Craftsmanship Powered by Digital Precision

How Debem built a modern digital foundation to accelerate development, strengthen governance and turn engineering data into a strategic asset.

Debem is an Italian manufacturer specializing in high-performance industrial pumps engineered for demanding environments, such as chemical processing, textiles and other sectors where reliability and material compatibility are non-negotiable. Founded in 1982 in Busto Arsizio, the company has grown into a globally trusted supplier known for its engineering discipline, in-house design and use of certified Italian materials.

Every Debem pump is conceived, modeled, tested and validated within Debem's own facilities, supported by a state-of-the-art internal laboratory that enables rigorous performance testing and continuous R&D. Over the past four decades, the business has grown into a global supplier, exporting its industrial pumps to customers across Europe, Asia and the Americas.

Challenge: Global Growth Outpacing Traditional Ways of Working

As the company expanded globally and diversified its portfolio for increasingly demanding chemical and textile applications, the expectations placed on its technical organization grew just as quickly. A surge in product variants, customer-specific configurations, and complex engineering requirements placed new demands on the business.

The traditional PDM system that had supported the company for years could no longer keep pace with the volume of projects, revisions and cross-team interactions. Having data in separate places introduced small gaps in clarity and coordination that became more noticeable as the business grew. Managing data across these disconnected silos made it harder to maintain clarity, alignment and smooth handoffs. A single customized pump variant, for example, could require duplicating hundreds of parts, manually rebuilding the Bill of Materials, and relying on human diligence to track revisions.

The strain was not limited to data alone. Manual oversight was required to maintain repeatability, but that same oversight constrained engineering creativity. What had once been a craftsmanship-driven engineering environment now needed the structure, speed and reliability of a modern digital development ecosystem without compromising standards or quality.

"Not having absolute confidence in our engineering data became a hidden tax on the entire organization," said Andrea Ranzini, Technical Director at Debem. "It slowed development, increased risk and made it harder to scale innovation. To ensure control, we had to enforce rigid administrative procedures that often choked creativity and slowed down development."

Solution: Enabling Creativity Within a Structured Framework

Debem recognized that sustaining its growth required a fundamental shift. The company needed a digital foundation capable of supporting both engineering creativity and operational discipline. After evaluating multiple options, the company selected PTC Creo and Windchill as the backbone of its new, integrated product development environment, supported by its integration partner, Softech Horsa.

Rather than migrating its legacy data in one large block, Debem built a clean structured engineering environment. Products were reintroduced gradually, reviewed in greater detail, and organized into a centralized, validated library. This created a single source of truth for all engineering assets and a platform ready to scale.

Creo now acts as the core environment for developing, modifying and validating Debem's complex industrial pump assemblies. Engineers work with top-down design methods, master models and family tables to manage product variants without duplicating data

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Partner Spotlight

Softech Horsa is a leading Italian technology and systems-integration company specializing in digital transformation for engineering-driven businesses. As part of the Horsa Group, it combines deep expertise in PLM, CAD, ERP and enterprise integration with a strong track record of supporting manufacturers across Italy and Europe. The company is known for its technical competence, sector-specific knowledge and ability to guide organizations through complex modernization programmes.

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or breaking references. When a customer requires a customized configuration, such as different materials, specialized components or altered performance parameters, the team can adjust a single driver or swap a module, and the entire model updates automatically. Integrated real-time simulation tools allow Debem's designers to run structural and thermal analyses as they work, eliminating the traditional 'design–test–rework' loop.

"Creo transformed us from a drafting office into an agile R&D environment where validated designs emerge on the first pass," said Ranzini. "Real-time simulation has brought validation upstream, allowing our designers to optimize all areas of structural and thermal performance as they work."

> **"When you design in a fully digital flow, data stops being a drawing and becomes a dynamic business asset that drives faster, smarter decisions."**
>
> **Andrea Ranzini, Technical Director, Debem S.R.L.**

Likewise, Windchill serves as the company's governed, centralized repository for all engineering data, ensuring that every design, revision and approval follows a consistent, traceable process. Even in its initial deployment phase, Windchill stabilized workflows across the technical department by automating change management, enforcing revision control, and maintaining a single source of truth for standardized components and assemblies. Engineers now work from the same validated dataset, reducing ambiguity and strengthening cross-team coordination.

"Windchill gave us the structure we needed," Ranzini explained. "It's the foundation that keeps our creativity aligned, our data reliable and our decisions fully accountable. We now know that every single design move is traceable and compliant. With Creo and Windchill, we didn't just change our software, we built a better way of working and collaborating that lets us look to the future with structure, speed and vision."

Results: Faster Cycles, Stronger Control, Higher Certainty

The combined impact of Creo and Windchill reshaped Debem's engineering culture and operational rhythm. Development cycles accelerated as engineers could iterate quickly, validate designs in real time, and reuse standardized components without re-engineering. Revision control became reliable and automated, eliminating the risks associated with manual tracking. Cross-team collaboration improved as everyone worked from the same governed dataset, with full traceability from concept to production.

The shift from a linear, cautious workflow to a parallel, high-velocity model allowed Debem to introduce both new and enhanced products with greater confidence.

"We can now move faster while maintaining the same high level of quality," added Ranzini. "Moving from hope to certainty in our data has strengthened our margins, accelerated time to market, and created a more collaborative environment across our teams. Knowing that everyone is working from the same file and following the same rules, has become a calm, steady anchor for the way we work."

This digital foundation also unlocked new opportunities. Every new project now begins digitally, is validated through simulation and moves quickly to prototyping. Technical data has become a living business asset rather than a static drawing.

"When you design in a fully digital flow, data stops being a drawing and becomes a dynamic business asset that drives faster, smarter decisions," Ranzini added.

Looking Ahead: A Fully Connected Digital Ecosy

Debem's digital transformation is far from complete. The company is already planning deeper integration between Windchill and its ERP system, as well as direct connections to digital totems on the assembly line - the interactive touchscreen stations that deliver real time project information directly to operators. Centralizing simulation data and FEM (Finite Element Method) analyses within Windchill will create a true digital memory for every pump, supporting the entire lifecycle from design to service.

"We see a future where every product is born digital, every decision is data-driven, and innovation scales without limits," concluded Ranzini. "Our next chapter is about creating a connected ecosystem where our data, people and processes move as one. We are designing a future where our products carry a digital memory, our teams share a single truth, and innovation becomes a continuous, effortless rhythm."

Customer Overview | Debem

Industry	Industrial Manufacturing
Headquarters	Lombardia, Italy
Employees	40+
Revenue	$10M
Website	www.debem.com
PTC Products	Creo, Windchill

Benefits

- **Accelerated Design Cycles** - Faster iteration and earlier validation reduce time from concept to prototype.
- **Efficient Variant Management** - Top-down design, master models, and family tables remove redundant assemblies and make customer configurations fast and reliable.
- **Upstream Validation** - Integrated structural and thermal analysis brings FEM level validation into the design phase, improving first pass quality and reducing rework.
- **Centralized Engineering Data** - Governed, single source of truth for all designs, revisions and approvals, ensure consistency across teams.
- **Reliable Revision Control** - Automated workflows replace manual oversight, reducing errors and ensuring every change is traceable and compliant.
- **Stronger Cross Team Alignment** - Shared access to accurate, current data improves coordination between engineering, quality and manufacturing.
- **Governed Creativity** - Windchill provides structure and accountability while Creo preserves the flexibility engineers need to solve complex design challenges.
- **Higher Confidence in Decisions** - A fully governed digital thread replaces uncertainty with clarity, strengthening margins and supporting faster, more confident execution.
- **Reusable Digital Assets** - Technical data is now a living, traceable business asset rather than a static drawing, accelerating new product development.
- **A Scalable Digital Foundation** - Clean, future-ready platform capable of supporting new product lines, deeper integration and a connected digital ecosystem.