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Industry is being digitised, and Piacenza is the crossroads of this innovation

by Fabrizio Cerignale



A journey through the capital of Italy's machine tools district to take stock of the digitisation of a strategic sector in the Italian economy. For the 17 April 2019 edition, Italy 4.0, the Class CNBC show hosted by Andrea Cabrini, left the studio for a visit to Piacenza, a city which has once again proved itself to be the crossroads of Italian machine tool manufacturing and mechanical engineering (*you can view the episode at <http://www.quattropuntozero.info/video>*)

With 115 companies employing over 2,000 people in the sector, Piacenza indeed boasts the highest concentration of machinery manufacturing companies in Italy. The area gives rise to innovations with a mix of expertise and a historical industrial presence which has made the town one of the major players in the industry 4.0 revolution. It is in Piacenza that Siemens' TAC – Technical Application Centre – is located, putting enterprises in direct contact with new technology since 2011. The TAC was turned into a TV studio for a day to host a debate on the development of technologies in this sector.

The speakers were Giuliano Busetto, Head of Digital Industries, Siemens Italia' new operational division for the digital industry, and president of Federazione Anie; the managers of two of the area's most important companies – Vincenzo Cerciello, technical director of Nordmeccanica, and Saverio Gellini, managing director of Mandelli Sistemi; Sandro Salmoiraghi, president of Salmoiraghi and president of Federmacchine; and Michele Monno, Professor at the Polytechnic University of Milan's Department of Mechanical Engineering and director of MUSP, the Piacenza consortium specialised in machine tools and production systems.

Telling us about the TAC by answering Simone Cerroni's questions in the centre's different locations were four special guides from Siemens Italia: Andrea Gozzi, Product Management Sinumerik and Industrial Software; Nicodemo Megna, Head of TAC; Massimiliano Galli, Head of Programmable Logic Control; and Giuseppe Biffi, Business Development Digital Enterprise.

What is the TAC, Siemens' Technical Application Centre?

The TAC, Siemens' Technical Application Centre for industry 4.0, is a model "smart factory" where you can see first-hand the most innovative technologies for automation and digitisation, letting visitors interact with machine tools, production machinery and integrated robots in order to understand the advantages of cloud computing, IoT and data analytics solutions, simulation and digital twins.

"The TAC was founded in Piacenza in 2011, and this was a specific logistical choice," Busetto explains, "that of being easily reachable for our customers located in Milan, Turin and the Emilia-Romagna packaging valley, as well as in the north east of Italy. And this area had all the necessary characteristics."



Giuliano Busetto, Head of Digital Industries, Siemens Italia

“The TAC has become a technology centre where we train students, customers and managers,” Busetto continues, “a smart factory in which we can show off digital technologies through machine tools, and, above all, our method of controlling them. We therefore have digital workstations with packaging machines which allow us to demonstrate Siemens’ holistic vision for the manufacturing industry, including through Digital Corner, the industrial software for manufacturing control and development.”



From Digital Twins to Mindsphere, the cloud operating system for IoT

Inside the centre we discover the digital workstations where we can see the digital twin concept in action, thanks to which the operator can simulate the final operation of the machine, as well as solutions passing through Mindsphere, which is “a cloud-based IoT OS,” as Busetto explains, “which allow us to understand how important it is to gather information in order to analyse the operation of the machines for the purposes of predictive maintenance.”

The value of data, and how best to use them

This operating system allows analysis of the data which are considered the jewel in the crown of industry 4.0 and which companies can make the best use of thanks to digital technology. “We are one of the founding companies of Mindsphere World Italia,” explains Cerciello (Nordmeccanica), “for managing data through a secure cloud and our key partner Siemens. These are data which allow us to network our machines and to keep the customers informed on whether they are performing to their expectations”.



Vincenzo Cerciello, technical director, Nordmeccanica

“Today we can offer complementary solutions with respect to what we were previously providing,” highlights Gellini (Mandelli), “such as augmented reality, for example. Through the acquisition of cloud data and other data taken from the machines in real time, we can superimpose a virtual model on the physical machine in order to calculate its effective performance, allowing us to understand how a machine is actually functioning and intervene if necessary.”



Saverio Gellini, managing director, Mandelli Sistemi

“For us, gathering data is hugely important in order to help customers to ensure 24/7 operation of their machines,” Salmoiraghi adds. “Our participation in MindSphere World Italia takes us in precisely this direction, to be able to use a platform which can be shared and which allows data to be gathered in complete security. Because cybersecurity and privacy matters are a delicate topic which we cannot neglect, seeing as we are talking about customers’ data.”

How mechatronics is changing and the importance of training

The advent of digitisation has, in just a few years, radically changed the face of engineering companies, transforming heavy industry into high-tech companies.

“In recent years, mechanical engineering has been through some formidable changes,” Salmoiraghi notes. “We were mechanical engineers, then we were in the electrotechnical mechanical field, then IT, then mechatronics, and now we don’t really know what we are! I would say we are a grouping of technologies, knowledge and innovative capabilities which place the Italian mechanical engineering industry at Europe’s cutting edge, and amongst the first in the world.”

This is where training comes into play, and Piacenza is once again a centre of excellence in this regard. First and foremost the TAC, which is one of the strong points of the system based on new technologies, through MUSP, to the machine tools course at the Polytechnic University of Milan which has been held at Siemens’s TAC in Piacenza since 2011, with 300 students to date taking the course there. It is a programme which provides for 80 hours of training, split into formal lessons and practical modules, with educational visits to companies in the sector with the goal of training the most highly qualified professionals for the industries of the future. And not just for designing machine tools, but also for the digitisation and integration of industrial software, IT and automation.

“We have to offer our engineering students a wide educational base,” Monno explains, “but we also want them to specialise in something which will make them appealing to the world of work. This happened here in Piacenza thanks to our partnership with the Siemens technology centre, which was set up nine years ago. Since then, we have a machine tools course which is held in this location, by a Siemens trainer, with state-of-the-art machines and continuous analysis against what companies will be asking of our students.”



Prof. Michele Monno of the Mechanical Engineering Department at the Polytechnic University of Milan and director of MUSP

Investment is falling – for Salmoiraghi, “It’s the fault of politics”

Despite this high level, however, the focus on technological innovation seems to be abating.

“The fault lies with politics,” explains Salmoiraghi, “because, after a strong push in this area over the last few years, thanks in part to tax incentives for investments, today we see some uncertainty. We lost a few months when we didn’t know whether the incentives would be renewed and for how long, and this put a brake on a very strong drive. Business owners need to look to the future in order to invest, but today we are living six months at a time, when we should have the ability to look six years ahead. But this would require political stability and a level of calm as regards investment.”



Sandro Salmoiraghi, president of Salmoiraghi and president of Federmacchine

This is a view shared by Busetto, who is also president of Anie Confindustria, the Italian National Federation of Electrotechnical and Electronics Companies. “From our viewpoint, we have seen a significant fall in orders,” he explains, “because insufficient focus has been placed in this area. It is true that the incentives – the “iperammortamento” higher depreciation allowance tax benefits – have been renewed, but it is equally true that continuity has not been given to the discussion of the importance of manufacturing. The last two years have been very important, more so for the domestic market than exports, for manufacturers of machinery, including for the foreign market. This is because the use of these digital technologies has made the machines, the lines and the processes themselves more competitive. We really need to maintain this drive and this focus.”