



MARINI
FAYAT GROUP



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MASTER TOWER

Think further!

Environmental sustainability, technological innovation and improvements in energy consumption have led to the development of a new way of producing asphalt.

The MARINI MASTER TOWER represents a new milestone in hot and warm mix asphalt production in terms of use of recycled materials, low emissions and low energy consumptions.



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◆ **Innovation.**
Everywhere.
With you.



◆ Benefits

Three main benefits provided by the new MASTER TOWER:

NEW PERFORMANCES FOR THE USAGE OF RAP

- Up to 100% of RAP delivered at 160°C
- High flexibility with high capacity hoppers for RAP and VIRGIN
- Thanks to special mechanical/manufacturing /design features of the asphalt plant (MARINI PATENT)

LOW EMISSIONS

- Indirect heating of RAP by means of HOT AIR
- Re-burning of bitumen particles (MARINI PATENT)
- Full treatment of emissions (gas and smell)

HIGH ENERGY SAVING

- 1 BURNER instead of 2 (MARINI PATENT)
- Higher efficiency in the heat exchange compared to all the traditional solutions available
- Relevant energy saving on thermal and electric energy consumption

PATENTED TECHNOLOGY

The target of present invention is to provide a new system capable of guaranteeing significant energy savings in the production and operation phases of the plant and a reduction in the release of pollutants into the environment during the production of mixtures with bituminous binders.

◆ Think different: new performances for RAP

MASTER TOWER technology includes 2 dryers placed above the mixer. This positioning prevents any possible sticking due to the hot recycled materials.

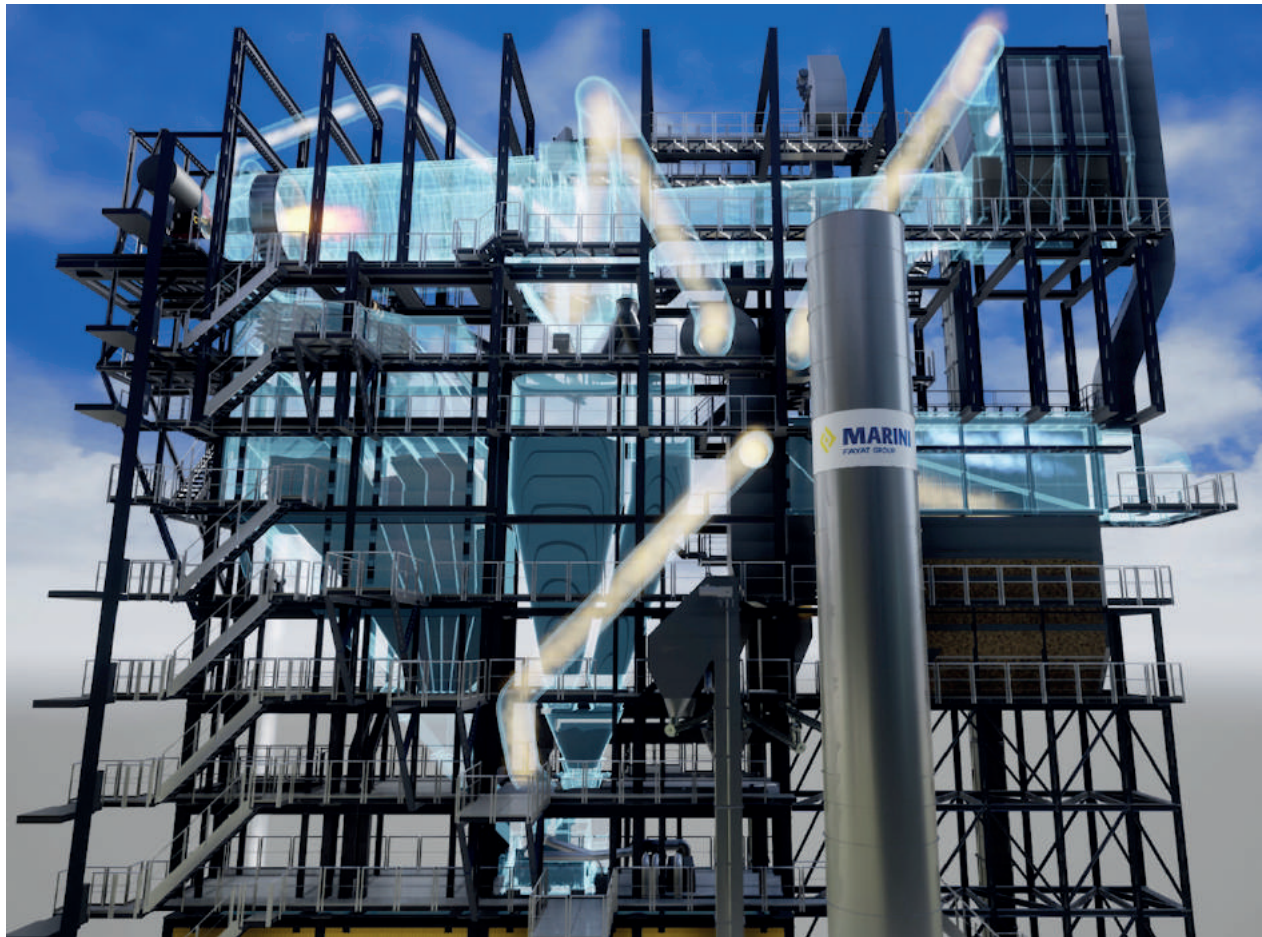
The RAP materials exit from the RAP dryer at a temperature of 160 °C allowing the operator to produce asphalt up to 100% RAP or in any case, to mix every kind of asphalt with high percentages of RAP without overheating of the virgin aggregates, saving energy and preserving the quality of the residual bitumen contained into the RAP.

The virgin aggregates reach the mixing tower screen directly from its discharging chute thus avoiding the typical thermal losses due to the hot elevator in the traditional plants. Wearing of both elevator buckets and chain is also reduced.

An automatic valve system manages the hot air flow and sensors and temperature probes provide the necessary information to the centralized control system. A completely new generation software manages the system in a precise and extremely reliable way, communicating with the operator in a simple way the necessary information and managing everything automatically and with the maximum efficiency and safety of all operations.



◆ Environmental solutions



LOW EMISSIONS PLANT

- Indirect heating of RAP with HOT AIR and high efficiency in counter flow drying process
- Re-burning of all the bitumen particles (MARINI PATENT)
- Full treatment of all the emissions, gases and smells, produced during the normal functioning of every asphalt plant

NEXT LEVEL OF RAP TREATMENT

The RAP is dried and heated by the hot gases coming from the virgin aggregates drum. The use of hot gases avoids both the contact between the flame of the burner and the recycled material and the direct radiation of the flame on the RAP, limiting in this way the picks of temperature during the heating process of the recycled material.

Thanks to an innovative system for the fumes management, all the particles as well as all blue smokes can be sent back to the virgin dryer drum and introduced just behind the flame of the burner. This process helps to decrease drastically the emissions and smells into the atmosphere.

Energy consumption

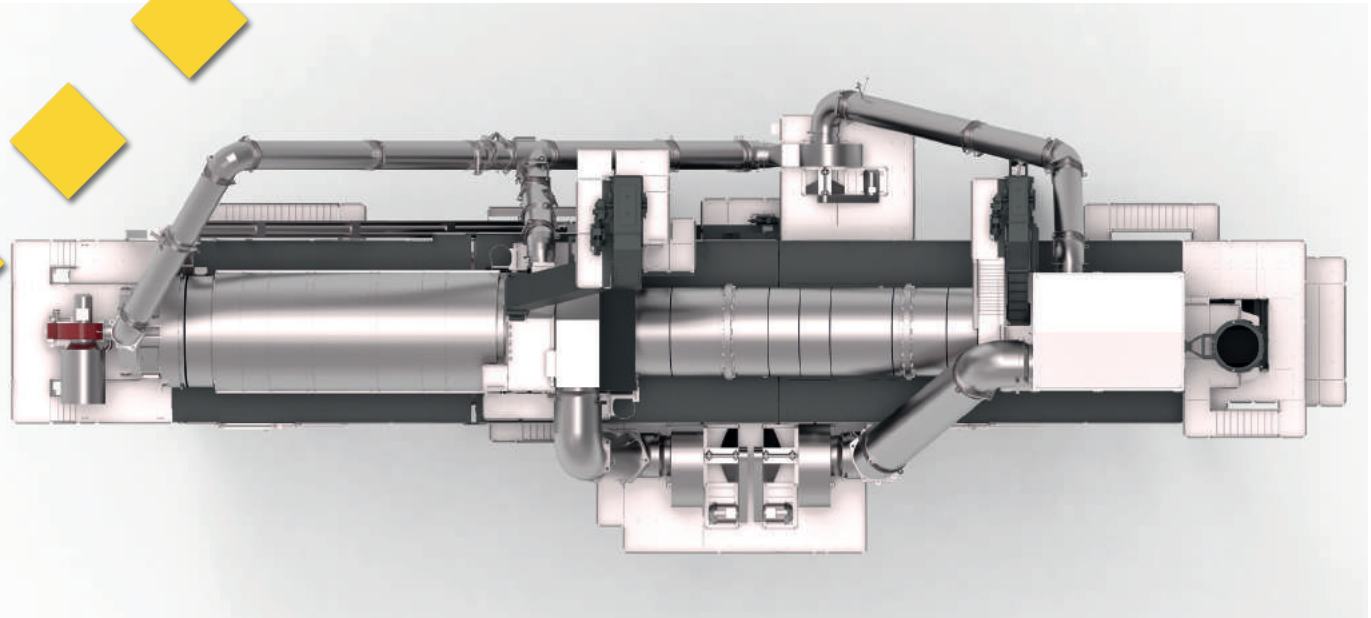
HIGH ENERGY SAVING

- 1 BURNER instead of 2 in counter-flow (MARINI PATENT)
- Higher efficiency in the heat exchange compared to all the traditional solutions available
- New design and high thickness insulation in order to reduce thermal loss

NEW GENERATION DRYING PROCESS

All traditional technologies available in the market are based on the use of a dual dryer system, each one fitted with its own burner. It goes without saying that the dual dryer operation is high energy consuming, exceeding the limits fixed by international regulations and leading not only to significant consumption of both fuel and electricity but also to high emissions into the atmosphere.

MARINI innovative solution consists of the simplification of the parts that generate heat, with the use of a single burner to supply the energy used to heat up the virgin materials in the first drum, and then depending on the mix to be produced, to transfer the needed quantity of heat to the second drum that process only RAP material.



◆ WMA solutions



Warm Mix Asphalt (WMA) is already the asphalt mix of tomorrow, providing a wide range of benefits:

- Reduction of bitumen VOC emissions
- Reduction of CO₂ (carbon dioxide) and other gas emissions due to energy savings when drying and heating virgin aggregates
- Reduction of fumes, emissions and odours
- Faster opening to traffic
- Higher workability
- Better compaction performances and extension of paving season
- Delivery of asphalt mix to longer distances
- Reduction of energy consumption = low production cost
- Higher plant recycling performances



Water based WMA technology is the best performing solution, especially the micro-bubbled foam bitumen solution (with high pressure water) which offers the widest range of technical and economical advantages.

Foaming system consisting of:

- A unit for pressurized water metering
- A foaming gun for injecting water into the bitumen feed
- Total integration of the system into the main plant software for new plants or into independent panel for retrofitted plants

Additives

Asphalt modification has been practiced in many forms in the past years.

The polymers are added to asphalt for a variety of reasons. They have been found to alleviate pavement problems and to realize economic, environmental, energy application and/or performance benefits.

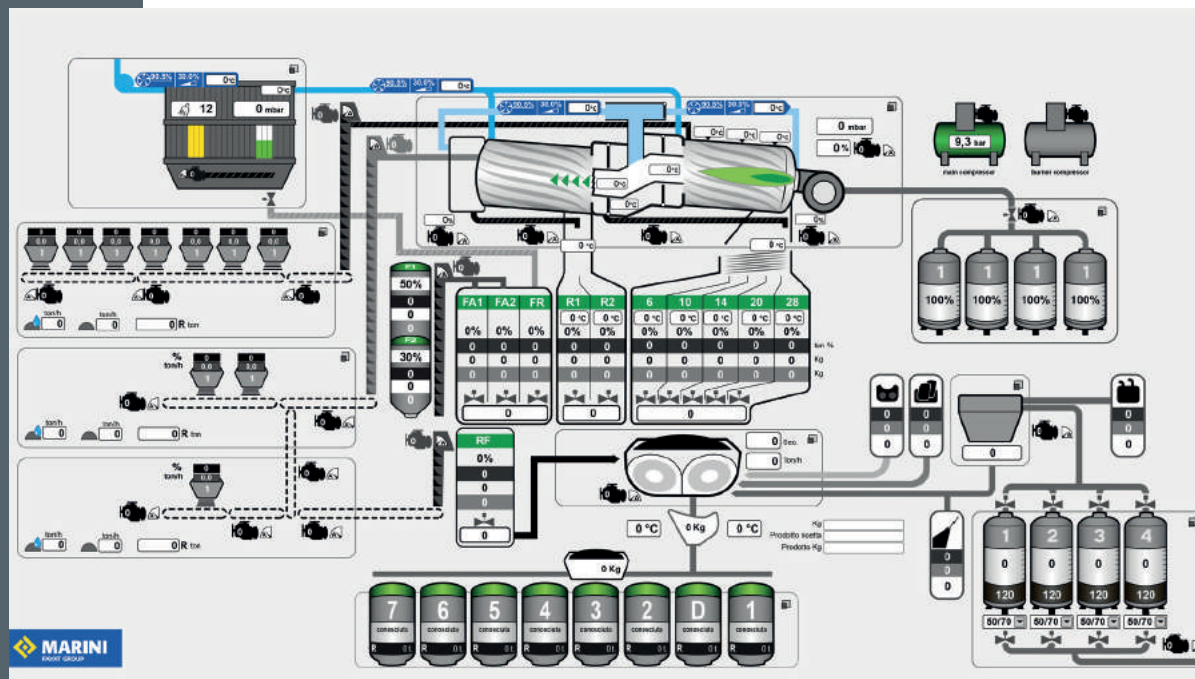
The plant is set up for the installation of metering devices for additives, in either solid or liquid form.

NEW!!!

Control management system

Complete solution for the management of batch asphalt plants

The system offers an automatic control of all the operations of the whole plant according to a series of programmed instructions, leaving however the operator the possibility to take decisions and to modify some process parameters.



Special features of the new software for managing RAP & virgin dryer:

- Automatic temperature control of aggregates or RAP
- Automatic control of burner capacity and automatic optimization system for high efficiency and for low consumption and emissions
- Automatic control of gas recirculation and re-burning of fumes
- Automatic control of temperature from virgin to RAP dryer



MASTER TOWER

◆ Technical specification

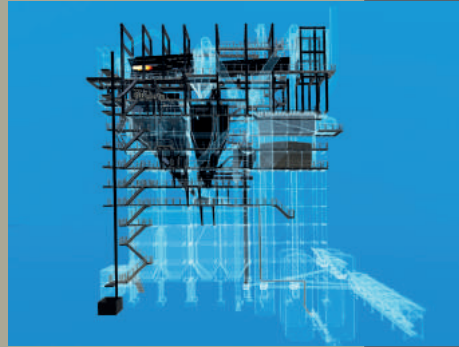
MASTER TOWER IN FIGURES:

- Drying capacity up to 320 t/h
- Up to 6 t mixer and up to 480 t/h mixing capacity
- Screening surface of 60 m³ and capacity of storage into the hot bins up to 230 t (double row available)
- RAP storage capacity up to 130 t in two separate hoppers
- Storage capacity of HMA, up to 1.040 t

RETROFITTING APPLICATIONS

This new environmental friendly solution facilitates and speeds up either the release of installation permit or the modification of an existing asphalt plant. In particular the special layout and reduced footprint, permit to the MASTER TOWER an incomparable capacity to fit everywhere as replacement of existing mixing tower, dryer and filter.





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