ON THE CONSTRUCTION SITE

In comparison to conventional hot-mix products, comfortable working conditions exist thanks to the massively reduced bitumen vapours and the associated lack of odour. As a rule of thumb : A reduction in the asphalt temperature by 10 °C halves the emissions on the construction site. This means that a 50 °C reduction reduces the emissions by around 95 %.

QUALITY THE SAME AS HOT ASPHALT

Low-temperature asphalt attains the same level of quality as hot-mix products. Due to the lower temperatures, the binding agent is in fact subject to less severe ageing.

SAME FINISHERS AND ROLLERS AS WITH HOT ASPHALT

It is possible to use the same construction machinery as with hot asphalt, whereby the mix behaves differently depending on the technology. The basic rules for good road construction also apply here. Prior instruction of the installation crew is recommended.

Its viscous properties are one of the main advantages of low-temperature asphalt. Installing “cooler” asphalt is a much easier task, especially on roads with a steep incline.

Compacting is realised by using of Ammann tandem rollers and pneumatic tyred rollers. The intelligent compacting system ACE ensures optimum vibration of the tamdem rollers.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