MAKRON

Industrial Circular Economy Solutions

ASPHALT ADDITIVE TECHNOLOGY

MAKRON

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1. ASPHALT ADDITIVE TECHNOLOGY

1.1. ASPHALT ADDITIVE PRODUCTION

MAKRON
A Promise to Complete.

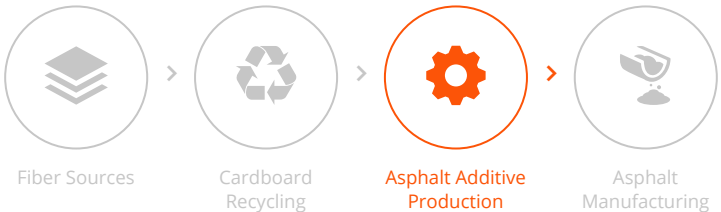
ASPHALT ADDITIVE TECHNOLOGY

Recycled cellulose fiber additives make asphalt more durable.

Stone Mastic Asphalt (SMA) is an excellent surface material for roads with heavy traffic. Adding recycled cellulose fiber into stone mastic asphalt results in better road surface performance. Recycled cellulose increases the absorptive capacity of bitumen and makes the road more durable. This results in better asphalt quality and road performance, and ultimately better traffic safety. Makron has the technology to produce sustainable cellulose fiber from recycled raw material.

Process stages

Excess pulp, paper, and cardboard materials are collected from various sources, for example from print houses, cardboard manufacturers and households. The recycled cardboard or paper is transported to an asphalt additive production plant. Makron Fibretec production line takes care of the whole recycled cellulose fiber manufacturing process, from receiving the raw material, to crushing it and processing the material at different stages, to producing a finished and packed product in either pellet or in loose form. Asphalt manufacturers then mix the additive into asphalt.



BENEFITS

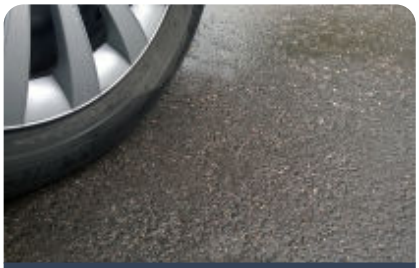
LONGER MAINTENANCE CYCLES

Adding sustainable cellulose fiber into Stone Mastic Asphalt (SMA) makes roads more durable. This leads to a longer maintenance cycle for better cost efficiency.

BETTER TRAFFIC SAFETY

Higher quality and more durable asphalt results in better road performance and ultimately in better traffic safety.

FEATURES



LESS DEFORMATION AND FEWER FRACTURES

Cellulose fiber additives increase the absorptive capacity of bitumen, which results in better moisture resistance.

WEAR RESISTANT ASPHALT

Cellulose fiber additives increase the wear resistance of bitumen.

PROCESS STAGES

We deliver complete production lines for asphalt additive production.

ASPHALT ADDITIVE PRODUCTION

Makron offers the technology to produce asphalt additives from recycled cellulose fiber. Our technology makes your production more efficient and delivers a high-quality product. We offer you complete Makron Fibretec production lines according to your volume needs and deliver them with intelligent automation included. We cover every aspect of the project from engineering design to commissioning and staff training. Recycled cellulose fiber is also an ecological and safe material for thermal insulation. Our technology enables you to produce both additives for asphalt and thermal insulation with the same production line. Learn more here.

CONTACT

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ASPHALT ADDITIVE PRODUCTION

Makron Fibretec lines are designed to produce asphalt additives from recycled cellulose fiber.

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BENEFITS

ALL THE ESSENTIAL FEATURES

Makron Fibretec lines are designed to manufacture recycled cellulose fiber additives for asphalt. Our production lines come with all the essential features, including equipment to remove dust and impurities.

30 YEARS OF EXPERIENCE

We delivered our first recycled cellulose fiber production lines over 30 years ago. And today, we continue to deliver and develop some of the world's most effective asphalt additive production lines.

EXAMPLES

Here is an excellent example of our asphalt additive production lines.

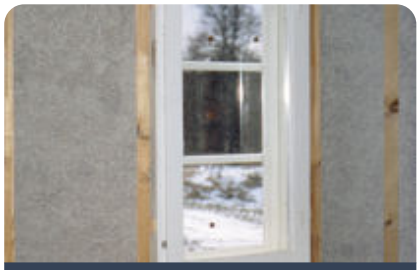
ASPHALT ADDITIVE PRODUCTION LINE

The Makron Fibretec line was developed to produce asphalt additives, as well as thermal insulation from recycled cellulose. This production line is optimized for 1,000 kg/hour capacity. The cellulose fiber can be processed further into pellets directly from the Makron Fibretec line or packed into various sizes of packages as loose fiber.

FEATURES

COMPLETE PRODUCTION LINES

All stages of production can be covered with one complete line. The machines are designed to function perfectly together.



TWO PRODUCTS FROM ONE LINE

With Makron technology you can actually use one line to manufacture both cellulose fiber additives for asphalt and cellulose fiber thermal insulation.

PROCESS STAGES

Our production lines take care of all the stages in the asphalt additive manufacturing process.

RAW MATERIAL FEEDING

In the first step of asphalt additive production the raw material, cardboard or paper, is fed onto the pre-handling table from where it is moved to the conveyor. The material is fed evenly to the line and the impurities are separated. On small capacity lines, the impurities are separated manually. On large capacity lines, the raw material has already been purified and baled, and the cardboard or paper bales are fed onto the conveyor.

WHAT MAKRON DOES

The Makron pre-handling table is designed for manual sorting of loose paper or cardboard. For larger capacities, Makron delivers automated feeding systems for cardboard or paper bales.

MATERIAL CRUSHING

The raw material is conveyed to the hammer mill or shredder where it is crushed into small pieces for refining. This stage includes a fiber surge bin for intermediate storage. From here the paper pieces are sorted for further processing.

WHAT MAKRON DOES

The Makron Hammer Mill is designed especially for crushing loose paper. Makron also delivers paper shredders for loose or baled paper material.

TECHNICAL DATA

Hammer Mill:
Power 45–75 kW

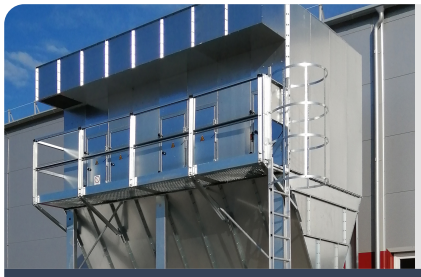
Shredder:
Power 90 kW

TRASH SEPARATION

After crushing, the material is moved to trash separation where all remaining metal and heavy particles are separated.

WHAT MAKRON DOES

After pre-crushing, metal and heavy particles are removed using a magnet and Makron's heavy particle separator.



DUST FILTERING

Dust filters remove all the dust from the process. Air and dust is extracted at all stages of the process through the filters.

WHAT MAKRON DOES

Makron delivers a whole dust filtering system designed especially for the process. Our filter units operate continuously and they can be cleaned without stopping production. The system automatically cleans itself by closing one section of the filter tubes at a time.

TECHNICAL DATA

Air flow	8,000–13,500 m^3/h
Dimensions	approx. 5,000 x 3,500 x 7,000 mm

REFINING

The raw material is refined into fibers by the refiner and then stored in the fiber surge bin.

WHAT MAKRON DOES

We offer the Makron Fine Crusher Hammer Mill for refining.

MATERIAL CONVEYING

Our complete production lines include belt conveyors for paper raw material. After pre-crushing, the material is conveyed by pipe. Our pipelines also include blowers and cyclones.

WHAT MAKRON DOES

Makron delivers special belt conveyors for paper raw material and final product packages. Makron also delivers pipes, cyclones, blowers and air filters for the conveyor system.

GRANULATION

The fiber material can be mixed, for example with bitumen, and granulated. This is an optional stage in the process.

WHAT MAKRON DOES

Makron delivers the granulating line for further asphalt additive processing.

PACKING

The finished material, recycled cellulose fiber additive for asphalt, can be packed using different packaging technologies depending on your production capacity and needs. Makron's packaging process packs the fiber into paper or plastic bags and presses all the air out to make the package compact and ready to transport.

WHAT MAKRON DOES

Makron's packing systems include surge bins and packing machines, and the cellulose fiber can be packed in either paper or plastic bags. The plastic packages can be made from either plastic bags or plastic foils.

TECHNICAL DATA

Automated packing into plastic bags

Capacity	approx. 2–3 bags/minute
Bag size	approx. 800 x 400 x 325 mm
Density	approx. 150 kg/m^3
Weight	13–15 kg (adjustable)

Manual packing into plastic or paper sacks

Package dimensions	approx. 100 x 50 x 25 cm
Diameter of the inlet	130 mm
Density	approx. 120 kg/m^3
Weight	13–15 kg

TECHNICAL DATA

Technical data of the Makron Fibretec asphalt additive production line

	Makron Fibretec Asphalt Additive Production Line
Effective capacity	1,000 kg/h
Required space	~450 m^2 + ~300 m^2 for storing the raw material and final product
Free height of the hall	At least 7 m
Power supply	400/230 V, 50 Hz; ~544 kW + granulation equipment 115 kW
Compressed air supply	0.6–0.7 MPa, ~600 l/min
Water supply	0.2–0.6 MPa (only with optional extinguishing system)
Operators	4–5 persons per shift
Auxiliary equipment	1 forklift truck, 1–2 hand pallet trucks

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MAKRON

Makron is a trusted partner to modernize industrial production processes. We support industrial companies to develop their business – from R&D and piloting to modernizations and boosting production efficiency. We improve productivity through automation and digitalization and build sustainable production and intralogistics solutions that adapt to future needs.

Makron is a 50-year-old family-owned company. With headquarters and electrical control cabinet manufacturing in Lahti, Finland, and machine manufacturing in Estonia, Makron has a revenue of 19 MEUR (2024), and we employ over 100 professionals.

Makron – Completely industrial.

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