

Pavan Group Cuts Machine Design Time by 15–20% with CoCreate® from PTC

World Leader in Pasta-making Machinery Uses PTC's Explicit 3D CAD to Quickly Create Highly Customized Equipment

Pavan Company, Galliera Veneta, Italy

Since 1946, the Pavan Company has been serving the specific needs of the pasta industry, designing and implementing custom pasta-making machinery that has gained a worldwide reputation for innovation, quality and reliability. Today, Pavan holds the #1 position in industrial equipment focused on the pasta industry.

As a result of rapid expansion and acquisition, the company became the Pavan Group, with multiple divisions representing many brands and activities. In the company's core business of industrial equipment for pasta, Pavan has an impressive 35% market share globally. With 95% of its business overseas, the Pavan Group is truly global, with representation in 120 countries worldwide, including the United States, Mexico, Argentina, Poland, and Russia.

The Challenge: Switch from 2D Design to 3D CAD, with Integrated PDM

- To quickly create highly customized, made-to-order industrial pasta equipment on extremely tight schedules to satisfy customers' unique requirements and specifications
- To manage all data contained within a multitude of complex assemblies comprised of tens of thousands of components
- To perform simulation studies involving mechanical, thermodynamic, structural and flow analyses, automation and piping
- To ensure that all designers can quickly adopt and apply explicit 3D design tools, so the company could take full advantage of the skills and experience of its talented designers

The Solution: CoCreate Modeling (3D CAD) and CoCreate Model Manager (PDM)

- An easy, intuitive explicit 3D CAD package that enables users to modify designs 'on-the-fly'
- Powerful product data management (PDM) tools, fully integrated with CoCreate 3D CAD, for managing hundreds of thousands of 2D/3D design files in a single, centralized vault
- Flexible solution that easily accommodates design changes at any stage of development
- Allows teams to leverage 3D design data from clients and suppliers, and incorporate that data into new designs, while sharing it with downstream teams (e.g., Manufacturing)



Pasta Forming Machine

The Results: A Faster, Easier Way to Design Highly Customized Industrial Machinery

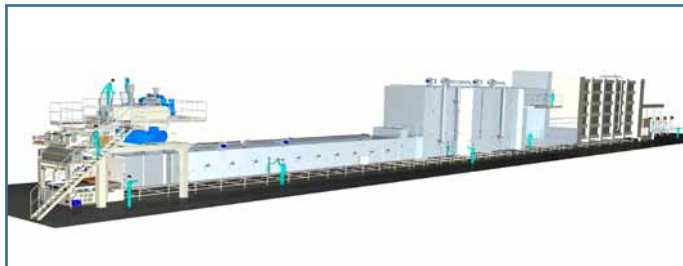
- Reducing time-to-design by 15–20% for new equipment
- Quickly customizing existing designs to create new, innovative machinery to meet demanding customer requirements, specifications and schedules
- Leveraging 3D design data from clients and suppliers, and incorporating it into new equipment
- Sharing photo-rendered images of designs to improve communication and collaboration, and avoiding misunderstandings
- Managing massive volumes of 2D/3D CAD data in a single, centralized data vault
- Performing structural and fluid-dynamic analyses to drive rapid optimization of designs based on test results
- Improving the quality and reliability of products and processes, while increasing customer satisfaction and market share

Tailored Solutions for Each Client—and for Each Type of Pasta

With the growing complexity of modern industrial equipment and increasing client requirements, Pavan Company requires product development processes that enable designers to quickly handle design changes, to complete projects on time and to specification, and to deliver highly reliable products.

Today, Pavan offers the broadest range of solutions for pasta production. The company produces machinery for making dry pasta, including long-cut, short-cut, nest-shaped dry pasta, and couscous for precooked pasta; as well as machines for filled, flat, extruded fresh pasta, ready meals, and gnocchi. Pavan also develops the production of dies for food equipment, die washing machines, automatic pasta cutting systems, packaging systems, and flow-pack packaging systems for pasta, confectionery, baked products and other goods.

The cornerstones of the company's success are technology, flexibility and reliability. Pavan incorporates high levels of new technology into its equipment, continually adding and expanding machines to its production range that address new process steps in pasta production. During projects, the company offers full flexibility to their clients, to meet their specific needs in a timely manner, within an agreed project schedule. And because of the efficiency and reliability of the individual machines and equipment, Pavan's clients are able to maximize production and minimize downtime, which in turn provides Pavan with a clear competitive advantage.



Virtual Prototype of a Pavan Production Line

Made-to-Order Design with Highest Reliability

“What we design and develop,” says Sandro Rasera, Technical Director of the Pavan Group, “is made-to-order industrial equipment that is highly customized based on our client's precise requirements and specifications. Our solutions are highly technical, handling the entire food production process, starting with raw materials, processing them through multiple stages, and packaging the final product. We develop all aspects of the equipment, including all the intermediary phases and interconnected machines. Our machines have a production capacity ranging from 300 to 6,000 kg/hour. Typically, these are turnkey solutions that handle all aspects of the pasta production process, including measuring raw materials, creating the pasta product, cutting, drying, cooling, storing and packaging. For us, every stage of the process must work perfectly, so the client is satisfied and we deliver a highly reliable solution,” explains Rasera.



Customized Mixer and Conveyor Line

Within the 3D-based product development process, the team creates a preliminary layout, then runs simulation studies involving mechanical, thermodynamic, structural and flow analyses, automation and piping analysis. These tests ensure that not only is the machine reliable, but the overall production equipment as well.

“In designing the individual machines, we work as a team, with multiple designers and other disciplines,” explains Engineer Rasera. “These are complex assemblies, and can have tens of thousands of components, and typically even a small group of machines will have several thousand components.”

Due to the high level of complexity and the need for precision, Pavan adopted PTC's CoCreate suite as its 3D standard for mechanical design and for managing the technical data within the whole Pavan Group. Naturally, during the software evaluation and technical benchmark phase, other 3D CAD systems on the market were considered.

“Among the dozens of solutions we analyzed,” states Rasera, “PTC's CoCreate Modeling was perfect for our needs, with the explicit modeling approach matching our product strategy in mechanical design, and CoCreate Model Manager managing the complex assemblies.

“We're currently running about 40 client projects, the majority of which are customization and tailoring of existing machines. The simplicity of PTC's CoCreate suite and its explicit modeling approach perfectly supports our teams and projects, ensuring that everyone can adopt 3D and begin using it productively. And, best of all, we've been able to manage new projects and more than 500,000 designs—created using our previous 2D system—in one central data vault, so that all relevant information is in one location,” says Rasera.



Sandro Rasera, Technical Director of the Pavan Group

Leveraging the Experience of All Designers

“With CoCreate, we’re able to focus on design, rather than the methods supported by the CAD tool,” explains Rasera. “It really means that we can best leverage the company’s true technical asset—the years of experience across the whole design team. With PTC’s CoCreate Modeling, we can address the most complex design projects within the strictest deadlines. We start with a preliminary high-level production-line assembly and layout, and then detail it with each machine, continually refining and tailoring them to the end goal. This approach is critical to our success,” says Rasera.

Best of all, CoCreate’s explicit modeling approach allows designers to easily and quickly drive the design changes needed to customize the design within the context of the whole assembly.

“During the first few months of deployment, we’ve already used CoCreate Modeling in all new projects. And, even in these early stages, we already see a 15% to 20% reduction in the time needed for new machinery. We’ll see more significant savings and advantages as more machines and components are created and available in 3D, and can then be directly leveraged in new projects and across multiple machines,” states Rasera.

“We see that CoCreate Modeling, and its explicit modeling approach, is particularly effective in supporting our effort to quickly tailor and customize machines to meet our client’s inputs and requests, which happens in about 80% of projects we undertake.”

Benefits of CoCreate Go Beyond the Design Team

Thanks to the explicit modeling approach, any original 3D design data can be directly leveraged from clients and suppliers, and incorporated easily into the equipment, and shared with downstream teams like manufacturing. Sharing rendered, realistic images of designs also improves communication and collaboration with clients and vendors, avoiding any misunderstandings.

Even simulation teams can leverage the 3D models to perform structural and fluid-dynamic analyses, and drive rapid optimization of the design based on the results. Using 3D across the company has helped Pavan drive a common method to execute projects that deliver highest-quality, highest-reliability equipment.

Rasera continues, “For us, data management is critical, and CoCreate Model Manager manages the models, drawings, versions and revisions for the equipment we develop. This results in improved collaboration and integration between different teams, keeping everyone on the same page.”

Concludes Rasera: “PTC’s CoCreate software, together with the professional skills and support of EIT Technology, is the perfect solution for us; we not only improve the productivity of our design team, but we also improve all aspects of our product development process, resulting in the best possible relationship with our clients, and highest quality products.”