



# The Importance of Shot Blasting in the Treatment of Machinery Components Subjected to High Stress: The Choice of Carantini

Marta Fumagalli **ipcm**\*

Carantini Sabbature e Verniciature is focussing on the immediate future. It has invested in a last generation shot blasting machine to cope with the growing request for finishing large-sized products intended, also for the separate urban waste collection sector.

In Italy, the waste collection sector has experienced significant growth following the legislative decree issued by Minister Ronchi in 1998, which gave rise to a series of rules that regulated the waste management and transportation operations and defined guidelines for the separate collection of municipal solid waste. According to the data

included in the eighth edition of the Green Book 2020, the report on the national municipal waste sector issued by the Utilitatis Foundation and presented in Rome in October, "the production of urban and related waste in Italy amounts to about 30 million tonnes per year, whereas special waste amounts to 130 million tonnes.

**One of the dump bodies shot blasted and coated by Carantini Srl.**



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Italy has an urban waste recycling rate between 45.2% and 50.8%, in any case above the European average, equal to 47%. Landfilling accounts for 22%. The sector has a total turnover of over 10 billion Euros, largely derived from waste fees, and over 95,000 employees. Despite the critical issues arisen during the lockdown period, the waste management service continued to contribute to urban cleanliness and public health. Together with other essential services of high economic importance, this can be one of the sectors capable of positively impacting the relaunch of the national economy.<sup>1</sup>

“In the last five years, the demand for the coating of dump bodies and frames for waste collection vehicles has grown exponentially,” states Pierpaolo Piccinini, Administrative Manager of Carantini S.r.l. Sabbiature e Verniciature (Valdaro, Mantua, Italy), a company that has been operating in the surface treatment field for over thirty years. Its contracting coating service is specialised in medium and heavy-weight metal structures: it sandblasts and coats aerial platforms, crane arms, concrete mixing systems, frames, heads, and trailers for agricultural machinery and it finishes trash compactors. “This sector has a huge potential,” explains Riccardo Carantini, the company’s owner with his father.. “The number of separate collection lorries travelling on our roads is growing exponentially and their producers’ requests are becoming increasingly stringent in terms both of coating quality, as the finishes must withstand the harsh conditions to which these vehicles are subjected, and of quantity of products to be treated. Currently, the ‘ecological’ vehicle sector accounts an increasingly large slice of our turnover. In fact, for years we have consolidated a close



The Tunnelblast 2530/16 tunnel shot blasting plant installed by OMSG.



Some complex-shaped parts shot blasted by Carantini.

<sup>1</sup> <https://www.confservizi.emr.it/2020/10/set-tore-rifiuti-in-italia-fatturato-da-10-miliardi-e-oltre-95-mila-occupati/> (10/11/2020)



The new cluster shot blasting machine type Capri 20/35 H22.



A component entering the new shot blasting system.

professional relationship with the Novarini S.r.l. company located in Vigasio (Verona), a manufacturer of this type of equipment, which is proving to be impressive and profitable for both companies”.

### The importance of the pre-treatment process

These structures are subjected to high chemical and mechanical stresses and, therefore, their pre-treatment process is essential to guarantee an excellent aesthetic quality and mechanical resistance degree. Having to guarantee high quality and performance standards, the company carries out a pre-treatment operation on all workpieces by shot blasting and subsequent cleaning. These eliminate any calamine and impurities and make sure that the substrates reach a

high surface roughness, thus promoting paint adhesion.

“We are currently equipped with two shot blasters supplied by OMSG-Officine Meccaniche San Giorgio (Villa Cortese, Milan, Italy), a firm specialising in the design, construction, and installation of shot blasting, sandblasting and shot peening systems,” indicates Riccardo Carantini. “We installed a tunnel shot blasting machine in 2003 and a double hoist one more recently, in order to meet the new needs of the market. This latter system replaced another OMSG shot blasting plant that, although fully functional, was undersized compared with the growing number of small and medium-sized parts we were asked to treat.”



A detail of the sandblasting chamber.

**Technical characteristics of the shot blasting machines**

The Tunnelblast 2530/16 tunnel shot blasting system has a chamber section of 2500 mm in width and 3000 mm in height and it is equipped with 16 single disc, direct drive 7.5 kW-turbines. "Since Carantini also treats heavy, large-sized components, together with their staff we developed a handling system that exploits the department's overhead crane. It was a challenge because, back then, this was not common practice," states OMSG CEO Enzo Dell'Orto.

"Indeed," adds Riccardo Carantini, "the Tunnelblast system was initially used to process heavy metal parts. Following the increase in more and more diversified requests from the market, we converted it in such a way that it could treat any type of part. However, as it requires a high amount of power, it was not convenient to employ it for smaller workpieces. Hence the need to install a new shot blasting machine."

"The new cluster shot blasting machine," says Dell'Orto, "is a type Capri 20/35 H22. Its



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sandblasting chamber has a diameter of 2000 mm and a height of 3500 mm and it features two hoists lifting up to 2000 kg each. The components to be treated are hung on a frame that automatically enters the shot blasting machine; at the same time, the operator can unload the already sandblasted workpieces and prepare the new ones to be introduced into the machine, thus reducing downtime. This system is equipped with 5 single disc, direct drive 7.5 kW-turbines type SG350 patented by OMSG. It is also Industry 4.0-ready."

### The coating process

After shot blasting, it is necessary to clean the components from the impurities deposited on them in the manual sandblasting booths. This is crucial to prepare them for the subsequent coating phase. "In 90% of our coating treatments, we use thermosetting powders and we adopt a mixed system following sandblasting: this includes an epoxy primer application stage and a finishing one by powder coating," explains Riccardo Carantini. The company has 3 powder application booths, 2 manual booths devoted exclusively to liquid coating, and 2 static ovens. For the application of powders, it uses Gema manual units in both their conventional and dense phase versions. "As the workpieces we treat do not have standard sizes, a manual operation helps us make sure we cover their entire surfaces."

### Conclusions

"Once again, an OMSG machine proved to be a winning choice. This long-standing collaboration enables us offer an excellent shot blasting service in line with the highest quality and market standards," states Riccardo Carantini. "Carantini's plant equipment is now ready to cope with any future increase in requests from our main customers, operating also in the fast developing sectors of ecology and urban waste collection." ○



**Powder finishing medium-sized parts.**



**Novarini S.r.l., a company specializing in ecological vehicles, is among the consolidated customers of Carantini.**