

Tech-Clarity

making the value of technology clear

Tech-Clarity Insight: The Business Value of Product Data Management

***Achieving Rapid and
Extendable Benefits***

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Executive Overview

Manufacturers today are facing challenging markets and uncertain economies. To survive these conditions they are trying to improve the speed of product development despite reduced headcount and budgets. One positive note is that many manufacturers are gaining significant value by implementing product data management (PDM) solutions. Tech-Clarity interviewed several small to midsize manufacturers (Table 1) to understand their experiences. Each of these companies implemented PDM for different business reasons, although several common themes were repeated. These themes are consistent with previous research on the topic, and include:

- Control and secure product-related data
- Improve the ability to quickly find and reuse information
- Share product knowledge with other departments

Manufacturers turn to PDM in order to take control of their product information and get more value from it. These solutions help companies manage their data and make it accessible to their Engineering peers as well as downstream departments such as Manufacturing. As a result, PDM helps these companies achieve business benefits including increased efficiency, improved quality, reduced cost, and the ability to bring products to market much faster.

Company	Description
Veeraja Industries	Total solutions provider of coolant filtration, chip removal and coolant management
Flovel Energy	Fully integrated hydro power equipment supplier
Weir Valves & Controls	End-to-end whole plant solutions to nuclear, fossil-fired and renewable power stations

Table 1: Companies Interviewed

Discussions with these manufacturers reveal a lot about their PDM implementations. For example, implementing the software without significant modifications helps companies achieve benefits more rapidly. Companies can accomplish this by using preconfigured, or “out of the box” PDM solutions. These solutions offer preconfigured settings and data such as roles, reports, attributes, and forms to allow manufacturers to get up to speed quickly. They also provide best practices embedded in preconfigured workflows so manufacturers don’t have to define processes from scratch where they currently have manual or outdated processes. This approach allows companies to get up to speed quickly and then grow from there to gain further benefits, providing engineers with the right tools to do their jobs efficiently.

The Business Value of PDM – Controlling Product Data

Why did the researched companies target PDM? The business value came from several sources. The first source identified from the interviews was control. Manufacturers rely on good product data to develop and produce quality products. In order to do this, they need to control their product data. *“Our primary objective was to sort out the data, to get it in line,”* explained Mr. Pinakin Mate. Mr. Mate is the CEO of Veeraja Industries Private, Limited, a total solutions provider of coolant filtration, chip removal and coolant management. *“Earlier the engineers used to have free ground, but now the process is streamlined and locked down so they can’t just store data anywhere and name it anything,”* he explains.

We were not able to control or standardize our engineering information without the common database provided by PDM.

Mr. Arun Gupta, Head of Design Engineering for Turbines, Flovel

Part of the challenge in controlling information is managing revisions and complex configurations. Manufacturers need to know which version of their data is the most recent and understand what has been released to manufacturing. This is very difficult to manage with dispersed data, or data that is stored on local storage or shared network drives. *“We were not able to control or standardize our engineering information without the common database provided by PDM,”* says Mr. Arun Gupta, Head of Design Engineering for Turbines at Flovel Energy Private Limited, India. Without controls, manufacturers are prone to errors by producing or purchasing against the wrong version of a part. Jonathan Mills, Engineering Manager, Weir Valves & Controls UK Ltd describes a similar situation. *“No controls were in place for the release and revision of 3D data,”* Mr. Mills says. *“Bills of material were out of sync with ERP data.”*

Product designs represent significant investment in intellectual property, and can become a competitive issue if the information is compromised.

Another aspect of controlling data is managing the security of the information. Product designs represent significant investment in intellectual property, and can become a competitive issue if the information is compromised. *“We had a lot of human turnover,”* Veeraja’s Mate recalls, *“People came and went, which made data security a concern. That was our second highest priority for PDM.”* PDM systems provide role-based security to selectively share product information with the right people. *“Without PDM we had no control over our information and different engineers had their own data,”* describes Flovel’s Mr. Gupta. *“Now with PDM we have access and security.”* Control helps engineers manage their data in a protected, secure environment, keeping their designs safe and easy to access.

The Business Value of PDM – Making Product Data Accessible

Another common theme identified by the participants was the ability to quickly retrieve product data. Of course it first needs to be controlled before it is shared, making inaccurate information more broadly available would be counterproductive. One of the most important reasons to make data easy to access is engineering efficiency. In an uncontrolled environment, engineers spend too much time looking for information. PDM helps alleviate that problem. *“We want to make information available to everyone, including technical catalogues, standard technical information, and quality standards,”* says Mr. Gupta of Flovel. *“Searching this information is very quick with PDM.”* Decreasing the amount of time engineers search for information allows them to focus on innovation and adding value instead of wasting time searching for files. This in turn improves cycle times and time to market, as well as saving money.

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Another impact of long search times is engineers reinventing the wheel. If information isn't easy to find, it will not be reused. Reuse improves both efficiency and design quality because engineers aren't starting from scratch each time. *“All of our products are custom, and we realized we were reinventing the wheel with each one,”* Mr. Mate of Veeraja recounts. *“The designer would start rethinking from the concept stage, draw it, and then face the same problems that we might have solved five years back. We had to go through the whole process again and again, that was the frustrating part.”* PDM, on the other hand, provides multiple search tools that can help engineers find what they need. Otherwise, as Mr. Gupta of Flovel cautions, *“Without PDM, Engineering can't find information and the next engineer might be repeating the same job.”*

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Mr. Pinakin Mate, CEO, Veeraja Industries

The Business Value of PDM – Sharing Product Data

Making design data available to engineers is important, but PDM also helps make the right information available across the business. One of the main benefits described by research participants was the ability to share product data easily with downstream functions that need accurate, timely data to do their jobs. Purchasing, Manufacturing, and others depend on the data from Engineering to play their role in developing and delivering profitable products. *“We had to have strong systems so that we could quickly design products and make accurate data available to Manufacturing,”* explains Mr.

Gupta of Flovel, “*We needed to make information correct and get the data to all departments.*”

***PDM helps manufacturers get the right information
into the hands of those that rely on it in their jobs.***

PDM helps manufacturers get the right information into the hands of those that rely on it in their jobs and makes sure that they have the right versions all the time. For those in the business who do not have direct access to a CAD workstation, PDM solutions can share visual representations from multiple CAD systems through lightweight viewing technology. This helps engineers by allowing them to easily share information with suppliers and other departments. With information accessible in a secure location, engineers can focus on designing products instead of answering questions or printing screenshots of designs for others.

Achieving Value Quickly (and Painlessly)

PDM provides control, ease of access to information, and product data sharing outside of Engineering. But not all companies have the IT and business resources to implement such a solution. Smaller companies, in particular, require ease and speed of implementation and may not have an IT staff to support a significant installation effort. As Veeraja’s Mr. Mate explains, “*A lot of companies in India don’t have a dedicated IT team.*” For these companies, it is critical to find a PDM system that includes implementation wizards and an architecture that is easy to maintain.

From a business perspective, the departments that will be using the system are also likely to be running lean and need to implement the solution as easily as possible. These companies should look for solutions that provide best practices in the form of preconfigured data and workflows. All three of the companies participating in the research for this report use Teamcenter Express from Siemens PLM Software, a solution that follows these best practices. “*Fifty percent of the workflows were directly applicable from the start, the other half we only had to modify a bit,*” recalls Mr. Mate of Veeraja.

***Our solution is not customized very much
because it is a tool that can be used out of the box.***

Mr. Arun Gupta, Head of Design Engineering for Turbines, Flovel

By taking advantage of packaged roles, groups, access rights, and other attributes companies can save the time it takes to implement from scratch. In this way, they are reusing best practices and then they can make minor adjustments as required for uniqueness of their business. “*Our solution is not customized very much because it is a*

tool that can be used out of the box,” explains Flovel’s Mr. Gupta. “The tool is very good, it is a very standard product that addresses the needs of the engineering market.”

Getting Started

Clearly, it is important to select a solution that provides the right functionality and technical environment (Table 2) to achieve the desired business value. Reducing modification to the PDM environment helps companies achieve benefits earlier. For those that do need to make some changes, the good news is that most of the changes to cPDM systems can be made through configuration as opposed to modifying software code. *“Our PDM is as close to out of the box as it can be, we configured about ten percent of it to meet part numbering, attribute mapping, and naming conventions that were already in place in our company and used in our other systems,”* says Weir Valves’ Mills.

Value	What to Look For in PDM
Improved Time to Market	Data Control Best Practice Workflows Effective Search
Quality, Reduced Errors	Ability to Share Data Collaboration Tools Data Control
Efficiency	Effective Search Best Practice Workflows
Reuse	Data Control Effective Search
IP Protection	Data Control Access Rights
Time to Benefit	Out of the Box Functionality Preconfigured Roles Standard, Best Practice Workflows Preconfigured Settings
Ease of Upgrade	Out of the Box Functionality

Table 2: What to Look for when Selecting PDM

One additional finding from the research is that there is help available for companies adopting PDM. There is no need for a manufacturer to do it on their own, particularly when this may be the first such system they have implemented. The companies researched for this report each got help from experts and local resources such as value-added resellers (VARs) and their software vendor. *“We invested in a ‘value discovery audit’ to help understand processes,”* says Mr. Mills of Weir Valves. Mr. Gupta of Flovel told a similar story, *“An expert audited our process and saw some advantages in doing*

things differently,” he explained, “As an example, we implemented thin clients at the distant manufacturing plants so they can easily see technical information.” The assistance may be technical and functional, and can even point out new business ideas. “Before buying PDM we only wanted to take care of design, that was our only aim,” explains Mr. Mate of Veeraja, “But we worked with a VAR and they opened us up to other improvement opportunities.”

Taking Advantage of (and Extending) the Benefits

The companies researched for this paper are gaining significant business benefits from PDM. These benefits include increased efficiency and speed. “We can get the correct and latest information by searching for ten seconds instead of ½ hour conventionally,” explains Flovel’s Gupta. Efficiency gains help with engineering throughput. They also help manufacturers provide faster quotes and faster delivery to customers, improving cycle times and time to market which are critically strategic to competition. “We are able to quote the customers faster, and submit drawings to production people faster,” says Mr. Mate of Veeraja.

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Efficiency directly impacts cost, getting the most out of lean resources. “We have not increased manpower, not increased shop floor area, and not increased design staff – but production went up 40%,” Veeraja’s Mate explains. “Our annual turnover (revenue) has grown without additional headcount. That means we are saving money.” Manufacturers can also save money by providing the right information to downstream departments. Reduction of errors saves time and money. “We have fewer design errors introduced to manufacturing,” says Mr. Gupta of Flovel, “The problem is gone and we have reduced cost.” Veeraja also experienced fewer manufacturing issues with PDM. “Our errors came down drastically,” remarked Mr. Mate.

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Mr. Pinakin Mate, CEO, Veeraja Industries

These results impact both the top line and the bottom line, and are achievable in a short period of time. By taking advantage of implementation tools such as wizards and preconfigured data, manufacturers can spend less time implementing and more time reaping the benefits of PDM. These benefits can be expanded over time by including

more processes, integrating to ERP, incorporating more people, and leveraging additional functionality as needed.

Conclusion

The companies interviewed for this report use PDM to improve their ability to control, find, reuse, and share product-related information. The driver for many companies to implement cPDM is to gain control over their information. As Mr. Mate of Veeraja explains, *“PDM helps get control of versions and revisions, it is very important. Otherwise it is just a file management system.”* This control, coupled with search capabilities found in the solutions, provides an enhanced ability to get the right information when it is needed. *“We have made a drastic change in the time needed to find information,”* confirms Mr. Gupta of Flovel. PDM also helps companies better communicate and share information both within Engineering and with the downstream departments that rely on engineering data to serve customers.

These improvements, in turn, help drive efficiency, reduce cost, and improve time to market. They also help to streamline processes across the business by sharing information with downstream departments. *“The best compliment we got on our PDM systems was by our commissioning engineer, who said that the software tools (including 3D CAD) resulted in the first time he could assemble our system without doing modification on site,”* shared Mr. Mate of Veeraja. Mr. Mills of Weir Valves describes similar benefits, including *“...reduction in engineering errors, efficiency, time savings through not having to search for data.”*

***We keep our PDM as ‘vanilla’ as possible to keep it simple,
very little has been changed from the standard.***

Jonathan Mills, Engineering Manager, Weir Valves & Controls

Perhaps most importantly, these benefits can be achieved quickly. *“The solution was relatively easy to implement, it took a few weeks to load the software, create the users, and make some initial flowcharts. It didn’t take too long,”* Flovel’s Mr. Gupta recalls. Of course implementations can take longer without using preconfigured solutions or if significant software changes are made. *“We keep our PDM as ‘vanilla’ as possible to keep it simple, very little has been changed from the standard,”* describes Weir Valves’ Mills. In the end, PDM becomes a strategic asset to the business. *“If we didn’t have our cPDM now it would be a disaster for us,”* concludes Mr. Mate of Veeraja. Companies that have PDM recognize how critical controlling data, making information accessible, and sharing knowledge to their business and can’t imagine living without it.

Recommendations

Based on industry experience and research for this report, Tech-Clarity offers the following recommendations:

- Use PDM to secure intellectual property and control product data in a central location
- Enable rapid retrieval of product information to improve efficiency and drive reuse
- Share product information with downstream functions such as Manufacturing to improve quality and reduce costly errors
- Take advantage of PDM systems with pre-configured, best practices for security, part numbering schemes, and other common information required to set up a the system
- Leverage standard best practice workflows such as “release to manufacture” and “engineering change control” to speed implementation
- Limit customization of PDM in order to achieve rapid time to benefit and simplify future maintenance and upgrades
- Take advantage of the business benefits that PDM has to offer, including speed to market, improved efficiency, and reduced cost
- Achieve benefits quickly, and grow the value over time by including more processes, integrating to ERP, incorporating more people, and leveraging additional functionality as needed

About the Author

Jim Brown is the President of Tech-Clarity, an independent research and consulting firm that specializes in analyzing the true business value of software technology and services. Jim has over 20 years of experience in software for the manufacturing industries, with a broad background including roles in industry, management consulting, the software industry, and research. His experience spans enterprise applications including PLM, ERP, PDM, quality management, service, manufacturing, and others. Jim is passionate about improving product innovation, product development, and engineering performance through the use of software technology and social computing techniques.

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