



CASSINO  
PLANT

## FACTS & FIGURES

# Contents

4

---

PRODUCTION

12

PLANET

18

PROCESSES

24

PEOPLE

30

PRODUCT

# Production

## Our Commitment

- 1 Exceptional, highly-motivated people
- 2 Technological innovation
- 3 Continuous improvements in efficiency and environmental performance through WCM
- 4 Full integration with the local community
- 5 Premium quality for premium products



More than  
**40 years**  
of operation



More than  
**7 million**  
vehicles produced



**15 models**  
produced since 1972



**2 million m<sup>2</sup>**  
total surface area (550,000 m<sup>2</sup> covered)

## The Plant: Yesterday

### **When did the Cassino plant open?**

In 1972 with production of the Fiat 126.

### **What models have been built at Cassino?**

The Fiat 126 was produced from 1972 to 1978, when production switched to the Fiat Ritmo. Since then, Cassino has specialized in the production of compact and mid-size models (C and D segment), such as the Fiat Tipo, Tempra, Marea, Bravo/Brava and Stilo, and, from 2007, the new Bravo, then the Lancia Delta and Alfa Romeo Giulietta. From 2005 to 2010, the plant also produced the Fiat Croma.

### **What distinguishes the plant?**

When the Fiat Tipo was launched in 1988, the plant underwent a major transformation with the introduction of automation for the most difficult and physically strenuous tasks. Since then, Cassino has consistently been at the leading edge of technological innovation. The Paint Shop, for example, is one of the most advanced in the world following the recent introduction of innovative “dry scrubbing” technology in the primer booths.

With the decision to allocate production of the new Alfa Romeo models to Cassino, beginning with the all-new Giulia, the plant has been transformed into a premium plant for the production of premium cars.





## The Plant: Today

### **How large is Cassino? What is its production capacity?**

The plant has a total surface area of two million square meters, including a covered area of 550,000 square meters. Production capacity is around 1,000 cars per day and, over its history, the plant has produced a total of more than 7 million cars.

### **Why is Cassino referred to as a “World Class Sustainable Plant”?**

Because, with application of the World Class Manufacturing methodology and use of the most advanced automotive production systems, it is a benchmark in terms of systems, people and environmental performance.

### **Why is Cassino considered a Premium plant?**

Premium means something “of superior value, out of the ordinary”...like an Alfa Romeo. Cassino is a premium plant because its innovative technologies, advanced processes and highly-qualified people enable it to produce exceptional cars.

### **What is Quadrifoglio Avenue?**

Quadrifoglio Avenue is the road running along the main façade of the plant, where a series of installations tell visitors what we do and how we do it. They show the care, quality, beauty, perfection and passion that we dedicate to our products, our people and the Environment.

### **Where did the name come from?**

“Quadrifoglio” is Italian for “four-leaf clover”, the good luck symbol that driver Ugo Sivocci had painted on his Alfa Romeo RL before the 1923 Targa Florio race. He won and Alfa Romeo adopted the four-leaf clover as its official racing insignia. The brand also began using the insignia to designate its top-of-the-line performance models. So, the name Quadrifoglio Avenue was chosen because the four-leaf clover is symbolic of Alfa Romeo and is also suggestive of nature and the environment.





### **What is World Class Manufacturing?**

World Class Manufacturing, or WCM, is a methodology applied every day at FCA plants worldwide.

WCM is a program of continuous improvement aimed at maximizing the competitiveness of our plants.

The primary objectives are the elimination of waste, product quality, workplace safety and environmental performance. Continuous improvement in all areas of production ensures that our products are of the highest quality and, therefore, that customer expectations are met. As plants achieve concrete results, which are certified by periodic audits, they progress through the various WCM levels in the system: Bronze, Silver, Gold and, finally, World Class.

### **When was WCM introduced and what level is the Cassino plant?**

World Class Manufacturing was introduced at Cassino in 2005. The plant was awarded WCM Bronze in 2008 and Silver in 2009.





# Planet

## Our Commitment

- 1 Zero water withdrawn for use in industrial processes
- 2 100% waste recovered or recycled
- 3 CO<sub>2</sub> emissions offset in full
- 4 Full integration with the local community and eco-system
- 5 100% electricity from renewable sources



**500,000 m<sup>3</sup>**  
of rainwater harvested  
annually



**50,000 m<sup>3</sup>**  
biolake



**3 Megawatt**  
solar panel installation



**Zero industrial waste**  
sent to landfill since 2000

## An eco-friendly plant

### **Why is Cassino considered a “green” plant?**

Because it will use renewable energies, such as electricity generated by on-site solar panels, and advanced technologies for reducing energy and water consumption. Because it will harvest and reuse rainwater rather than drawing on precious local water resources. Because, since 2000, not a single gram of industrial waste has been sent to landfill. Because 100% of our industrial waste is either recycled or recovered. Because 100% of electric energy comes from renewable sources and 100% of emissions from the production of thermal energy are offset.

### **What steps have been taken to make the Paint Shop sustainable?**

The water used to collect overspray in our paint booths is purified and reused. In our primer booths, we have eliminated water with use of the revolutionary dry scrubbing technology to collect overspray. Air contaminated with excess primer particles is sucked in and filtered by special cardboard separation modules, which are then sent for recovery. Cassino is the first car assembly plant in the world to implement this technology, which, among other benefits, doesn't require chemical additives.

### **How is Cassino a “zero water” plant?**

Every year, we collect half a million cubic meters of rainwater. That's equivalent to half an hour's flow down the Tiber River. Through water reutilization and production technologies that require very little water, or in some cases none at all, our plant will be self-sufficient. This means that we will be able to operate without taking a single drop of water from the network for use in our industrial processes.

### **Why build a lake?**

A biolake with a capacity of more than 50,000 cubic meters will be used to store harvested rainwater. We can then draw water from the lake as and when needed for use in our industrial processes.

### **What if there is a drought?**

With our efficient processes and water recycling technologies, the plant's water requirement is minimal. As a result, the storage capacity of the lake is adequate to get through periods of drought without having to draw from the network or other local water resources.

### **What is phyto-purification?**

It's a natural system where the combined action of gravel, plants and micro-organisms filters and purifies water from the biolake for use in the plant's industrial processes.





### **How does waste become a resource?**

By recycling in an economically-sustainable way, applying the principles of a circular economy, what used to be considered waste has now become an opportunity...a new source of raw materials.

### **What is the objective of initiatives such as the beehives and biodiversity areas?**

To demonstrate the strong interconnection between the plant and the local area and underscore the importance of safeguarding our natural heritage, starting with the little things.

### **What is a “carbon footprint”?**

A carbon footprint represents the impact of human activity on the environment in terms of carbon emissions (CO<sub>2</sub>). CO<sub>2</sub> is not intrinsically harmful to the environment. In fact, the CO<sub>2</sub> that we breathe out is absorbed naturally by the earth's plantlife. However, if too much of it builds up in the atmosphere, it can have a major impact on climate.

### **How do we reduce CO<sub>2</sub> emissions?**

By optimizing and reducing energy consumption, including adopting the latest technologies, using LED rather than traditional lighting and, most importantly, only using electricity from renewable sources.

### **How are carbon emissions offset?**

The plant only uses electricity from renewable sources, so our carbon emissions are minimal. The small amount of carbon we do emit from the production of thermal energy, however, is offset through market-based investment in initiatives to reduce climate-altering emissions. As a result, Cassino is a carbon-neutral plant.

### **Does the plant use solar energy?**

All of the electric energy we consume comes from renewable sources, such as hydroelectric, wind and solar. One example is the solar panels that will cover employee parking areas to shelter cars from the sun, while at the same time generating electricity. With a total surface area equivalent to more than 2 football pitches, these solar panel installations will have a peak capacity of up to 3 Megawatts. In fact, they will generate some 3.5 GWh of renewable energy annually: zero consumption of fossil fuels and more than 1,000 tons of CO<sub>2</sub> emissions avoided per year.





# Processes

## Our Commitment

- 1 Use of state-of-the-art technologies to deliver premium quality
- 2 Energy-efficient processes
- 3 Optimized water usage
- 4 Highly-ergonomic workstations
- 5 World's first car assembly plant to use dry scrubbing technology in the primer booths



Nearly  
**1,300 robots**  
in the Body Shop



**Zero water**  
used in the primer booths



Innovative  
**anti-corrosion**  
treatment



**15,000**  
best practices adopted on  
the production line

## World-class technology

### What major technological innovations have been introduced at the plant?

Innovations in the **Body Shop** include new laser welding technologies, self-piercing riveting for joining steel and aluminum components and gluing systems for joining steel and carbon fiber components. These new lighter materials deliver higher performance combined with lower fuel consumption and emissions.

In the **Paint Shop**, the introduction of E-Shuttle technology has brought improvements to the paint prep and anti-corrosion treatment processes, while reducing the consumption of energy, water and paint. In addition, introduction of the innovative new dry scrubbing technology in the primer booths has eliminated the use of water altogether.

On the **Assembly Line**, where the processes are predominantly manual, workstations have been redesigned to reduce worker fatigue and improve ergonomics. For example, variable platforms automatically adjust to the ideal height for workers at each station.

### How many robots are there in the plant?

The Body Shop is the most highly-automated area of the plant with nearly 1,300 robots installed. Robots are primarily used to perform difficult, repetitive operations.

### What are laser deposition welding and laser brazing?

These are innovative technologies used to join parts that would be impossible to join with conventional spot welding.





### **What is the E-Shuttle?**

It is a system that rotates vehicle bodies as they are immersed in the pre-treatment and cataphoresis baths. Cataphoresis is an electro-chemical anti-corrosion treatment that optimizes bonding to metal surfaces. Compared with the traditional method, the E-Shuttle system improves the quality of treatment while also requiring much smaller immersion tanks, meaning reduced energy and water consumption.

### **What is dry scrubbing technology?**

In our primer booths, a process called dry scrubbing has replaced the traditional water-based method of recovering primer overspray. Air contaminated with primer particles is sucked into special cardboard filters that collect the overspray without the use of any chemical additives. When the filters are full, they are sent to specialist contractors for recovery. Cassino is the first car assembly plant in the world to use this technology.





# People

## Our Commitment

- 1 Employee well-being
- 2 Involvement and motivation to excellence
- 3 Shared values and objectives
- 4 Development of technical and managerial skills
- 5 Ergonomically-designed workstations



**4,338**

total employees



**60%**

university and high school graduates



**261**

Team Leaders



More than

**700,000 hours**

of classroom and on-the-job training

## People-centric approach

**Cassino has been through a cultural change.**

**How was it achieved?**

Through targeted training initiatives, events such as the “Big Bang” and a daily commitment to application of the World Class Manufacturing tools and principles.

**What makes the cars produced at Cassino PREMIUM?**

We want every car we make to convey Perfection, Care, Beauty, Passion and Quality. Behind each of these concepts, there is a practical application on the production line. Perfection, for example, reflects our ability to listen to others, correct errors, and continuously improve. Care means remembering that each customer considers their car special and so every detail of every car should be produced with care. This approach is part of our culture of excellence.

**How are people at the center of the plant?**

The quality of the work and cars produced at the plant depends on people. Even at an advanced, highly-automated plant like Cassino, people are the most important resource. In the end, they are the agents of change and improvement. They are what makes the difference.

**How is employee well-being achieved in concrete terms?**

To begin with, safety in the workplace is the number one priority. In fact, “zero accidents” is one of the goals of World Class Manufacturing. Workstation design is another important area. Ergonomic workstations make tasks easier and less tiring. Attention is given to the smallest detail, with direct input from those who actually work on the production line. These designs then undergo virtual testing before implementation. Virtual analysis of workstation ergonomics has led to innovations such as platforms that adjust automatically to the height of individual workers.





Cassino Plant  
LITE 3



PAR. POST  
STAZIONE  
120

DELIBERA  
PARAUROYI  
POST.  
MODALE  
ESTERNA



### **What is WPI?**

WPI, or Work Place Integration, is a new approach to production processes that begins with the design of individual workstations. Product and process are developed in parallel, and input from Team Leaders with experience on the production line plays an important role in definition of the work cycle and workstations.

This translates into a significant reduction in the number of post-installation modifications and improved ergonomics that reduce worker fatigue. So WPI has major benefits in terms of people involvement and the quality of workstations.

### **What is the ErgoLab?**

In the ErgoLab, we study workstation ergonomics through both virtual and real simulations. Data relating to physical effort, posture and movement is then used to design workstations that optimize processes and reduce excess exertion or physical stress for workers.

### **What are adaptive workstations?**

This is one of many innovations that improve workstation ergonomics. With the simple swipe of an ID tag, variable height platforms automatically adjust to the most comfortable position based on a worker's height and build.

### **How important is training?**

Training is fundamental. The quality of our products depends on the skill and know-how of our people. The WCM Academy, dedicated Training Areas and trade schools support training and application of all procedures. An additional resource is the Web Academy, where training materials and study aids are available for download.

### **What is a Team Leader?**

Team Leaders form the base of the plant's work organization model. Individual production teams consist of six team members and a Team Leader. The Team Leader is qualified to execute all tasks assigned to the team and can give training or support to each of the six team members. As such, the Team Leader represents a bridge between production and management, and is tasked with leading, motivating and supporting his or her team in every way possible, in order to achieve the highest standards of quality and production.





# Product

## Our Commitment

- 1 Cars that inspire emotion
- 2 Exclusive technology and engineering
- 3 Best-in-class Italian design
- 4 Perfect fusion between man and machine
- 5 Maximum performance and driving experience, without compromises



**2 models:**

Alfa Romeo Giulia  
and Giulietta



Innovative materials used to reduce  
the weight of the Giulia Quadrifoglio by

**more than 100 kg**



Power output of the  
Giulia Quadrifoglio:

**510 HP**



Top speed of the Giulia Quadrifoglio:

**307 km/h**

## “La Meccanica delle Emozioni”

### When was Alfa Romeo established?

Anonima Lombarda Fabbrica Automobili, or Alfa, was established in 1910 in Milan. The name was changed to Alfa Romeo after the company was bought by engineer Nicola Romeo in 1918. The brand logo incorporates two elements that are symbols of Milan: a red cross on a white ground and the serpent from the Visconti coat of arms.

### Alfa Romeo on the track

From its earliest days, the Alfa Romeo name has been synonymous with victory on the racetrack. Alfa has racked up numerous victories including back-to-back Formula One World Championship titles in 1950 and 1951 with drivers Nino Farina and Juan Manuel Fangio. It is also 10-time winner of the Targa Florio, 11-time winner of the Mille Miglia and 4-time winner of the 24 Hours of Le Mans.

### What makes the Giulia so revolutionary?

First, it marks a return to rear-wheel drive on a major production Alfa Romeo. Already adopted on the mid-engined Alfa Romeo 4C, rear-wheel drive is the best system for delivering maximum driving pleasure on a high-performance vehicle. The Giulia also uses innovative materials, such as aluminum alloys and carbon fiber together with ground-breaking technologies that minimize weight to the benefit of performance, fuel consumption and emissions.

### What was behind the conception and design of the Giulia?

It would have been difficult to develop a project like the Giulia using a traditional approach. That's why Alfa Romeo established a “Skunk Works”, a methodology first used during the Second World War that enabled a small team to design and develop the first U.S. fighter plane in just 143 days. Our Skunk Works team was made up of an elite group of designers and engineers who are passionate about the brand. Starting from a blank drawing board and with a mandate to think outside the box, they launched a revolutionary project. More than just a means of transport, the Giulia is a true “mechanical work of art”.

### How is the Giulia “designed around the driver”?

Every detail is designed to ensure perfect fusion between man and machine. Precise handling, responsive throttle, prompt shifting and braking, the ability to switch from rear-wheel to all-wheel drive to optimize performance and deliver unrivaled driving pleasure...“La Meccanica delle Emozioni”.





Bollino Verde

73.7	TESTING 1	1	8
9	Centropass Control	26	

**What are the most innovative features of the Giulia?**

The Giulia is packed with innovative technical solutions: an exclusive dynamic suspension system consisting of double-wishbone front suspension and patented “Alfalink” rear suspension and a double-clutch Torque Vectoring differential, which delivers precise control with independent torque delivery for the rear wheels.

The engines are also a key feature of the Giulia range. The 2.9L V6 bi-turbo on the Quadrifoglio version is derived from Ferrari technology and experience. The result: an engine that delivers 510 hp and goes from zero to 100 km/h in 3.9 seconds, with a top speed of 307 km. For the other versions of the Giulia, all engines were designed exclusively for Alfa Romeo and deliver best-in-class performance. These include the 2.2L all-aluminum turbo-diesel that can propel the Giulia from zero to 100 in less than 7.0 seconds.

**What versions are available in Italy?**

Five versions are available: Giulia, Super, Quadrifoglio, plus the Business and Business Sport versions for corporate fleets. These come with 5 engine/transmission configurations: a 150 HP and 180 HP 2.2L diesel with 6-speed manual or 8-speed automatic transmission; and a 510 HP 2.9L V6 Biturbo gasoline engine with a 6-speed manual transmission.







**Contacts**

**FCA Corporate Press Office**

Phone: +39 011 0063088

E-mail: [mediarelations@fcagroup.com](mailto:mediarelations@fcagroup.com)

**Alfa Romeo Press Office**

Phone: +39 011 0038908

E-mail: [roberto.toro@fcagroup.com](mailto:roberto.toro@fcagroup.com)

**Cassino Plant**

Phone: +39 0776 3991

Turin, Italy

July 2016





CASSINO  
PLANT