

# Italian Technology Roams Paris Streets

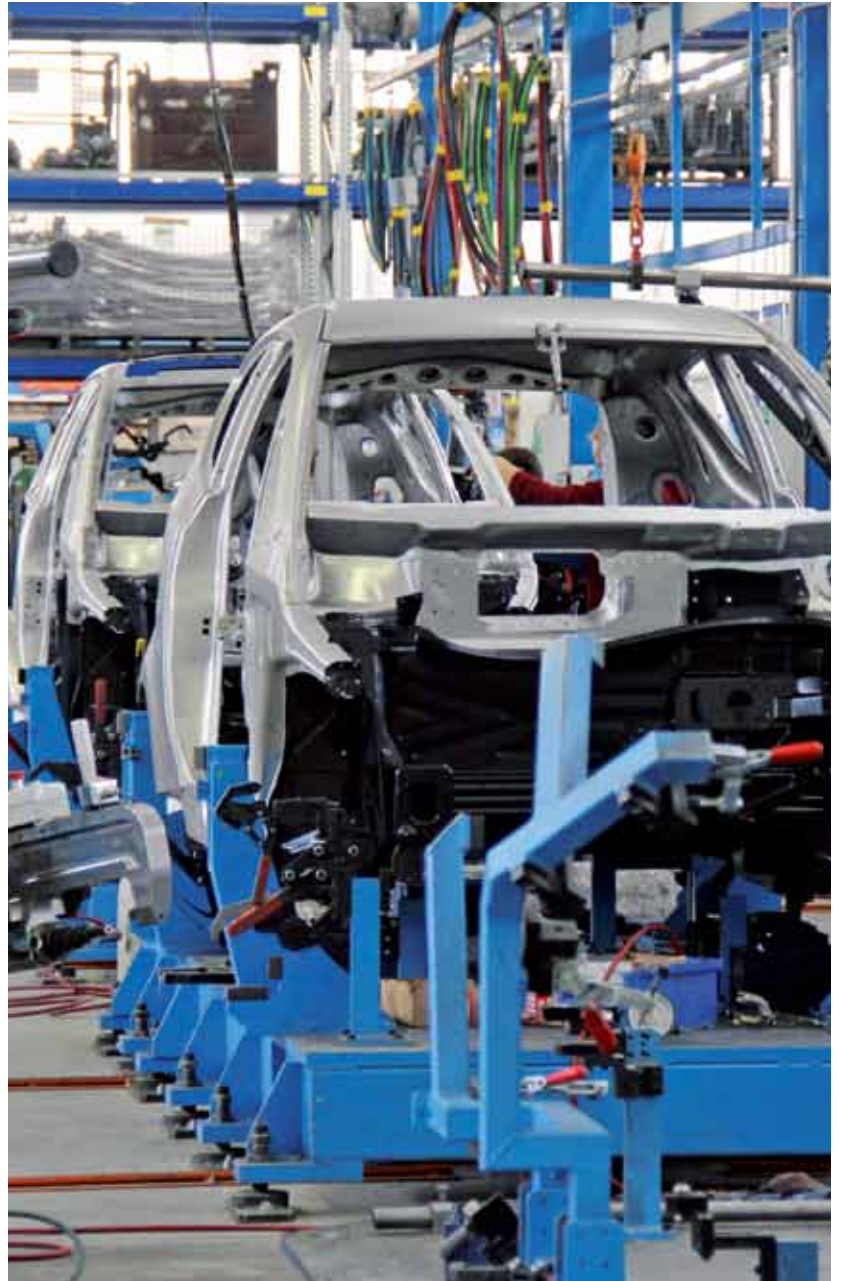
By Fabrizio Garnero

*An Italian heart pumps vitality into Autolib', the Parisian car sharing project. The project's fleet of fully-electric automobiles is entirely manufactured by the Italian company CECOMP, located in La Loggia (Turin). Made in Italy also labels the laser technology that the company employs to cut the automobile bodywork components -- four Prima Power laser systems, three of which are 3D.*

The Autolib' car sharing project is centered in Paris and 46 neighboring townships. French billionaire Vincent Bolloré funded the Autolib' car sharing project. The project is based on the successful Velib' bike sharing model launched by the mayor of Paris, Bertrand Delanoë, in 2007. Velib' includes more than 20,000 bicycles distributed through 1,600 stations across the city.

Encouraged by the success achieved from the Velib' project, Delanoë set his sights on the "green dream" at the Paris Automobile Fair of 2008 – an "ecologic" car sharing service he aimed to introduce by the end of his term in office. He was motivated by a study conducted by Apur (Atelier Parisien d'Urbanisme), which revealed that 56% of Paris residents do not own a car, and those owned remain mostly parked. Despite the concrete basis of the idea, there were many skeptics. Indeed, there were many challenges to the car share program: the lack of series model, the high cost of batteries, low autonomy, and lack of charging infrastructures.

The company that won the bid to supply the fully-electric cars was the Bolloré Group, which invested up to 1.5 billion euros in the project. This amount also includes vehicle maintenance and insurance, but most of it was directed to the production of the electric automobile. This contract was awarded to CECOMP, currently leasing the Pininfarina plant of Bairo Canavese in the province of Turin. The manufacturing lineup also includes approximately 60 specialized automotive workers who plan to produce 4,000 automobiles by the end of 2013 – 3,000 of which are destined for lease. These cars are distinguished by their aluminum gray color, and are "greener", given the lack of body paint.



*The founder and CEO of CECOMP Giovanni Forneris (center), flanked by his sons Gianluca and Paolo.*

## A Production Capacity of 15 Autos Daily

CECOMP is a company that strives to bring the ideas of designers, automotive style centers, and car makers to life. CECOMP was founded in 1976 by Giovanni Forneris, who developed his expertise at Centro Stile Fiat, while working for the most prestigious designers and body workers, such as Michelotti and Giugiaro.

Since its inception, CECOMP has worked with the leading automobile companies, and has been committed to excellent workmanship and attention to every detail, while utilizing the most innovative production systems and most advanced technologies available. The company is currently managed by its founder/president, closely flanked by his two sons Gianluca and Paolo Forneris, who respectively hold the positions of chief technical/sales officer and chief financial/administrative officer. CECOMP undertakes a variety of activities, such as prototype and pre-manufacturing phases, masterfully combining craftsman detail and industrial innovation.

CECOMP has fully embraced the project of the Bolloré group, going beyond the design and prototype phases of the electric automobile to take on the role of bodywork producer and manufacturer of the entire vehicle. Currently CECOMP is fully involved in producing the bodywork and assembling and detailing the cars, 15 of which are completed daily. "Reaching this productive capacity required us to seek a solution that allowed us to reach and maintain this quota since we are not car makers," recounts Paolo Forneris, CECOMP CEO. "The Pininfarina production plant of Bairo Canavese was the perfect solution for us. Each day our 15 cars utilize only one assembly station out of three. Despite this, having the assembly line already set up, with only a few changes for electric vehicle production, as opposed to Pininfarina's internal combustion engine models, was essential."

### High-Strength Steel and Aluminum is a Matter of Weight

"Thinking about the car production cycle," continues Paolo Forneris, "we started from the bottom up... which means from assembly to the finishing line. The job began back on October 2009 for us, and we gave way to the manufacturing process of the first vehicles after only two months, once the design was approved. We delivered the first cars in July of last year. In only 18 months, we were able to start manufacturing our automobiles with all the required approvals. Vehicle standardization is the same as for large series, but with a limit on the amount that can be manufactured. CECOMP can produce 1,000 vehicles per year."



CECOMP preferred laser cutting flexibility to traditional sheet punching.

CECOMP followed the "style" of the electric vehicle that Pininfarina had begun to study for the Bolloré Group, which is the head of the consortium that was awarded the contract. "This is a four-passenger, two-door vehicle that is 3.65 meters long and weighs 1,100 kg. In comparison to the original, its interiors were re-conceived to limit production costs", continues company CEO, Paolo Forneris.

### The Flexibility of Laser Cutting Instead of Traditional Punching

"When starting production, we first made the prototypes and then the pre-series, putting together all bodywork punching and assembly equipment in-house. We were dealing with small quantities when compared with traditional car making, so we opted for what we considered the right production compromise."



The Rapido Evoluzione system by Prima Power installed at CECOMP.

CECOMP preferred laser cutting flexibility to traditional punching. The sections of shaped sheet metal and dies were cut using four Prima Power lasers that consisted of one Optimo and two Rapido – one of which is the more recent Rapido Evoluzione model – and a Platino 2D system.

### 3D Laser Cutting is Essential

"We already owned two Prima Power laser machines for 3D cutting (Optimo and Rapido), one from 2006 and the other from the following year," says Paolo Forneris. "But the Autolib' project motivated us to purchase a new flat cutting system in 2010. We procured the Platino, used to cut sheet metal shapes, followed by the Rapido Evoluzione last July, which is a latest generation system that allowed us to organize our machinery for any production requirements at issue."

There are a total of over 300 product codes to cut, among parts in aluminum and other elements that make up the vehicle, for a total of 10 work hours per vehicle. The noteworthy savings of time and the variation of pieces once again justify laser production technology. Currently, CECOMP is one of the few companies in Italy tooled to face this type of production, thanks to its large and well-equipped fabrication and laser cutting shops, even though laser technology was initially conceived more for the manufacture of prototypes. It is important to keep in mind that CECOMP started off as a model maker, and that the first Prima Power laser – at



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the time known as Prima Industrie – was installed because a flexible prototype cutting method was required, “We cut from 10 to 150/200 pieces per batch in relation to each customer’s needs,” states Forneris. Today, laser tech is a fundamental plus for the production of this electric car, but also important in other scenarios. “Having both cutting-edge laser technology and a fabrication shop positions us to meet all our needs,” says Forneris. “Whether we use laser cutting or dies and presses depends on the target quantity. Our electric car is an example because 3,000 units do not justify the use of punching dies. Therefore, let’s leave room for lasers that have been extremely instrumental for this production, with emphasis on the 3D cutting plant. Without this technology, embarking on this journey would have been impossible”.

### Four Complementary Lasers From Different Eras.

Though conceptually the same, in just a few years laser technology has undergone significant advancement to instill a different cutting approach to cars produced by a single manufacturer; and, at times, also affects a single series. This holds true for CECOMP, that operates three 3D laser systems – purchased over the course of several years-- and the company considers them complementary in all processes. The component positioning equipment was designed to be “universal” and can be employed in each of the three systems. This makes it possible to overcome any difficulty, even downtime due to scheduled maintenance, given the importance of production timetables.

“Even if a machine is idle, we are still able to produce the codes and quantities required to produce 15 vehicles daily, simply by optimizing the cutting parameters due to a difference of laser power rating of the systems... and not to the fact that the machines are equipped with different CNC systems,” says Antonio Bellini, Prima Power area manager, the contact for CECOMP on all laser-related issues. “This is a fundamental aspect for CECOMP in view of continuity, allowing customers to use the same programs and technology regardless of the machine model, CNC system or year of purchase.”

“Obviously a series of item dimensional checks and inspections is performed when any piece being cut is moved from one machine to the other,” points out Forneris. “The majority of elements can switch machines, while some can only be cut using Optimo for reasons of size, such as the side panels.”

CECOMP has implemented the Tebis cutting machine control module to program its laser machines, after using the specific software in its plants to eliminate burring. “There is a choice made in consideration of simplicity and continuity since they already have a good knowledge of the Tebis milling software. This is a tribute to the Prima Power machines that have proven to be extremely flexible and open to any CAM cutting control software on the market,” says Bellini. “The machines are equipped with high-power laser generators: 3,000 W for Prima Rapido and 4,000 W for Platino and Rapido Evoluzione, the latter requiring high-power concentrations, as they are mostly used to cut aluminum nitride. Aluminum cutting called for particular care and attention to cutting-parameter tuning to prevent burring usually generated by this material.”



Prima Power cutting systems are extremely flexible and reliable.

“In regards to machine hardware, a calcium-based powder metering system was mounted to spray the coating into the evacuation pipe to douse the potential flammability of aluminum powder. Furthermore, employing almost exclusively nitrogen gas used for sheet metal cutting, CECOMP also disposes of large cryogenic tanks that provide the amount of nitrogen required to cover three cutting shifts on four machines. Nitrogen cutting of aluminum leaves the piece clean (the cutting residue is in the form of a powder easily brushed away by hand), and this is extremely important since the vehicle is not painted.”

### A Replicable and Repeatable Project?

Can the Autolib’ project be reproduced in other world cities and capitals? “That is what we hope,” answers company CEO Mr. Forneris. “Aside from mere profits, I personally find that this has been a fascinating experience up to this point. In addition, this is the first time we have produced a vehicle off the drawing board. Currently, CECOMP has a specific mandate to manufacture 3,000 electric cars by December 13, the date in which the contract expires.”

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