A Low-Consumption Super Chain for the Green Conveyor of the Future

From an interview with Matteo Roda
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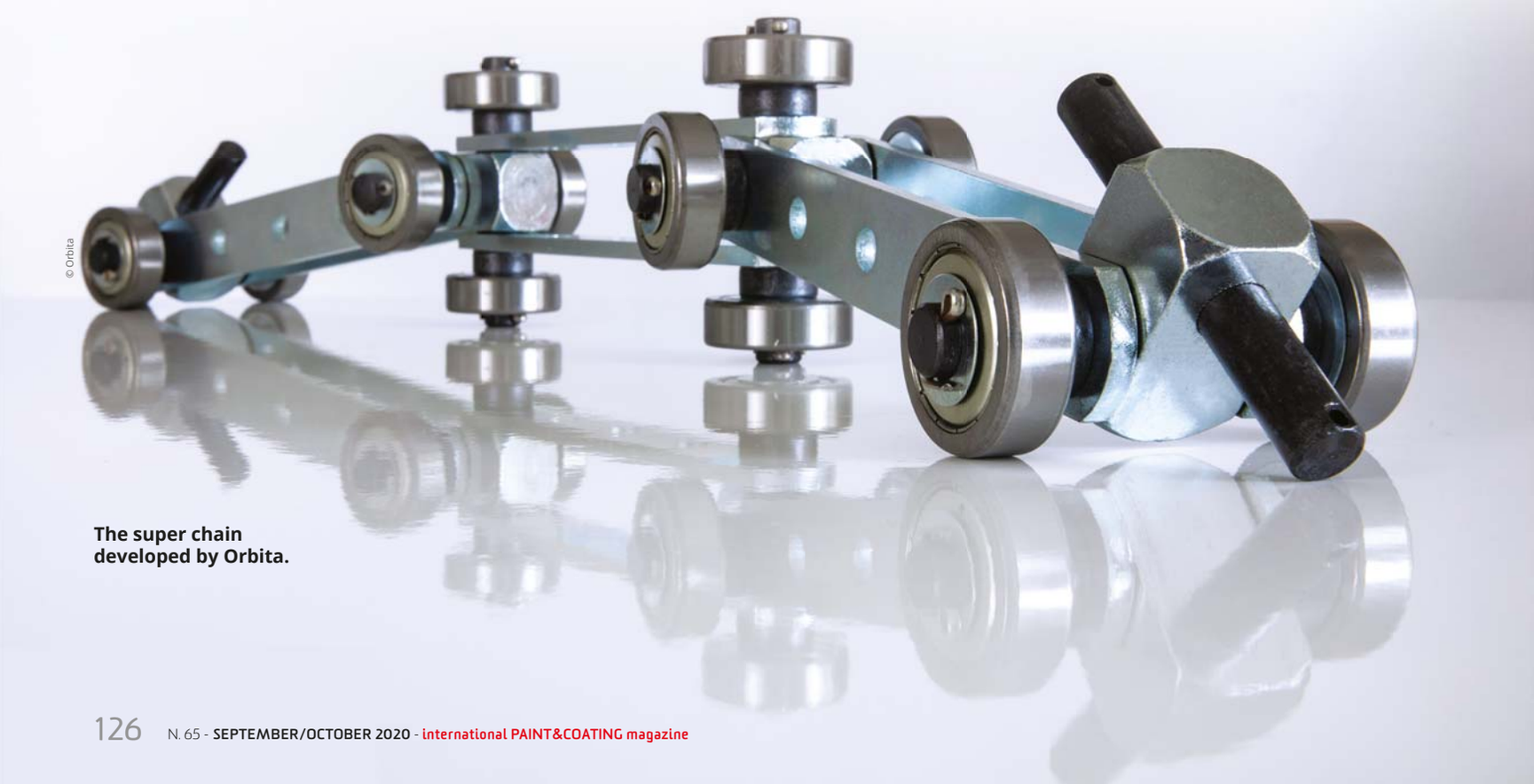
As a specialised manufacturer of high-quality chains and bearings for conveyors, Orbita Srl has launched an advanced line of chains with special steel ball bearings that lower the coefficient of friction and a new type of chain that does not require re-lubrication. The combination of these two innovations allows creating a super chain with reduced energy consumption.

Friction is one of the factors that most affects the transport efficiency of a conveyor. The variation of the chain's friction coefficient as a function of its forward speed is one of the main causes of the problems encountered by users. Such friction coefficient variation, in turn, may result into several issues; one of the most common and most critical phenomena is the so-called "wobble", that is, the irregular and jerky advancement of the chain. As a result, in order to maintain the efficiency of the system, the bearings integrated in the chain must be continuously lubricated. Starting from this assumption, the technical team of Orbita, a company established in 1962 for the production of chains for overhead conveyors and now one of the European leaders in the sector, has developed two innovative projects aimed at reducing the coefficient of friction of bearings and eliminating the need for chain re-lubrication.

A young team has given new life to the company

Orbita is a family business, managed by brothers Massimo and Andrea Roda and by their sons, Matteo, sales manager who has already working in the company for several years, and Giacomo, who thanks his linguistic mediator training has starting to manage relations with foreign customers. Matteo and Giacomo represent the third generation working in the company.



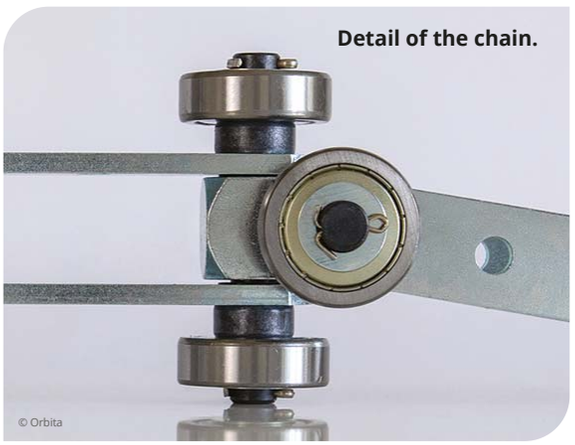
The super chain developed by Orbita.

"In the last three years," acknowledges Matteo Roda, "there has been a significant generational change within our production department. A few long-standing employees holding key positions in our workshop have retired and a group of young people, with an average age of about 30, has replaced them. These employees, on the other hand, have been working with us for a long time and they are perfectly familiar with both our manufacturing processes and our products. Therefore, they have managed to quickly establish an excellent relationship not only with each other, but also with suppliers and customers." The two innovations that Orbita is currently patenting and launching on the market were born precisely from the synergy of this new team.

Some Orbita's team members.

The reduction of the friction coefficient of bearings

"We have implemented a new ball bearing machining method," explains Roda, "which combines a mechanical and a surface treatment process on the special steels substrates. Thanks to this particular combination, our R&D centre has found the optimal solution to make the bearings roll more smoothly, especially in the most critical areas of the chain, such as curves, climbs, and descents. The chain's traction force is reduced because the conveyor encounters less resistance, thus becoming faster and therefore more productive and, at the same time, using less energy resources to operate. This is a crucial element, especially in the coating industry, which is one of the most energy-intensive ones." This innovative technology has been applied on the bearings that account for 80% of Orbita's production, that is, those with a diameter of 37, 40, and 45 mm. However, it can also be used on components intended for smaller chains, such as those with a diameter of 28 mm. "We have already built a system conceived in this way, which is already in operation at one of our customers' plant."



Detail of the chain.

Low maintenance: the new conveyor without re-lubrication

The dripping of oil and grease on the components to be painted, caused by the need for frequent chain lubrication operations, is a well-known problem for coaters. "Two years ago, Orbita conceived a system, currently still under testing, which does not require any re-lubrication interventions. This has a double advantage: on the one hand, it avoids any contamination of the workpieces hanging from the conveyor's frames and, therefore, any need for reworking phases; on the other hand, it reduces the consumption of lubricating products such as oils and grease, thus reducing the environmental impact of these substances. In addition to greater conveyor efficiency, this also guarantees greater production capacity, thanks to the reduction of scrapped contaminated parts, and greater environmental sustainability."

Orbita's super chain: faster, more productive, and more environmentally friendly

"Our next goal," states Roda, "is to combine these two innovations into one system, a "super chain" that represents an absolute novelty for our sector. With a low coefficient of friction and without the need to re-lubricate the chain, it is faster, more productive, and more sustainable overall, thanks also to a reduction in maintenance costs. One of our most important customers is currently testing the chain developed by Orbita. At the moment, they are very pleased with it: despite the higher initial investment, as the chain has some more complex and, therefore, more expensive technical characteristics, they are convinced they have made the right choice and they fully trust our work."

We will not have to wait long for the conveyor of the future to become a reality.