MARINI
FAYAT GROUP

CLASS TOWER

THE TAILOR MADE PLANT



FAYAT MIXING PLANTS

CLASS TOWER

MARINI's CLASS TOWER asphalt-production plants ensure a finished product of the highest quality. All components have been designed to guarantee high performance with low energy consumption and emissions in compliance with the strictest regulations.

With production up to 400 t/h, hot aggregate storage capacity up to 200 t, and mixer capacity up to 6,000 kg, the plant layout can be designed to meet every need, from the traditional solution with dryer and filter on the ground to the configuration with filter above the dryer.

This plant provides a wide range of technologies to produce asphalt with very high RAP percentages.



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THE CLASS TOWER RANGE

CLASS TOWER: RANGE UP TO 400 T/H

Type	CT 240	CT 320	CT 400
Maximum output	240 t/h	320 t/h	400 t/h
Cold feeders	on customer request		
Dryer drum	E220 (L=9 m/D=2.2 m)	-	-
	E220 XL EvoDRYER (L=11 m)	-	-
	E250 (L=10 m/D=2.5 m)	E250 (L=10 m/D=2.5 m)	-
	E250 XL EvoDRYER (L=11.5 m)	E250 XL EvoDRYER (L=11.5 m)	-
	-	E270 (L=11 m/D=2.7 m)	E270 (L=11 m/D=2.7 m)
	-	E270 XL EvoDRYER (L=12.5 m)	E270 XL EvoDRYER (L=12.5 m)
Burner power	16.8 MW	19 MW / 22 MW	24 MW or 27 MW
Filter surface	750 m² / 900 m²	1,012 m² / 1,214 m²	1,280 m² / 1,700 m²
Recovered fines hopper	from 25 t to 70 t	from 40 t to 80 t	70 t
Total screen surface	37 m² / 45 m²		
Sand screening area	8.2 m²	10.8 m²	
Hot aggregate storage under screen	80 t / 140 t / 2 x 100 t / 200 t		
Mixer capacity	3.5 t / 4.5 t	4.5 t / 5 t / 6 t	
Product storage / compartments	minimum 2 x 55 t maximum 10 x 100 t long-term storage bin (optional) loading cell (optional)		
Imported filler storage	on customer request		
Bitumen storage	on customer request		
Recycling up to 40%	Recycling ring and EvoDRYER		
Recycling up to 40%	Mixer		
Recycling up to 60%	Ring + mixer		
Recycling up to 80%	Recycling in ERAC parallel drum		

CONFIGURATIONS AND TECHNICAL SPECIFICATIONS

Overall operation

1 Storage and metering of virgin aggregates

2 Recycled materials storage and metering

3 Drying tower
- dryer drum and recycling ring
- recovered fines hpper
- bag filter

4 Imported filler storage bin

5 Mixing tower
- hot elevator
- fines elevator
- screen
- hot aggregate hoppers
- dosing unit
- mixer

6 Storage bin

7 Bitumen storage

8 Control cabin and automation





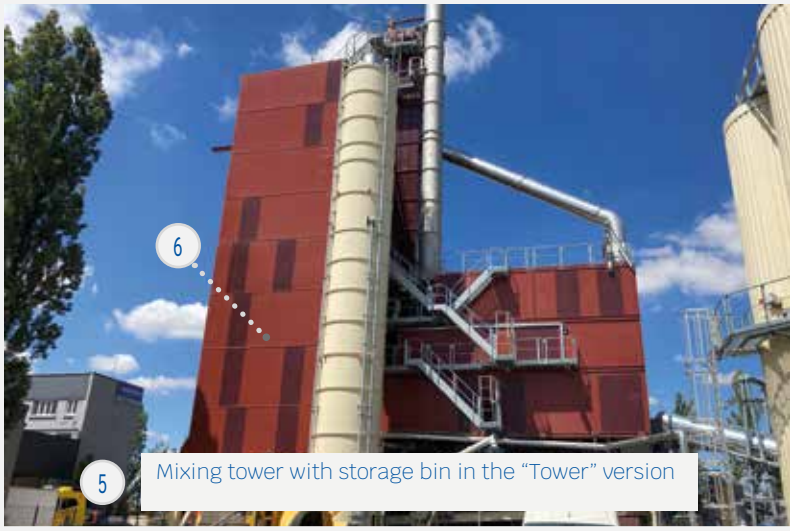
1 Cold feeders with hopper – width: 3.5 m / 4 m
capacity: 11 m^3 / 18 m^3 / 20 m^3



2 RAP cold feeders (with the third cold feeder)



3 Dryers with a diameter of 220 cm / 250 cm / 270 cm
Filter placed above or next the drying drum



6

5 Mixing tower with storage bin in the “Tower” version



4 Filler silos (special “Tower” version)



6 Side storage bin



8 Control cabin (version with four containers)



7 Bitumen storage tanks with electric heating

WHAT MAKES OUR PLANT UNIQUE



Class Tower – Austria

ENERGY-SAVINGS
Our technology ensures low energy consumption

SUSTAINABILITY
Attention to emissions and odours

RECYCLING
High RAP use percentage to optimise binder and aggregate consumptions.

ASSEMBLY, MAINTENANCE, AND SAFETY
Plants designed with users for you

CUSTOMISATION
A customised plant to meet the most demanding requests

EVOLUTION
New software developments for the client

ROI
Savings on the overall cost of each component per HMA ton



ENERGY-SAVINGS

for lower operating costs of the plant

THE INNOVATIVE CONCEPT BEHIND CLASS TOWER

The filter above the drying drum allows for substantial savings in electricity and fuels.

This plant helps reduce CO_2 emissions considerably.

MAIN CHARACTERISTICS

- HIGH-PERFORMANCE BURNERS
- HEAT EXCHANGE OPTIMISATION
- OPTIMISED INSULATION
- CONSUMPTION CONTROL

1. OPTIMISED PERFORMANCE
   reduced heat loss thanks to the Class Tower configuration
2. HIGH-EFFICIENCY BURNERS
   The electronic control and the compressed air-assisted spraying allow the burner to provide high efficiency regardless of the operating conditions and fuel type (possible use with bio-oil, wood powder, hydrogen, etc.)
3. WARM MIX ASPHALT
   the plant is equipped with a high-pressure foam kit and can produce any type of HMA. This kit (on request) is incorporated into the production process, allowing the plant to save up to 30% of energy
4. OPTIMISED INSULATION
   The plant's main points (screen, hot aggregate hoppers, storage bins, bag filter, etc.) and binder storage tanks are clad with oversized insulating material with reduced thermal bridges
5. CONSUMPTION CONTROL
   advanced software and inverters optimise the plant's consumption, keeping it under control


1


2


132°
HOLD
3


4


VLT
VLT
5

SUSTAINABILITY

Thermal protection

EMISSIONS

Emissions and odours are the most remarkable challenges asphalt production plants must take on nowadays.

Emissions can be conveyed or fugitive.

1. **CONVEYED EMISSIONS:**
conveyed emissions result from the drying and mixing stages. They come from well-defined emission tables and have limit values that depend on the asphalt production technology

2. **DIFFUSE EMISSIONS:**
diffuse emissions are produced when materials are loaded and unloaded and during secondary plant operating stages. These emissions do not have a specific point of measurement but can be reduced by using special solutions

THE FUME TREATMENT SYSTEM: AEROFILTER

MARINI has developed and installed AeroFILTER, the new fume and blue smokes filter.

The AeroFILTER treats fumes and blue smokes produced along the mixer exhaust point, the skip track if the plant is fitted with a side storage bin and the truck's discharge point.

This device filters fumes and blue smokes in several steps. Oils are then recovered in the lower part of the hopper before being evacuated through special tanks without any external dispersion.

The treated fumes are sent to the main stack.

AeroFILTER

THE FUME HEAT TREATMENT SYSTEM: EVODRYER

The new EvoDRYER system provides numerous benefits and ensures higher performance related to the use of RAP. It also thermally treats fumes that may contain VOC.

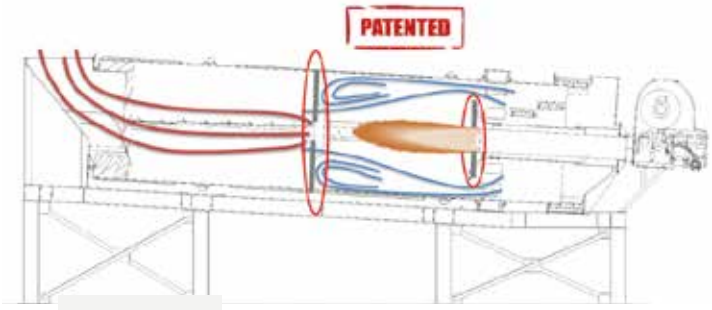
RAP (Reclaimed Asphalt Pavement) is introduced in the dryer drum after the burner flame, preventing the bitumen in the RAP from deteriorating. Even odours and emissions are considerably reduced.

The air conveyed by the mixing tower is fed behind the burner flame through an inlet at the front of the cylinder.

This patented system distributes air to the outer periphery of the combustion chamber and purifies the fumes from the residual organic compounds in gases.



AeroFILTER



EvoDRYER



EvoDRYER

RECYCLING

An essential step in plant management

THE REASONS FOR MARINI'S CHOICE

All over the world, the government authorities work to ensure the protection of the environment for a number of reasons:

- waste reduction resulting from the deterioration of the road network
- high amount of RAP with related storage problems
- reuse of raw materials: aggregates are lacking due to the decreasing number of active quarries on a national and international basis
- energy savings: consumption is lowered due to the reduction in aggregate quarrying, transport and traffic hold-ups
- bitumen recycling: because not just aggregates are reutilized, but also he bitumen is partially reused.

METERING SYSTEM IN THE MIXER

RAP can be fed in the mixer through a special feeding line, which consists of:

- cold feeder and feeding belt
- cold RAP metering unit, which includes a bucket elevator, a surge hopper, and a weighing conveyor belt with a variable RAP metering management system based on the moisture content
- modular exhaust system for the RAP produced in the mixer, with a fume partialisation system from the virgin dryer drum to the filter



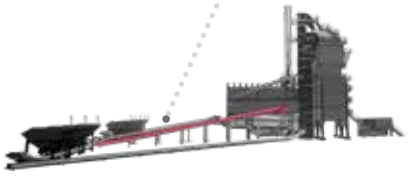
Metering system in the mixer

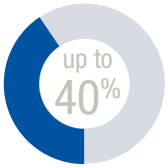


METERING SYSTEM THROUGH RECYCLING RING

The recycling ring placed after the burner flame allows RAP (Reclaimed Asphalt Pavement) to be fed at the ideal point of the drying drum without infiltration of parasitic cold air. RAP does not come in contact with the hot gases produced by the burner's flame but is gradually heated in the drum by means of heat-recovery flights and mixed with the virgin aggregates previously heated up to a suitable temperature. Most importantly, this technology prevents bitumen from being damaged.

Metering system through recycling ring





COMBINED TECHNOLOGY: RING + MIXER

The combination of the two technologies (Ring + Mixer) is the best solution in terms of flexibility and RAP performance.





RECYCLING IN A PARALLEL DRUM: THE ERAC TECHNOLOGY

The MARINI ERAC system is a RAP dryer with hot air, which can use up to 80% of RAP at an operating temperature of 160 °C, minimising emission levels. RAP is heated by counterflow, which also lowers exhaust gas temperatures.

This line consists of:

- cold feeders and feeding belt
- bucket elevator and RAP dryer drum





ASSEMBLY, MAINTENANCE, AND SAFETY

Plants designed for operators

1 **ASSEMBLY:**
all modules are pre-assembled at the factory to save time and prevent problems at the assembly jobsite

2 **MAINTENANCE AND SAFETY:**
we create plants keeping the safety of your personnel in mind. Moreover, we strive to ensure safety to prevent accidents and unpleasant situations







CUSTOMISATION

A customised plant to meet the most demanding requests

CUSTOMISING A CLASS TOWER

We have two possible options where the vent stack is placed in the highest position to remove the need for heavy civil works.

1. A filter can be positioned on the ground or on the dryer drum for lower heat dispersion and higher heating of the recovered particulate matter
2. The filter placed on the ground allows you to combine any type of filter with any type of dryer drum and thus ensure maximum product configuration flexibility





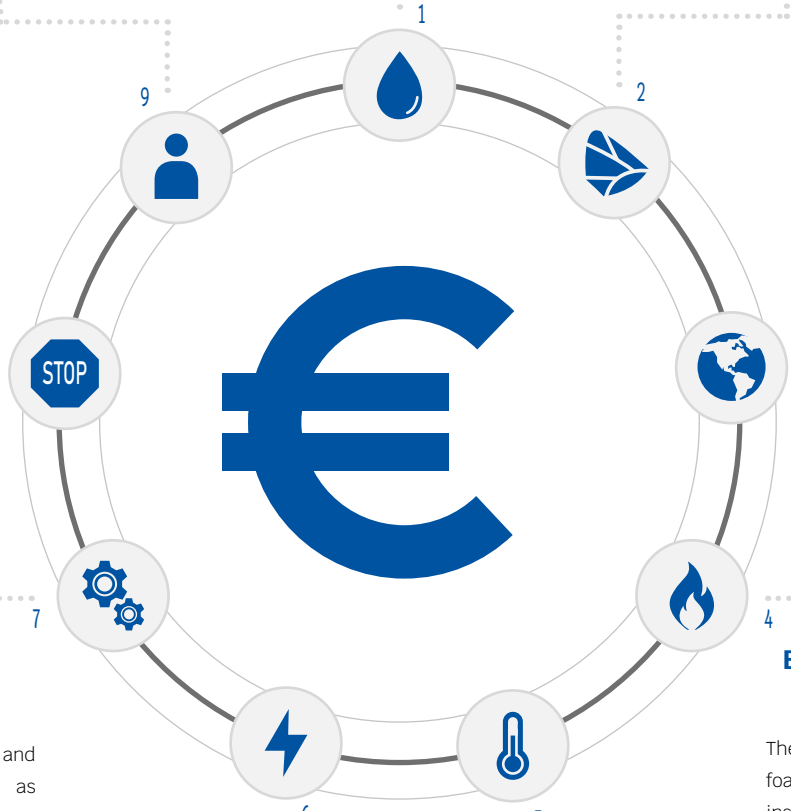
RETURN ON INVESTMENT

Our solutions for optimal ROI.

OPTIMISED COMPONENTS TO REDUCE CONGLOMERATE COST

Investing in the MARINI CLASS TOWER allows you to produce top-quality HMA (Hot Mix Asphalt) at an unbeatable cost.

Every component of the overall cost of one ton of HMA is taken into consideration with the following solutions:



WORKFORCE

The multiple solutions provided that make our plants run smoothly facilitate maintenance and allow access to all points, employing as few people as possible.

BITUMEN

The recycling technology helps reduce the amount of bitumen used by up to 80%.

AGGREGATES

The recycling technology helps reduce the amount of aggregate used by up to 80%.

TRANSFER COSTS

The low transfer costs of our plants minimise the impact on the cost per ton of asphalt.

PLANT DOWNTIME

Our reliable products and efficient after-sales service help minimise plant downtime.

SPARE PARTS

An optimised, more reliable and long-lasting solution, such as Marini Endurance wearing plates, reduces the need for maintenance and spare parts.

ENERGY TO DRY/HEAT AGGREGATES

The high-efficiency burner, foamed bitumen, and optimised insulation help reduce energy consumption by up to 30%.

PROCESS ELECTRICITY

Our software, technology, and the use of several inverters allow electric motors to consume less energy.

ENERGY FOR MAINTAINING BITUMEN TEMPERATURE

Highly efficient binder storage tanks with reinforced insulation and reduced thermal bridges reduce by up to 75% the consumption of energy needed to maintain the storage temperature.


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EVOLUTION

A new plant concept.

ADDITIVES

The plant's innovative design allows the use of all types of additives.
An optional kit can be integrated into the plant at any time.

CELLULOSE FIBRES
cellulose fibre pellets, designed to stabilise the asphalt

PIGMENTS
(iron oxide, yellow, blue and white dyes)

POLYMERS FOR MODIFYING THE BITUMEN
(Wax, EVA, SBS, Latex)

NEUTRAL BITUMEN
(synthetic bitumen, for special colours)

RUBBER POWDER
Rubber powder is obtained from tyres of dismissed cars and trucks. It increases bitumen elasticity while reducing thermal sensitivity. The result is reduced deformations, damage caused by humidity, noise and pavement vibrations

ANTI-STRIPPING AGENTS
Anti-stripping agents lower the surface tension of the bitumen, ensuring higher adhesion on the aggregate

LIGHT-COLOURED SYNTHETIC BITUMEN
light-coloured synthetic bitumen ensure colour flexibility and bright pavements

WARM MIX ASPHALT (WMA)

Usually, WMA is produced at a temperature lower than 30 °C compared to HMA. However, like HMA, it ensures high performance and a multitude of benefits.

- reduced VOC emissions
- reduced CO_2 (carbon dioxide) and other gas emissions thanks to lower energy consumption for drying and heating aggregates
- reduced fumes, emissions and odours
- the site can be opened to traffic at an earlier stage
- high workability
- improved asphalt compaction and extended paving season
- delivery of asphalt over distances
- reduced energy consumption = lower production cost
- higher plant performance by using RAP







CYBERTRONIC

Optimised production management

PLANT MANAGEMENT SOFTWARE

Cybertronic is Marini's plant management software.

It can be expanded using complementary software kits that ensure energy saving, fewer problems at the jobsite and a high percentage of RAP.

NEW FUNCTIONS

"DRYING PROCESS CONTROL" PACKAGE

"ENERGY" PACKAGE
Optimised energy management

"DYNAMIC RAP" PACKAGE

"COLD RAP" PACKAGE

"APPLICATION FOR TRUCK LOADING" PACKAGE

"MAINTENANCE REPORT" PACKAGE

correct fume temperatures inside the filter

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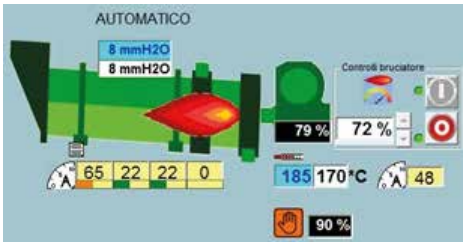
fuel consumption optimisation

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thermal exchange efficiency

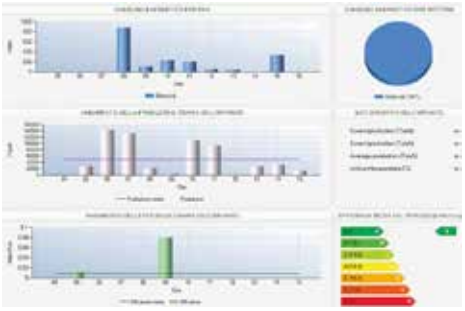
AUTOMATIC CONTROL OF THE DRYING PROCESS

By adjusting the burner's power and the drum's rotation speed based on the production (t/h) and humidity of the infeed materials, the software stabilises the outlet temperature of the material leaving the dryer and the inlet temperature of the fumes in the filter. This process reduces fuel consumption, optimising heat exchange efficiency.



OPTIMISED ENERGY MANAGEMENT

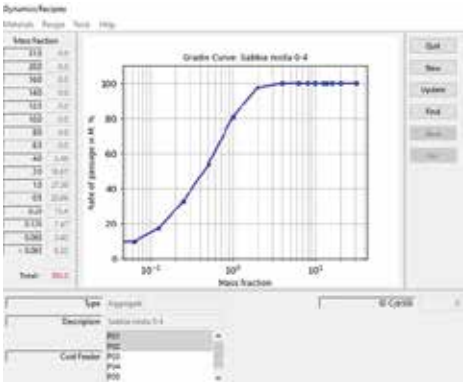
This software integration can control the energy consumption resulting from the production of various recipes. This makes it easier to analyse potential production process improvements, allowing for the optimisation of consumption and emissions in the atmosphere.



OPTIMISED AND DYNAMIC RAP MANAGEMENT

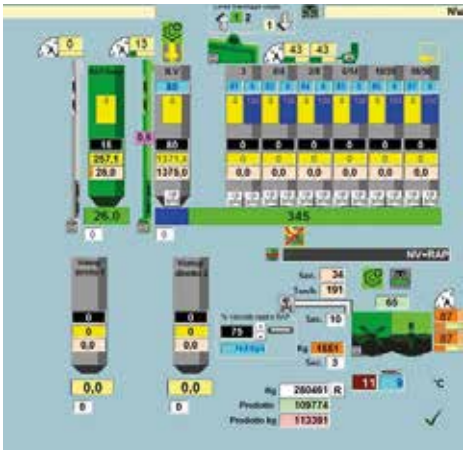
You can dynamically adapt the percentage of RAP by inserting the particle size curves of the aggregates, bitumen types, RAP used and the asphalt to be produced.

This software allows you to check the maximum amount of RAP that can be used based on the aggregates and RAP available and thus stay within the particle size curve. It also allows you to instantly vary the formula to adapt to any operating condition (especially when using the cold RAP line in the mixer).



HANDLING COLD RAP IN THE MIXER

The new function calculates the correct speed of the RAP weighing belt during the metering step. The user can manually adjust the RAP inlet speed based on the mixer's depression value.



ECO-RESPONSIBILITY

OUR VALUES

For us, clients and the environment always come first.

INNOVATION
Our company was established almost 120 years ago. Since then, it has always found innovative solutions for hot-mix asphalt plants. That's why we can take on the most difficult challenges and help our clients develop their business

CUSTOMER SATISFACTION
Meeting our clients' needs is our priority. We work in partnership with our clients, providing them with appropriate and bespoke solutions throughout the life cycle of their asphalt plants

ENVIRONMENT AND SAFETY
we design and manufacture our asphalt plants to minimise their environmental impact. Ensuring safety for the operators and our personnel at the construction site is our priority

TEAMWORK
MARINI is a human-scale, family-run company of the Fayat Group, where teamwork is our strength

CORPORATE SOCIAL RESPONSIBILITY
we are committed to developing sustainability by implementing social and environmentally-friendly activities while valuing the relationship with our employees and partners



OUR TOP PRIORITY: PROTECTING THE ENVIRONMENT

We design our asphalt plants to minimise their environmental impact. We consistently integrate our products with innovations that help protect the environment.

LOW VISUAL IMPACT

MARINI'S CLASS TOWER RANGE features a compact structure so it can fit into small spaces, thus minimising its visual impact.

LOW EMISSIONS

CLASS TOWER complies with the most stringent regulations on atmospheric emissions.

We can ensure low emissions as we rely on a high-efficiency burner, handle RAP correctly (protecting the bitumen contained in it) and use a high-performance bag filter.

CO_2 EMISSIONS

How do we keep CO_2 emissions low? By ensuring high recycling rates, locating the plant near the worksite, and using biofuels.



SOIL PROTECTION

By storing sensitive products (chemical additives) in appropriate containers and no longer using diathermic oil, we have eliminated any accidental risk of environmental pollution.

SMELL POLLUTION REDUCTION

MARINI technologies minimise VOC emissions and unpleasant odours associated with bitumen vapours.

LOW NOISE EMISSION

Noise is reduced upstream thanks to various solutions, including a frequency inverter on filter/burner fans or silencers on pneumatic cylinder. This way, the plant can be easily integrated into the environment.

AFTER-SALES SERVICE

We at Marini have implemented a strategy including the plant's whole life cycle, which represents solid and unifying values:

- Our commitment to focus on customer service.
- Our technical support is based on a competent team and an organization that is willing to listen to its customers.

RETROFITTING

Our experts help you find the best configurations to improve the asphalt-production plant's functionality and operating life and preserve the initial investment value.

TRAINING

The MARINI ACADEMY is addressed to companies from the road industry and specialises in technologies for the industrial production of HMA. The course portfolio includes in-person and online classes, combining theory and practice.



SPARE PARTS

Our spare parts help maintain your plant's performance high. Our spare parts service aims at meeting any deadline and safety issues.

AFTER-SALES SERVICE

Our expert technicians help you make your investment profitable and keep your plant efficient over time. The emergency toll-free number is active 24/7 to answer your doubts on use, maintenance, and troubleshooting. Moreover, our technicians are also available to commission and repair your plant at any time.

PARTNERSHIP AND PROXIMITY

Marini has always worked to meet the requirements of its clients.

A team of expert project managers is always available to find a solution that complies with the regulations in force and technical specifications and minimises energy consumption, CO_2 and odour emissions.

Our best engineers will find state-of-the-art solutions while our technicians will provide technical support during every step of the plant's life cycle.

That's how we stay by our clients' side. Because your success is our success.













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