Asphalt Production
Technologies

E-MAK

e-mak.com


E-MAK

TECHNOLOGY PARK

E-MAK new technologies are first tested under actual production conditions at Simge Group trial facilities for final improvement and then put on the market for sale

E-MAK,
is the only asphalt plant manufacturer with its own trial facilities

R&D AND INNOVATION

Asphalt Recycling Systems: RATech

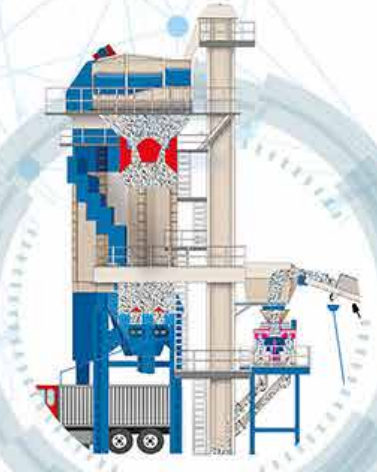
RATech is integrated with asphalt plant by adding aggregate, bitumen and anti-aging into RAP material for bitumen base production.

Megaton

Brand new innovation project designed for E-MAK mining facility which can provide aggregate for asphalt plant, concrete plant, cold mix plant 24/7 simultaneously. It is an aggregate preparation-stocking -dosing system which includes re-crushing system. It is also environmentally friendly and energy saving system.

Aggregate Modification Plant: Challenger Plus

In addition to features of CHALLENGER, it diminishes significant amount of moisture from wet aggregate. Thanks to Aggregate Modification Plant, aggregates purchased from third parties but not suitable for production recipe is modified through re-crushing and sieving. As a result, the unsuitable aggregate is now modified to be used in asphalt plants, moisture content is minimized which leads asphalt plants to work in full capacity and efficiently.



E-MAK Production Standards

E-MAK asphalt plants are produced under EU directives; Machine Safety Directive 2006/42/EC, Electromagnetic Compatibility 2004/108/EC and Low Voltage Directive 2006/95/EEC and in line with EN standards with its CE marking.
Also; E-MAK proudly holds EAC- Eurasia Certificate of Conformity, ISO 9001 Quality Management Certificate and ISO 14001 Environmental Management System Certificates.

Worldwide patented E-MAK's genuine technologies

4th Eurasphalt & Eurobitumen Congress Innovation Session

'E-MAK Challenger Presentation'

5th Eurasphalt & Eurobitumen Congress Resource Use and Recycling Session

'E-MAK RATECH Presentation'

PRODUCTION QUALITY

As the first process of production all steel material used in the production is subjected to sandblasting (Sa 2 ½). After mechanical cutting and forming, sandblasted materials are cleaned using special solutions. Parts which are not subjected to welding process are coated (80µm). Parts which will be subjected to welding process are pre-coated (40µm) leaving the necessary surface for welding.

All these processes are completed within 8 hours to prevent corrosion. After welding processes are over, the parts are re-cleaned, heated and pre-coated 80µm again for uniformed coating. The final painting process which is 50µm using acrylic paint. Painted parts dry in an oven at 600C.

Our welding processes are certified with EN 1090-1, EN 1090-2 (EXC3) and TS EN ISO 3834-2.
The quality system process starts from the raw material during acceptance of materials and this is maintained by applying extraction, yielding, elongation and chemical analysis tests conducted at E-MAK Quality Laboratories according to EN 10025 standards.

All applied welding techniques are approved by WPQR's issued according to EN ISO 15614-1 standard as a result of tests made by an accredited institute. Our welding engineers prepare WPS's according to EN ISO15609 standard. Beside all of these to insure the system, our all welders have certifications according to EN ISO 9606-1 standard from an accredited institute.

All pieces to be weld are applied to joint preparation process according to EN ISO 9692 standards. Surfaces subject to welding process are carefully cleaned from grease, rust, paints and so on.

Cleaned pieces are exposed to pre-cementation process according to EN ISO 13916 and EN 1011-2. Welding wires are selected carefully and tested according to EN 13479 standards. Welding processes are controlled before, during and after each welding by control technicians and monitored by welding engineers. After each welding a stress relief process is applied according to EN ISO 17663 standard.

Each welding process is approved after an eye control according to EN ISO 17637, penetration inspection according to EN ISO 3452-1, magnetic piece inspection according to EN 17638 and ultrasonic inspection according to EN ISO 17640 standards are applied. It is not allowed for any piece to move to the next process step without the approval of the welding engineer.

High quality materials

Excellent craftsmanship

E-MAK AT DIFFERENT PRODUCTION CONDITIONS AND LOCATIONS

Germany

Saudi Arabia

Nigeria

Kazakhstan

Azerbaijan

Greece

Algeria

Kuwait

Istanbul

Sudan

Kosovo

Ukraine

Jordan

Syria

Iraq

Macedonia

Izmir

Bulgaria

Cyprus

Kyrgyzstan

AFTER SALES

Our customer oriented After Sales service with good service quality is the most important factor for our clients to choose E-MAK.

- After-sales support includes technical information-consultancy, emergency consultancy line, on site assembly and dismantling, spare parts, repairing, revision and periodic maintenance
- 7/24 customer support line
- Mechanical, electrical, electronic experienced after-sales staff with efficient on-site service
- Remote support service by online connection to asphalt plant automation
- Fast and original spare parts guarantee with large spare parts stock

E-MAK Training Center

E-MAK Training Center provides both on-site and theoretical training for work development periodically.

- Quarry Operations
- High quality aggregate production
- Asphalt production applications
- Asphalt plant operator training
- Asphalt paving and compacting applications

We are at your service with our worldwide partners near you

Applied trainings under actual working conditions at our facilities


E-MAK

ASPHALT PLANTS

EXPRESS 80-320 t/h

- Quick assembly
- Easy transportation
- Economic price

EXPERT 240-320 t/h

- Totally enclosed mixing tower
- Economic assembly in narrow space
- Fits into containers
- Economic price

GREEN TYPE 200-240 t/h

- High volume stocking capacity
- Wide platform and ladders
- Easy to integrate new technologies

SUPER GT 200-350 t/h

- In addition to Green Type features:
- High volume hot aggregate bunker
- Totally enclosed mixing tower
- Able to stock 5 types of asphalt simultaneously

MAJESTIC 260-350 t/h

- High production capacity
- Ideal for metropolitan cities
- Quick mix design change via double sieve
- Stocks 5 types of asphalt simultaneously

EXPRESS MOBILE 80-240 t/h

- Batch or continuous type
- Quick assembly
- Easy transportation

BITUMEN PROCESSING EQUIPMENT

BITUMEN TANKS

- Electrical or hot oil heating
- Vertical or horizontal type
- Optionally with agitation shaft
- 10-5000 ton capacity range

MODIFIED BITUMEN (PMB) PLANT

- Hot oil heated
- Full or semi-automatic
- Easy transportation and assembly
- 8-20 t/h capacity

BITUMEN EMULSION PLANT

- Hot oil heated
- Full or semi-automatic
- Easy transportation and assembly
- 4-15 t/h capacity

ASPHALT RECYCLING

RATECH

- Cold asphalt recycling
- Warm asphalt recycling
- Hot asphalt recycling

COLD AGGREGATE SILOS

Cold aggregate silos are the starting point of asphalt production. E-MAK cold aggregate silos provide controlled, homogenous and continuous feed in required proportions for different aggregate types. Different aggregate types do not mix with each other.
Widths of silos are suitable for loader and provides easy operation. Automation system links cold aggregate silos and hot aggregate bunker. Dosage speed is automatically adjusted.

- 4 or more silos
- In volumes between 8 m^3 - 25 m^3
- Feeding conveyor with inverter
- Flow control system
- Optic /acoustic warning system
- Equipped with vibration motor
- Covered
- Emergency stop system
- Moisture sensors allow automatic burner flame control

Functional design

Easy transportation


İSFALT
E-MAK
CAT
972G

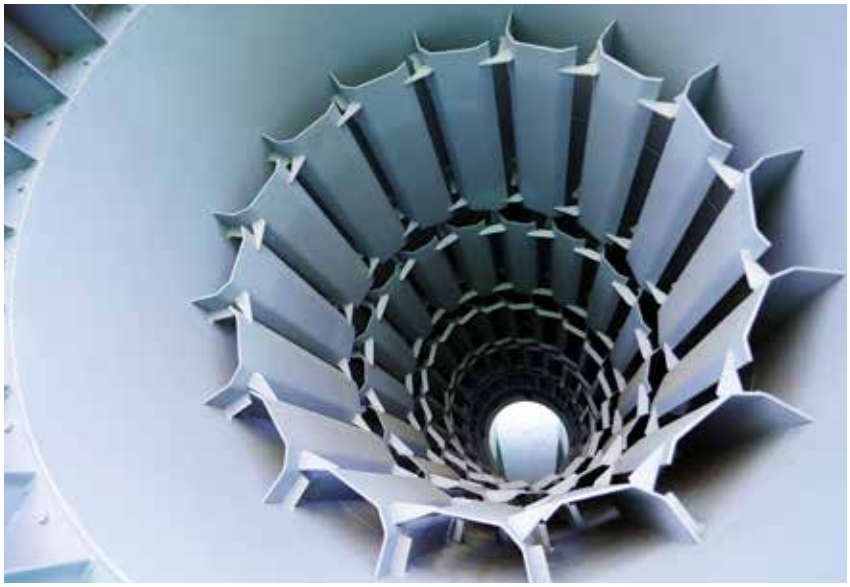
DRYER

E-MAK dryers provide efficient aggregate drying and heating due to the specially designed angled shelves within the dryer with optimum heat transfer surface and minimum fuel consumption. The body and drive rings are held together with no welding (using bolts only) this avoids defects due to high and sudden temperature changes. The dryer is manufactured by material durable to wear and heat resistant. Dryer rings and rollers are made of special and long lasting forged steel.

- Outer body is insulated with rock wool and stainless steel according to climate conditions
- Durable to heat expansion and easy to change compensation springs are fixed without welding
- Effective heating and drying of aggregate due to contact with hot air and hot surface with longer burner flame
- Pre combustion chamber protects inner dryer surface from direct contact with burner flame
- Vacuum control system and special wing design to regulate exhaust gaseous
- Soft starter or inverter in driving system to restart even if the plant is loaded
- Forged steel rings and rollers
- Burners with different fuel alternatives
- Automatically adjustable burner according to aggregate moisture content and quantity

Low fuel consumption under the heaviest working conditions

High drying efficiency



VERTICAL ELEVATOR

E-MAK vertical elevator is designed according to asphalt plant capacity. Vertical elevator transfers heated aggregate from the dryer to the sieving unit. For 300t/h and over capacities double body, heavy duty type elevators are used.

- Gears are produced from special steel and hardened to be wear-resistant
- Single or double row H type chain for heavy duty use
- Bucket edges are reinforced with special steel strips to provide wear-resistance
- Back stop lock to secure drive system
- By-pass channel connected to hot aggregate silo
- Elevator chain tension mechanism is either helical spring type or weight type according to capacity
- Driving systems equipped with soft starter or invertor
- Optional, additional gearbox system for maintenance and restart when the plant is loaded
- Optional, insulation with rock wool
- Optional, level and rotation sensors

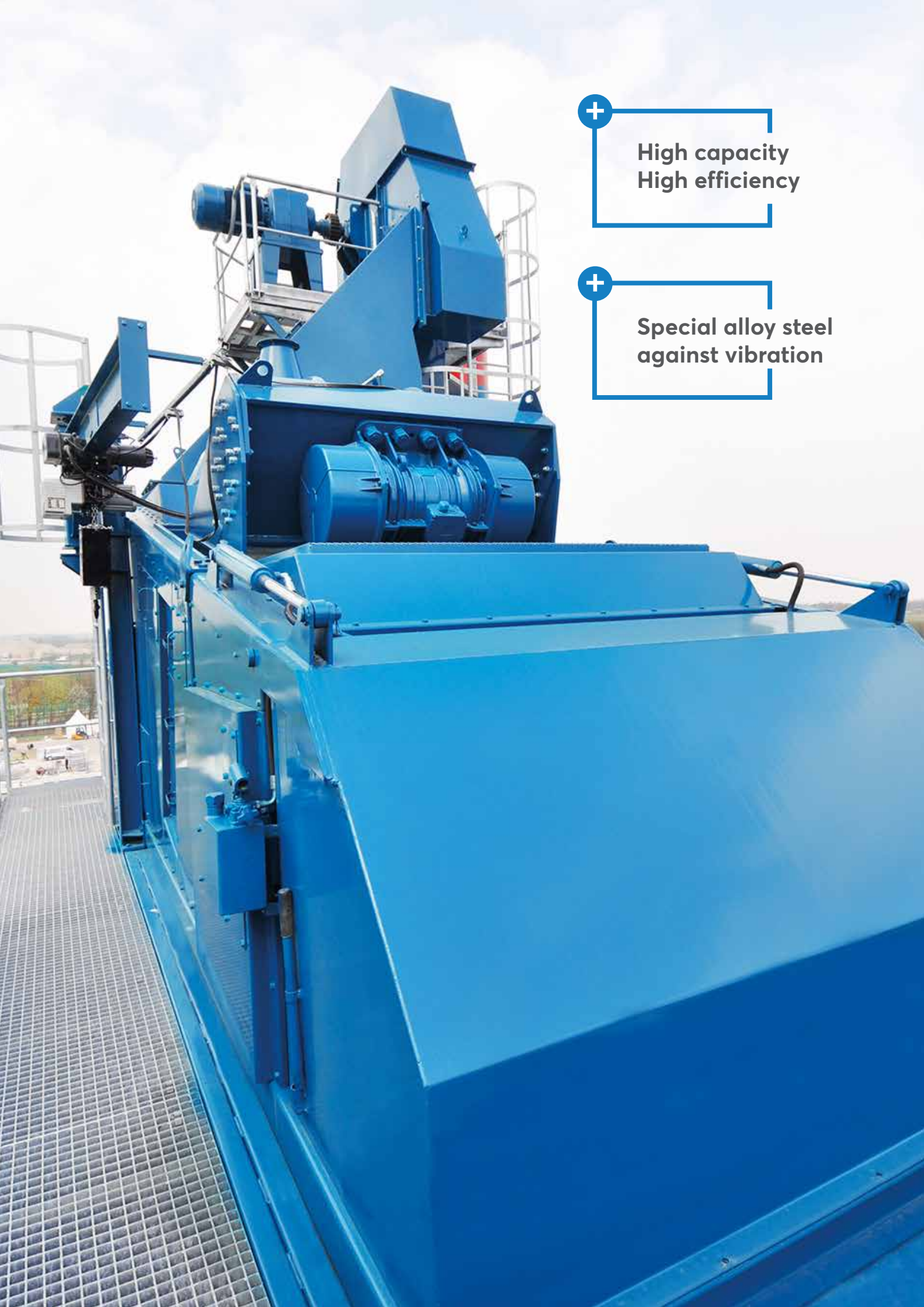
Gearbox system
for maintenance and restart
when the plant is loaded

Heavy duty type
vertical elevator

SIEVING UNIT

High efficiency slightly sloped sieves used in E-MAK Asphalt Plants have vertical and horizontal amplitudes to minimize gradation errors.

- It can be with vibration motors, unbalance exciter or eccentric shaft according to model and capacity
- 4, 5 or 6 fractions
- Compact, fully closed, maintenance free and dust-sealed design
- Hydraulically controlled front cover
- Upper and side maintenance windows
- Easy to change screens
- Screens made of wear-resistant steel wire mesh
- Filter connected dust vacuum hood
- Optional service crane
- Special alloy steel body combined with vibration resistant rivets


High capacity
High efficiency
Special alloy steel
against vibration

HOT AGGREGATE SILO

Sieved aggregate is stocked within the hot aggregate silo compartments according to its fractions. It is synchronized with cold aggregate silos via automation.

- 40-160 ton storage capacity
- 4, 5, 6 or 7 aggregate compartments
- By-pass compartment
- Lower and upper level sensors
- Continuous level sensors
- Temperature sensor
- Optimum heat insulation according to climate conditions
- Sampling mechanism
- Dust- free, two stage discharge lids

Two stage discharge for fast and precise weighing

Special design to prevent segregation

WEIGHING AND ADDITIVE SYSTEMS

Aggregate Weighing Unit

- Accumulative weighing via electronic load-cells
- Pneumatically controlled discharge lid
- Weighs up to 4500 kg according to asphalt plant capacity

Bitumen Weighing Unit

- Weighing via electronic load-cells
- Electrically heated
- Quick discharge through mixer
- Weighs up to 500 kg according to asphalt plant capacity

Filler And Additives Weighing Units

- Weighing via electronic load-cells
- Air shocks for easy discharge
- Leak proof, sealed discharge lid
- Weighs up to 900 kg according to asphalt plant capacity

Cellulose Additive System

- Weighing via electronic load-cells
- Pneumatic transfer via blower
- 2m^3 stock silo capacity
- 25-30 kg/batch

Liquid Additive System

- Precise weighing via electronic load-cells or volumetric dosage
- Dosage is made by mass weighing and volumetric measurement
- Additive for cold asphalt, DOP or any other liquid additives easily integrated

Package Additive System

- Rollers tilting system
- 2 t/h capacity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SCANIA

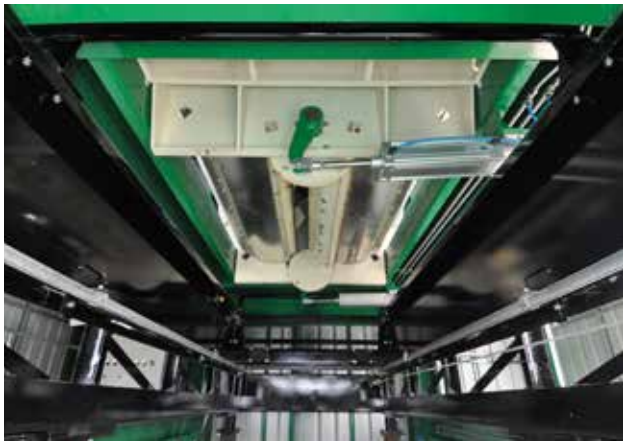
MIXER

The mixer is designed to efficiently mix aggregate, bitumen, filler, additives (powder, liquid, package etc.) and RAP according to desired mixture.

- 750-5000kg mixing capacities
- Motor gearbox group for heavy-duty drive
- Especially designed high temperatures and wear resistant internal alloy lining
- Wear resistant mixing arms and pedals mounted on synchronized twin shaft
- Circular discharge lid driven with double pneumatic cylinder
- Electrically heated
- Special bearings are used to bear high temperatures during mastic asphalt production
- Patented arm and pedal design to obtain homogenous mixture
- Infrared heat sensor
- Soft start / inverter drive system
- Minimum maintenance
- Special hatch design for easy maintenance

High quality homogenous mixture

Resistant against high temperature and wearing



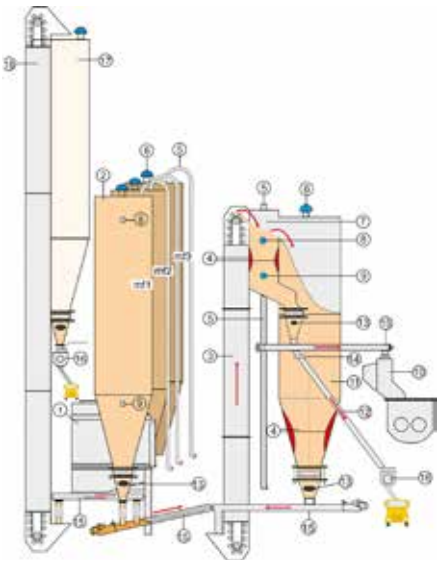

E-MAK

FILLER SYSTEM

- Provides usage of filler collected in the filter unit and externally supplied mineral filler together or separately in asphalt production.
- Provides transferring of unusable or excessive filler collected in the filter to dust storage silos.
- A unique system for handling (adding to asphalt) externally supplied mineral filler.
- In this system a small (watering) mixer is used to discharge filler to trucks. No dust is scattered in the air and environmental impact does not occur.
- 20-100 m^3 silo capacities.

Compact design for continuous & problem-free feeding

1- Filter
2- Foreign Filler Silo
3- Filler Elevator
4- Air Shock Pads
5- Silobas Filling Pipes
6- Continuous Level Sensor
7- Filler Service Silo
8- Max. Level Sensor
9- Min. Level Sensor
10- Filler Weighing Unit
11- Filler Storage Silo
12- Discharge Pipe
13- Vibrating Motor
14- Filler Discharge Lid
15- Screw Type Conveyors
16- Watering Dust Preventing Unit
17- Surplus Dust Silo
18- Surplus Dust Elevator



FILTERING UNIT

E-MAK dry-type filtering units separate dust and gas generated during asphalt production, as a result air pollution is prevented and aggregate dust is collected and not scattered to the environment. The aggregate dust retained can be used as filler material during asphalt production.

- 250-1100m² filtering surface area
- External or integrated pre-separating unit
- Bags are cleaned with reverse air system
- Temperature measurement at filter inlet and outlet
- Emergency automatic burner shuts down to prevent filter overheating
- Easy bag and support cage replacement
- Vertical type filtering bags
- 18.000 - 90.000Nm³/h air flow

Conformity of EU Air Pollution Control Regulation Limits

- Fan with inverter for low electric consumption
- Automatic vacuum regulation system for fuel saving in dryer
- Low dust emission values
- Dustproof design
- Optimized insulation and fan power according to geographical conditions
- Optionally high dens insulation and electrical heating for lower body part

AUTOMATION SYSTEM

E-MAK automation systems software and hardware projects are prepared individually according to clients' demands, requirements, use conditions (geographical environment, climate, fuel to be used etc.) and manufactured to operate the asphalt plant economically and efficiently.

HARDWARE

- Full automatic control via main PLC
- Special PLC to ensure work safety
- BUS connection system between main PLC and field systems
- Ergonomic, quick, easy, user friendly screens design
- A monitor shows all electric motors, valves and lids on/off status, malfunctions etc.
- Optional, second monitor shows all motors electrical current and temperature values
- High quality, heavy duty - minimum IP55 components are used for field automation
- Container type insulated control cabin with double glass windows, air-condition and anti-static flooring
- Control cabin with separate rooms for both operator and panels
- Comfortable and wide viewing angle from inside the cabin

SOFTWARE AND PROCESS CONTROL

- SCADA software for process control data recording and monitoring
- Special program for data reports and graphical outputs
- Continuous level sensors (radar) are used to monitor hot aggregate levels for adjusting the flow rate of corresponding cold aggregate silos automatically according to mixing rates
- Process parameters are evaluated and monitored and automatic controls are carried out accordingly. Heat monitoring thermocouples and infrared heat sensors, material level radars, capacitive sensors, motorized level sensors and level switches, air-pressure and vacuum monitoring sensors and moisture sensors are used to control production processes
- E-MAK's automation remote control system supports asphalt plants assembled throughout the world

According to 2004/108/EC electromagnetic compatibility directives 'EMC tests' are carried out and approved by an accredited institution to meet EU Councils.

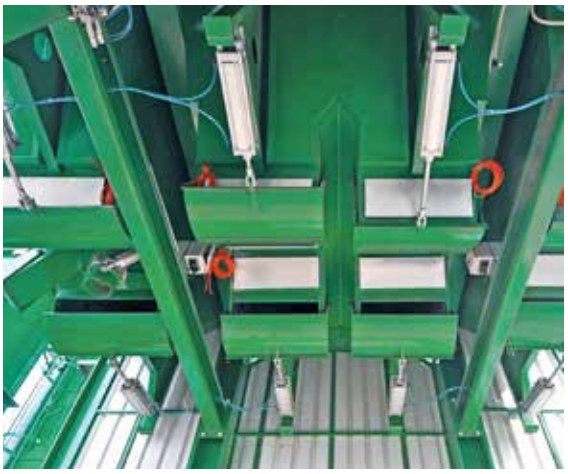
HOT MIX BUNKERS

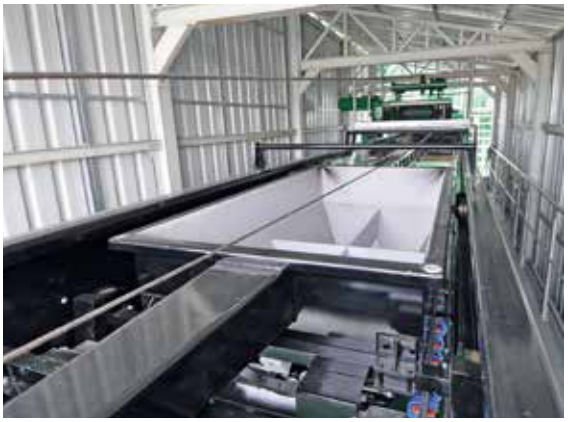
Manufactured according to required capacity with insulation and heating

- Optionally able to stock different types of asphalt with skip type or under mixer type systems
- 25-400 ton stocking capacity options
- Maximum level warning system
- Infrared heat sensor monitoring asphalt temperature loaded to the truck
- Automatic spraying system to prevent asphalt sticking to the skip and trucks
- Optimum heat insulation according to environmental conditions
- Designed for easy transport
- Electrically heated bunker discharge lids

Dense insulation to maintain asphalt temperature

Able to stock 3 types of asphalt under the mixer






RATech160
Double Sieve System
MAJESTIC360

BITUMEN TANKS

For modified bitumen option, tanks with agitation shaft &mixer are available.

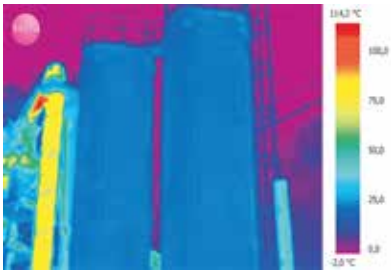
Horizontal or vertical in desired capacities

AUTOMATION

Bitumen level and temperature monitored from the control cabin. In case of temperature drops, electrical heating turns on automatically.

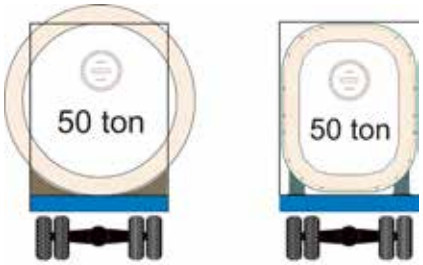
INSULATION

Vertical type tanks upper, lower and side surfaces are insulated with up-to 25 cm rock wool. Thus, heat losses prevented.



TRANSPORTATION

E-MAK vertical prismatic type bitumen tanks with dense insulation have high stocking capacity and enables easy international transportation.

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E-MAK

ASPHALT RECYCLING

Asphalt pavement that has been removed for reconstruction, resurfacing etc. (RAP – Reclaimed Asphalt Pavement) can be recycled after certain processes. The recycling unit has become a necessity for asphalt plants working in big cities.

RAP is being used as a recycling agent in asphalt production in conjunction with international norms. This not only supplies an advantage to costs but is also a must for the environment.

Asphalt RECYCLING units are manufactured in accordance to order demand specifications.

More green and more economical asphalt production

Cold Asphalt Recycling System:

Consist of the following units:

- RAP silo
- Feeding conveyor
- Elevator
- Feeding bunker
- Mixer feeding weighing conveyor
- Steam expansion duct

Hot recycling with indirect heating

Hot Asphalt Recycling System:

- RATech can produce bitumen base mixture by adding aggregate, bitumen and anti-aging additive to RAP material without the need for asphalt plant. In this way the overall production capacity of facility increases 100%.
- RAP material is added to the mixture via weighing unit.
- RATech provides 45sec bitumen base mixing in its own special mixer. Mixer is equipped with bitumen weighing unit and ant-aging additive dosing unit.
- In RATech system, sticking of materials to surfaces is prevented as RAP material is dragged along fixed ground by driving plates.
- In binder and wearing course production, RATech provides further 45sec. mixing time to RAP material with anti-aging additives. In this way (45+25 =70sec.) mixing time is achieved during the 45 sec. batch time.
- No sticking occurs as vertical elevator carries cold RAP material.

EMULSION

"E-MAK EMULSION" series bitumen emulsion production plants are 4-15 ton/hour capacity and suitable for all types of road and asphalt applications.

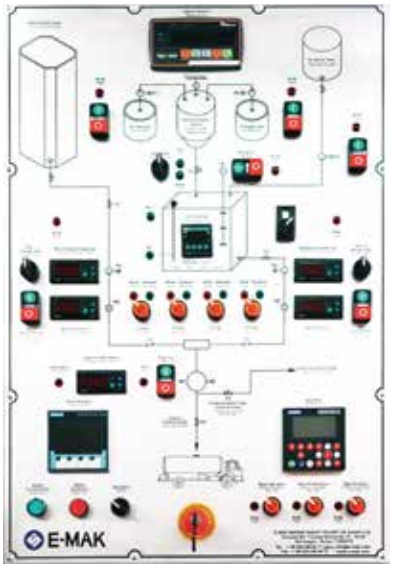
All equipment used in "E-MAK EMULSION" series bitumen emulsion production plants are chosen for long life and high efficiency and environmentally friendly and economical.

"E-MAK EMULSION" easy to install and maintain as well as ease transportation.

"E-MAK EMULSION" series bitumen emulsion production plants have different options and can meet all needs of customers.

Easy transportation
Fast installation
Environmentally friendly

- Acid-resistant stainless steel solution (SAE) preparation tank
- Mixer made of stainless steel for homogeneous mixture of water, acid and emulsifier,
- Pool system to avoid residual mixture,
- Circular rotary sprinkler system for cleaning the tank,
- Analog and digital temperature measurement systems,
- Level measurement systems,
- Frequency controlled and electrically heated colloid mill, which can provide 0.2 to 0.6 mm grain size,
- Lobe type, stainless steel body solution pump for homogeneous mixture and desired flow rate,
- Eccentric type, corrosion and hydrochloric acid resistant body with simultaneous suction and filling capability, Acid and emulsifier pumps,
- Acid-resistant actuated valves, solution and bitumen flowmeters,
- Temperature, level and flow values monitored by mimic diagram,
- Optional pH meter,
- Optional 2 x 10 tons electrically heated vertical type emulsion stock tanks,
- Thanks to the electrical heating system, easy transport and installation to any location



Temperature, level and flow values can be monitored on a mimic diagram

Colloid mill:
Provides 0.2 to 0.6 grain size, frequency controlled and electrically heated

Analog and digital temperature and flow measurement systems

Solution pump:
Lobe type, stainless steel body to get homogeneous mixture and desired flow rate

Acid and emulsifier pumps:
Eccentric type, Corrosion and hydrochloric acid resistant body with Simultaneous suction and filling capability

MODIFIED BITUMEN PLANT

"E-MAK PMB" series modified bitumen production plants are 15 ton/hour capacity, homogenizing Polymers (SBS, APP etc.) and bitumen by grinding

All equipment used in "E-MAK PMB" series modified bitumen production plants are chosen to provide long life and high efficiency, environmentally friendly and economical.

"E-MAK PMB" Easy to install and maintain as well as easy transportation.

Polymer Modifying Mill: Resists up to 220°C, 20t/h pumping capacity and 160 kw

Mixing Tank: Vertical type, 100 mm rock wool isolation, manufactured to be containerized, hot oil heating serpentine pipe, 22 kw mixer and 10 m^3 volume (Operating capacity 6m^3)

Heating Tank: Horizontal type, 10m^3 volume, internally has 400 lt hot oil heating serpentine pipe (28m^2), 100 mm rock wool isolation, manufactured to be containerized, upper surfaces is 3-4 mm checkered steel plate, 5000 kg capacity 4 Pcs load-cell and stainless steel body.

Long lasting components

Easy transportation

- 50 t/h capacity, 15 kw Bitumen pump
- Polymer Modified-Granule (SBS) feeding unit has Feeding hopper with feeding opening 500x500, 2m^3 weighing chamber with load-cell and 30m^3/h capacity screw conveyor
- Hot oil jacketed bitumen valves and filter
- Double Control System: Semi-Automatic - Fully automatic with PLC control
- All valves used in the system can be controlled from the operator panel via pneumatic actuators
- Mixer tanks temperature is digitally and manual, the weight is digitally by load-cells and Mill's temperature is digitally followed up and controlled
- Thanks to electrical heating it is possible to transport and installed in desired places easily
- Universal design, piping network inlets and screw conveyors connecting points are on both sides of the plant. So there will be no problem if bitumen tanks are on right or left side of the plant
- Possibility of transport with 40 trailers


SİMGEMAT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MACHINE CONSTRUCTION INDUSRTY & TRADING CORP.

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