



THE INNOVATION SHOWCASE

SMACT competence center

BLM GROUP is the leading character of the innovation showcase demonstrated through its installed "Machine-to-machine" technology dedicated products and design, engineering and development at the Mechatronics Center of Rovereto by SMACT (Social, Mobile, Analytics, Cloud and Internet of Things) Competence Center. SMACT is an ecosystem of research, companies and public institutions, gathered to create value in digital transformation.

Matteo Faggin, General Manager of the SMACT competence center, talks about the partnership with BLM GROUP.

SMACT is a Competence Centre where research and industry meet. How does the Rovereto Live Demo project in cooperation with BLM GROUP, Trentino Sviluppo, FBK and Ruota Libera fit into the picture?

SMACT is one of eight Industry 4.0 Competence Centers in Italy created to facilitate collaborations between innovators within universities and industries. Our Competence Centre, located in a vast and diversified district, has chosen Live Demos of digital enabling technologies applied to specific sectors and use cases as the main tool for interacting with innovators because they also make sense to local SMEs.

In Rovereto, we teamed up with the University of Trento FBK Foundation and industrial partners such as BLM GROUP to create a mechatronics factory school Live Demo. It is a miniature factory with a handful of workstations that exemplifies a typical Italian manufacturing process. Obviously, the challenge was to make this miniature factory relevant to SMEs. To do so we chose to make it productive by mitigating the perception that it is a mere display of technologies and making it easier for small business owners to fully comprehend. We picked Ruota Libera, a local business that plans on making bicycle frames in this factory.

The concept of a simple production cycle using laser cutting, tube bending and welding equipment is complemented by “machine-to-machine” digitization use cases developed by our research and industrial partners and implemented here. The business owners who come to visit us will see the technologies but more importantly will see their application put into practice in a production cycle that is not too different from their own. This is meant to help them imitate what we did in Rovereto and also through collaborations with the partners who assisted us in setting it up.

A lot of interest was sparked at the Rovereto showroom opening by observing the exchange of information between the BLM GROUP tube bending machines and Lasertube systems which “talk to each other” to produce the bike frame component and to the SMACT software that displayed the entire process. But specifically, what do the machines say to each other?

“Machine-to-machine” is the key theme of this SMACT live demo. In practice, it is about the technologies that enable direct and indirect data exchanges between the various machines in a production cycle. In simple terms, the machines talk to each other. A practical example is the one already demonstrated by BLM GROUP in the data exchange between laser cutting and bending jobs for optimizing the cutting according to the deformations introduced in the subsequent bending operation.

But the opportunities of the “machine-to-machine” concept do not stop here. They can extend to sharing the data from environmental sensors or probes whose inputs can be used by various machines in the production cycle to adjust their operating parameters and maintain the highest level of product quality or sharing production batch data that can be used for programming individual machines and by the mobile robots that prepare re-tooling kits for each machine. Ideally, we will be able to demonstrate the potential of a so-called “lights-out” factory in Rovereto, which means that it can continue to produce without dedicated personnel being present at night.

“*“Machine to machine” is the dominant theme. A practical example is clearly demonstrated by BLM GROUP in the exchange of data between laser cutting and bending, which enables cut optimization according to the deformations introduced in the subsequent bending.*”





Why is the interconnection between systems and dialogue with machines so important?

In a global scenario where production chains have been under stress for years to deliver what customers want when they want it, down to single item batches, a company's ability to respond quickly has become an essential competitive factor. If you add the recent supply chain difficulties to this, you can see how the need for production flexibility is increasing rather than decreasing. However, this ability to produce higher quality products in an increasingly flexible manner clashes with the difficulties and resources required to manage complexity. The horizontal and vertical integration of systems has become an essential tool for responding to market needs and maintaining or improving company competitiveness, reducing the burden of people managing complexity and shifting it to the machines themselves. Of course, it is not always feasible but in our Live Demo, we can demonstrate that it can be achieved successfully in some application areas, with technologies that are now also commercially available or through the development of new technologies in collaboration with academic research or specialist companies.

What Industry 4.0 applications have you implemented with BLM GROUP equipment and software, and what further developments should we expect?

BLM GROUP provided us with two important machines: an LC5 laser cutting machine and an E-TURN52 tube bending machine. We have already started to implement some demo use cases with our partners on these machines, including the unmanned joint process connection and integration, the creation of dedicated dashboards for scheduling production on the different machines, and plant OOE efficiency monitoring on individual machines and the plant as a whole. In the near future, we are planning to make more use cases that highlight how machines with sensors and data-sharing capabilities, such as BLM GROUP's, can optimize production and perhaps, more importantly, achieve higher product quality and potentially implement new business models.

The quality of finished products is a key element for standing out from increasingly aggressive competitors. How can Industry 4.0 applications and the dialogue with BLM GROUP machines in Rovereto lead to high-quality production?

Industry 4.0 is simply the implementation in production of the promise of more and better productivity enabled by digitization. The data produced by machines are used within the individual production station and shared throughout the entire production cycle facilitating increasingly intelligent and proactive production management. Obviously, this improves product quality in addition to lowering production costs. Product quality is the strength of much of Italian and European manufacturing and the fact that digitization of processes allows greater control over the quality of final products leads to even more competitive companies.

We are experiencing difficult times of geopolitical tensions, critical environmental issues and energy transitions. Do you think the Italian industrial system needs to be rethought? How does the Live Demo workshop experience fit into this context?

It has become increasingly apparent that the Italian industrial system has great potential and needs to tackle equally great challenges. The energy bill is a major concern for small and large business owners but, on the other hand, the changes taking place in global supply chains allow a production system like ours, which has traditionally not focused on the segments struggling the most today, to find new market opportunities. However, companies must become more flexible to produce at ever lower costs per unit and

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market products of ever higher quality to meet the challenges and seize the opportunities. This can also be achieved today by digitizing processes. The intensive use of advanced automation has promoted some the major reshoring events reported by the press. Our live demo in Rovereto can help small and medium companies see and understand how to respond to these current times by building increasing competitive capacity. In addition to demos, SMACT and its partners can accompany companies in research and innovation plans and for training their workforce, which is essential to take full advantage of the potential of new technologies.