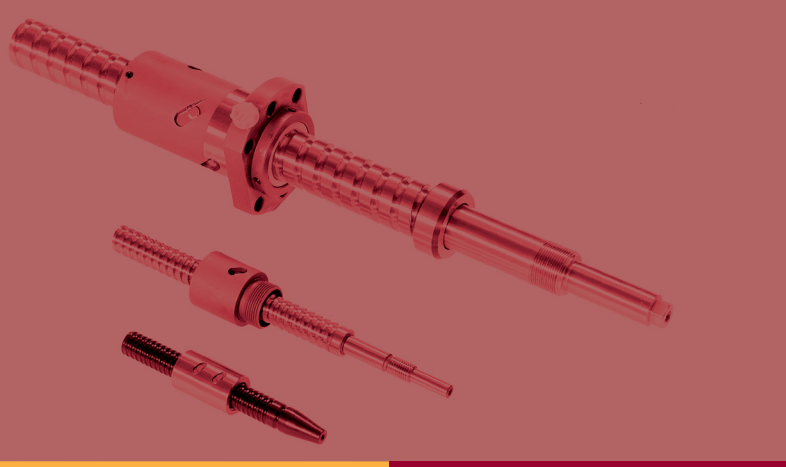
# CASE STUDY

## MOOG ROLLER SCREWS IMPROVE PRODUCTION PERFORMANCE FOR BMB S.P.A.



### BMB S.p.a.

Located in the industrial heartland of Brescia in Northern Italy, BMB S.p.a. is a leading global manufacturer of injection molding machines for the plastics industry. Founded in 1967, the company has an annual turnover of €114m and around 170 employees. At its headquarters in Brescia, BMB has three main production facilities organized into four units, responsible for building its range of hydraulic, hybrid and full electric injection molding machines such as the eMC full electric and the eKW hybrid.


BMB's main production facility in Brescia, Italy

BMB's high precision, cutting edge applications are used to manufacture a range of plastics products across the world, from automotive parts, to packaging, to items such as wheelie bins and storage containers. The company invest significantly in research, innovation and development in order to build injection machines with high performance levels able to deliver consistent plastic parts quality. Consequently, BMB's team of technicians and designers are able to simulate production processes that help ensure optimum machine performance. The company manufactures approximately 240 machines per year, 90% of which are for export.

### An ongoing collaboration with Moog

Moog has collaborated closely with BMB for over twenty years, supplying the company with its D660 Series Pilot Operated Proportional Valve for closed loop control of speed and pressure during the plastic injection phase. Moog also supplies BMB with electronic machine controllers to manage all machine processes including axis, temperature and sequence control and the human machine interface (HMI). The controllers, including Moog's new MC600, have provided BMB with consistently fast reaction and reduced cycle times on its machines.

### Delivering success through continuous product improvement

BMB faced growing problems with its use of planetary roller screws used on the clamping axis of its eKW hybrid, and the clamping and injection axes of its eMC full electric machines. Roller screws are rolling systems composed of a nut and threaded shaft that contains a fixed number of rollers, and act as an actuating mechanism in many electromechanical actuators. Roller screws are suitable for use on high precision, high-speed, heavy load and heavy use applications, and are widely employed across the plastic machinery industry.

Since 2008, BMB had procured roller screws of between 39mm and 87mm in diameter and with a dynamic load of 950kN from a well-known manufacturer who frequently faced delivery problems. BMB were looking to improve on these lead times, as well as achieving greater flexibility in the design of the screws used on its machines.

In 2014, building on its already solid working relationship with the company, a Moog Italiana team made up of sales and engineering experts worked closely with BMB's management to resolve both the supply and design flexibility problems. Having already made effective use of Moog valves and electronic controllers in the operation of the machine's injection process, the combined team were also able to resolve the question of screw supplies. The successful implementation was the result of Moog's ability to customize roller screws in order to reduce noise emissions, and the outcome clearly offered BMB the degree of technological flexibility that they were looking for.

Author:
Bruno Fazzari - Sales Director Moog Italy


BMB's eKW Hybrid Injection Molding Machine – clamping axis on the left of picture

This positive collaborative engagement also enabled Moog significantly to improve on the delivery time offered by its competitors, thereby helping to resolve BMB's supply problems. The project as a whole clearly demonstrated how effective collaboration and continuous product improvement delivers manufacturing success.

## Improved production performance

Moog's further, successful collaboration with BMB highlighted how close cooperation with the customer can bring tangible and positive results. Since 2016 BMB have ordered a high number of roller screws from Moog for use on both injection and clamping axes, demonstrating how the company now feel comfortable interfacing with a single high technology supplier for multiple products. Switching to Moog as a key supplier of roller screws has enabled BMB to acquire high quality, reliable and customizable technology at a realistic price. As a result, they are now able to engage in production planning more effectively while reducing the volume of products in their warehouse. For Moog, it is ample confirmation of how in-house expertise leads to product improvements, and how excellent relations with customers deliver real advantages to the manufacturing process.

Moog Ball and Planetary Roller Screws

## Features of Moog planetary roller screws

- ISO3408-3 classes 1-3
- Diameter from 15 mm [0.6 in] to 100 mm [3.93 in]
- Pitch from 2 mm [0.08 in] to 42 mm [1.65 in]
- Length up to 4,000 mm [157.5 in]
- Dynamic load up to 1,230 kN
- Static Load up to 3,500 kN
- Acceleration up to 40m/sec$^2$
- Number of starts: 5-6

## Successful Teamwork

Bruno Fazzari, Sales Director for Moog Italy in Malnate, emphasizes the importance of collaborative customer engagement in resolving BMB's planetary roller screws problems. 'The Moog Italy team proved successful in developing the existing relationship with BMB, and created a collaborative engagement framework that solved the company's supply and technological problems very effectively. Moog's ability to customize our technology quickly, thereby reducing noise emission levels and providing a reliable supply of screws, helped BMB and reinforced our close relationship with them.' Moog's focus on in-house expertise proved crucial to this success and as Fazzari adds, 'our team of experts were able to customize our planetary screws technology to precisely meet BMB's requirements. This capability proved pivotal to our success.'


Moog Italy in Malnate in the province of Varese

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