

Industrial machinery and heavy equipment

## Savio Machine Tessili

Teamcenter helps Savio parallelize project activities to slash lead time

### Products

Solid Edge, Teamcenter

### Business challenges

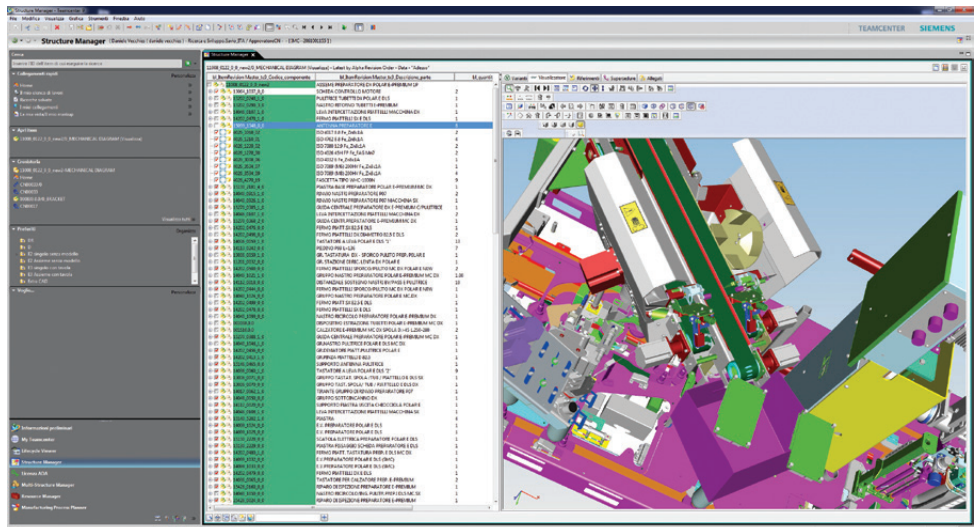
- Large assembly design
- Parallelize business processes
- Exchange data directly between PLM and ERP to align engineering and production
- Extend 3D assembly visualization outside the engineering department

### Keys to success

- Teamcenter for product life-cycle management
- Solid Edge to manage large assemblies and flexible parts

### Results

- More flexibility in PLM and CAD, resulting in reduced engineering change cycle time
- Smooth management of large assemblies
- Faster and easier modeling of variants and configurations



### Textile machinery manufacturer constantly cuts product development time by fully leveraging the adoption of Teamcenter and Solid Edge

#### Continuous evolution

Savio Machine Tessili SpA (Savio) is a model of continuous evolution, with its roots going back to 1911. The company has a century-long success story, beginning with Marcello Savio's ingenuity and then passing through different owners, from the Savio family to the Italian state company ENI, from Itema group to Alpha equity. In 2011, Alpha acquired 100 percent of the shares of the company and its subsidiaries.

As a result of these acquisitions, today the group business is divided into two major areas: Textile and Electronics & Components. In the textile business, Savio produces winders, two-for-one twisters and rotor spinning frames, and Mesdan manufactures yarn joining solutions and testing devices. In the Electronics & Components business, Loepfe supplies yarn clearers for winders and spinners, and sensors for looms and other textile devices; Eutron supplies electronic cards; BMSvision supplies production monitoring systems; and SedoTreepoint supplies dye house control systems.

#### Efficient organization

Savio has always been well organized, says Roberto Badiali, R&D director. "When I was

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R&D Director  
Savio Macchine Tessili

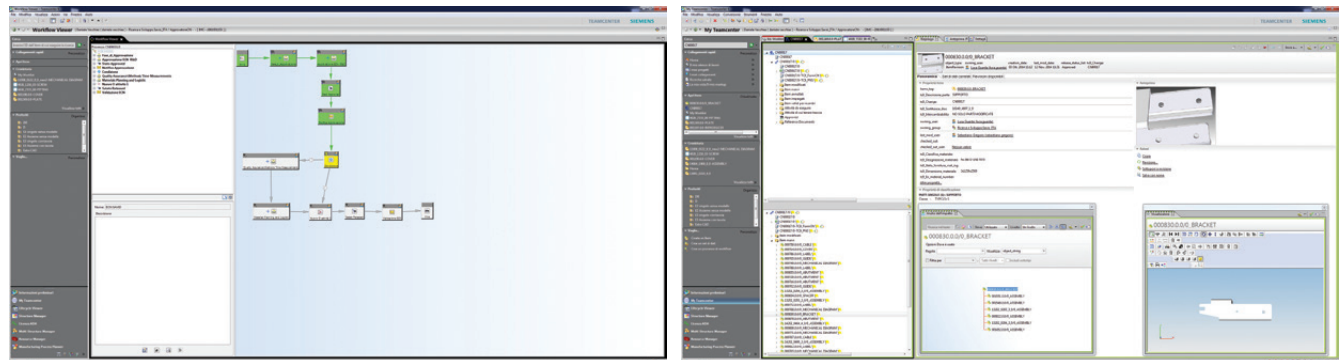
employed in 1980, the company had already implemented the engineering and manufacturing processes as it is taught at the university. Back in the 1950's, Savio had adopted the production methods of big organizations such as Olivetti, Necchi and Alfa Romeo, building up an efficient organization that later-on became a reference for several companies in our region.”

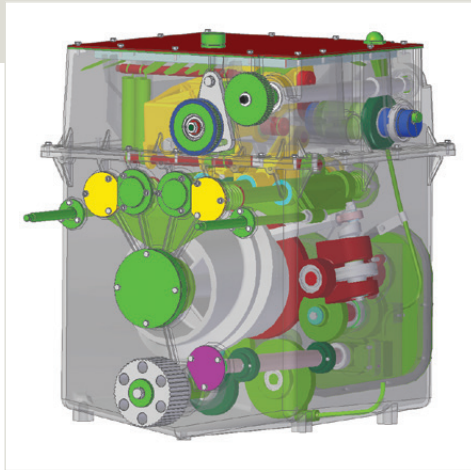
Savio's business – design, production, sales and service of textile equipment all over the world – is highly competitive, with only two very aggressive competitors, a German firm and a Japanese company. “Winders have always been difficult to set up, both 30 years ago when the concept was basically mechanical, and now that it is a mechatronic device,” Badiali explains. “We still develop equipment that requires extensive testing and accurate setup to

work 24 hours a day, in harsh, dusty, humid and hot environments, with room temperatures that can reach 35 degrees Celsius and uneven power supply with strong voltage oscillations.”

As operating machines, winders must be very versatile and easy to adjust, as they must process both very fine, thin yarn and thicker raw yarn. Savio's machines normally have a control head connected to several identical operating units. The company manufactures approximately 120,000 units annually. These units must be sturdy, insensitive to environmental conditions and dust, easy to clean and maintain, and operable by unskilled staff. “This is why our control panels have multi-lingual interfaces, and most of all, lots of icons and pictures,” Badiali says.

**Savio's requirements are quite complex, with bills of materials consisting of 13,000 items on average (covering all alternative configurations and options), while a BOM for a typically configured machine has approximately 5,000.**





The product development cycle starts from well-defined, basic specifications collected from different sources. Then the first design stage checks new concepts with finite element analysis (FEA), laboratory tests and other processes, and generates simulators and prototypes that are tested in the field for at least six months. Based on the results of these tests, the designs are corrected and optimized to produce a pre-series and then the final series. The modern mechatronic design allows modifications on-the-fly that were impossible 30 years ago.

Customers normally find an answer to any need in Savio's portfolio, as well as support to define working plans, the number of units and factory layout. "Customer-specific requests have been gradually adopted in standard production, so our designers only have to develop new

concepts when new requests arise," Badiali says. "At present, 95 percent of the parts of our machines are standard. All we have to do is configure to customer requirements."

#### Tools to improve

Savio's lead time is currently five weeks (versus three months in the past), from order to assembly, which takes another week. This result was achieved through part standardization combined with adequate technology tools, including computer-aided design (CAD) and product data management (PDM). "Since 1985, we have adopted CAD and PDM tools to meet the specific requirements of an industrial equipment manufacturer," Badiali says. "We need a flexible solution to handle all the components of our machines, including sheet metal, plastic, castings, turned parts, small details, pistons, solenoids, and others."

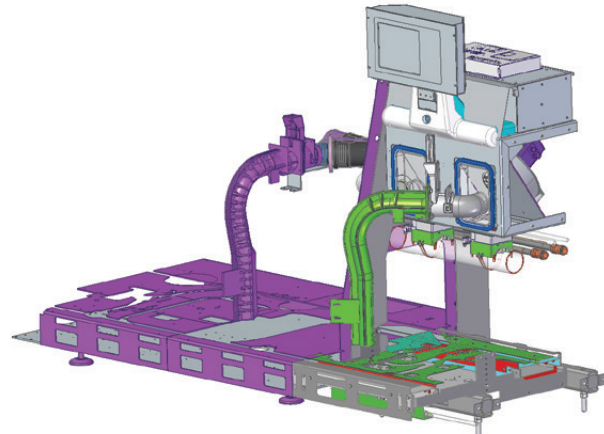
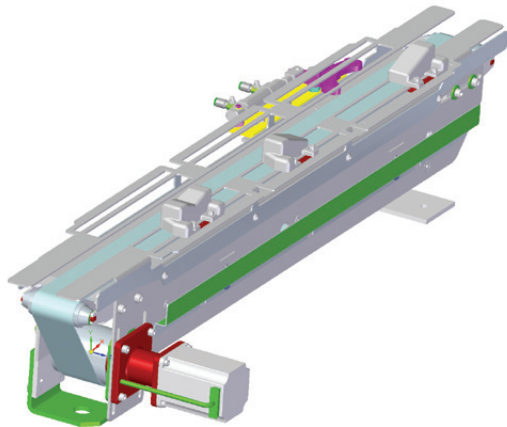
In 2010, after discarding the existing CAD/PDM package, Savio's management launched a process to evaluate the best tools on the market. As Badiali says, the goal was to identify "a flexible CAD solution that offered both traditional parametric modeling and a history-free approach, combined with a good PLM (product life-cycle management) system to replicate the processes and workflows of our organization."

**"To minimize paper documents, we want to enable our production staff to view 3D parts and assemblies."**

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Each customer selects a configuration by filling out forms with 40 different sections. The company’s portfolio is built around eight major models, for which more than 30 different configurators have been developed, including macro categories and subcategories.

#### Successful migration

During software selection, Savio’s managers met several vendors and finally chose Prime Team and Tech Value, specialists in the development of high value-added solutions and consulting, and technology partners with Siemens PLM Software. The Prime Team and Tech Value staff, with several decades of CAD and PLM experience, proposed Solid Edge® software for 3D design and Teamcenter® software for equipment lifecycle management. Both

solutions are from Siemens PLM Software. Savio started with a very detailed adoption project. “Prime Team and Tech Value presented and deployed the project properly, meeting all our expectations in terms of implementation, migration and startup,” Badiali confirms.

During the adoption, Savio migrated all of its 3D and 2D design data to Solid Edge and Teamcenter. “With the previous software, we were constrained to a few types of assemblies, as the product could not handle the complexity of our machines,” Badiali recalls. “With the valuable support of Prime Team and Tech Value, we converted 450,000 files from the previous 3D package to Solid Edge, which immediately proved to offer suitable performance to handle our assemblies.”

The next step was to develop macro assemblies of entire machine sections, and then populate these assemblies not only with parts with corresponding drawings, but also with parts from the BOM without a drawing, which had not been possible

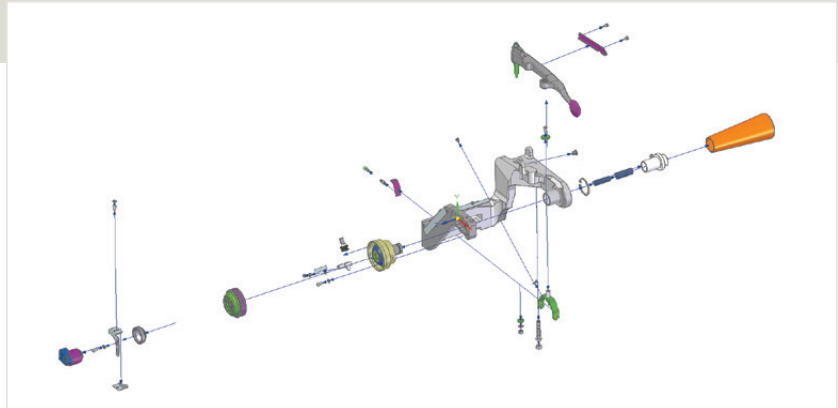
with its previous system. "Our designers must be able to work in a unified environment, without being forced to access our ERP (enterprise resource planning) system," Badiali says.

### Handling large assemblies and flexible components

Daniele Vecchies, R&D data manager at Savio, mentions many benefits offered by Solid Edge, besides the smooth handling of large assemblies. "Solid Edge is very versatile in responding to all of our needs," Vecchies says. "Synchronous technology streamlines the import of assemblies from our legacy database, which contains more than 15 years of 3D CAD design data. With Solid Edge, we have many more modeling commands and features, and an advanced sheet metal package.

"Though we adopted Solid Edge quite recently, we can clearly see the difference from the previous software," Vecchies notes. "We really appreciate the management of flexible parts that can be viewed in different positions. It is very useful for elements like springs, pistons, cylinders, O-rings, rivets or bushings – both standard and home-made. With Solid Edge, we can design one flexible part and then apply different deformation variants, which can be easily switched on and off in the 3D model."

Another valuable tool for Savio engineers is integrated FEA for vibration analysis of individual parts; it is useful and efficient because it can be easily used by designers without special FEA skills.



### PLM for everyone

A similar process was implemented for the gradual adoption of Teamcenter, which has been populated with entire machine structures, including drawings. In the second stage, items without drawings will also be added. "Another key benefit of Teamcenter is the management of configurable structures," Badiali adds. "Our designers can build assemblies with variant parts to extract different configurations from the master model and the corresponding BOMs, viewing them with a very simple and intuitive approach."

Teamcenter interfaces directly with Savio's ERP system, performing a data synchronization procedure daily. Besides the 35 CAD workstations, the Siemens PLM Software suite also has been implemented outside the engineering department, with installations in production, industrialization, methods and quality. "The engineering change workflow cannot be restricted to the engineering department alone," Badiali says. "And to minimize paper documents, we want to enable our production staff to view 3D parts and assemblies."

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R&D Data Manager  
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## Solutions/Services

Solid Edge

[www.siemens.com/solidedge](http://www.siemens.com/solidedge)

Teamcenter

[www.siemens.com/teamcenter](http://www.siemens.com/teamcenter)

## Customer's primary business

Savio is a leader in the yarn finishing machine sector, operating worldwide in the manufacturing and marketing of automatic winders, continuous shrinkage and bulking winders, two-for-one twisters, and rotor spinning frames. The company has factories in Italy, China and India.

[www.saviotechnologies.com](http://www.saviotechnologies.com)

## Customer location

Pordenone, Italy

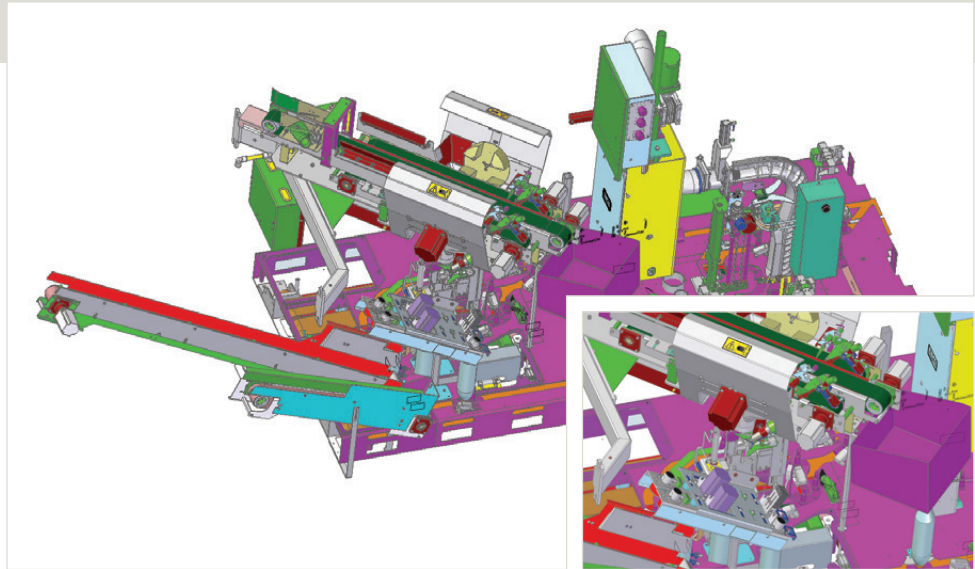
## Partners

Prime Team Srl

Tech Value

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Teamcenter was implemented "out-of-the-box" without any customization, while the previous PLM solution required significant work to replicate all of Savio's protocols. "We have identified the most efficient procedures to adapt our processes and systems to the software," Badiali says. "Teamcenter is very responsive, so you are not forced to customize the application; you only have to configure it."

Teamcenter also delivers classification capabilities that support the search for frequently used parts such as springs or spacers. Besides classification by component type, Savio has identified about 100 geometric parameters for feature-based searches, such as the number of coils in a spring.

## Ambitious plans

Moving forward, all departments involved in product validation will have access to Teamcenter. With Siemens PLM Software technology, Savio plans to parallelize all project activities, thus far developed with a serial approach, to further reduce lead time. The target is to reduce it from five weeks to three weeks. "In the future, if required, we can easily connect subsidiaries and remote offices," Badiali concludes. "This is another reason why we selected Siemens PLM Software, so we can rely on a global partner and a solutions portfolio adopted by many big organizations. The global scope is definitely one of the key strengths of Siemens PLM Software."

## Siemens PLM Software

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[www.siemens.com/plm](http://www.siemens.com/plm)

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