



MacDon Industries Ltd.

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*– Jon Cook
Engineering information manager*

MacDon Industries Finds Profitable Method to Leverage Design Productivity Across its Entire Engineering Organization

Solid Edge Insight technology manages design data at no additional cost

A simple question motivates MacDon Industries Ltd., a leading maker of agricultural equipment based in Winnipeg, Canada: "How can we make harvesting better?" As "The Harvesting Specialists" MacDon has been building and perfecting harvesting machines for more than half a century, always with one single goal in mind – making harvesting easier and more productive. But building better harvesting machines takes more than wishful thinking. It requires a combination of many factors including highly skilled

precision craftsmanship, an uncompromising demand for excellence, and innovative, forward-thinking engineering.

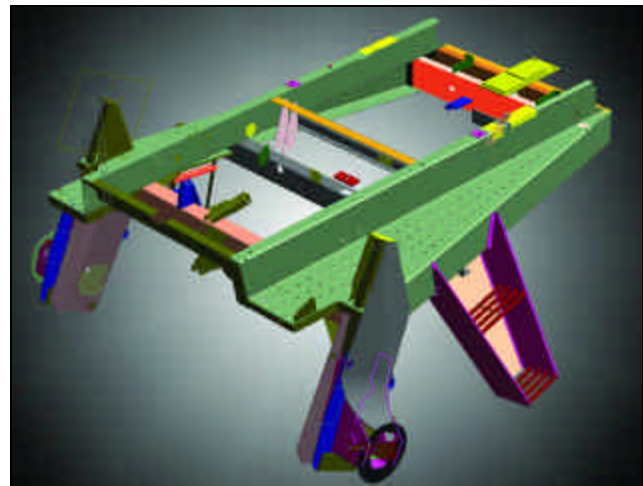
From the engineering perspective, MacDon has faced and solved its challenges head on. But one major dilemma, common among companies focused on the design, development and manufacture of mechanical products, needed to be answered. "How do we efficiently manage the large amount of design data being generated by our engineering group?" asks Jon Cook, Engineering Information Manager.

The only answers Cook had for the 32-person CAD design organization were either to acquire a separate, expensive product data management software system or to develop a custom application that would handle some but not all of the company's needs. Neither alternative really solved the needs of MacDon. But the only other alternative -- not managing the extremely valuable design data at all -- would prevent the company from recognizing substantial savings through engineering efficiencies. Currently MacDon has implemented the custom program to automate processes and procedures as well as enforce standardization of files, but it does not deliver all of the functionality MacDon is looking for without a significant effort from the engineering programmer they have on staff.

CAD productivity explosion

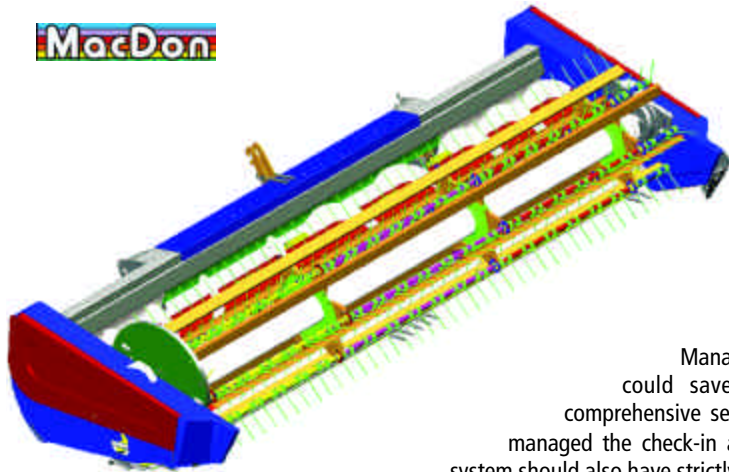
MacDon has experienced a major design productivity boost with Solid Edge, creating tens of thousands of parts. MacDon's 12 product lines and 50 different configurations contain up to 3,000 parts each. Designers need access to common parts for use in multiple products and configurations. Another 70 MacDon employees in purchasing, parts, manufacturing and service also need access to the valuable engineering data.

With the many variations in sizes and configurations across MacDon's broad product offering (tractors, mowers, and bailers), engineers could waste a lot of time recreating existing designs, fixing errors caused by using outdated design files, and searching for





The MacDon logo features the word 'MacDon' in a stylized, multi-colored font where each letter is filled with a different color (red, yellow, green, blue, purple).



data. "Without a set of rules and guidelines governing the use of CAD, MacDon would be in a mess," says Cook.

"What we have found through experience is that if you leave file organization up to individuals, short cuts are taken and the entire system becomes very difficult to manage," says Cook. "This is exponential with the number of people creating and editing information."

Cook says that a fully functional Product Data Management system that is almost invisible to the CAD user could save significant amounts of time, provided it had a comprehensive search engine, delivered the files to the workstation and managed the check-in and check-out process. The product data management system should also have strictly enforced system rules for attribute management and file integrity to realize these potential time savings. One of the issues that Cook is dealing with currently is the prohibitively slow response from the file-based "where-used" reporting. The other

major issue is that Solid Edge files, once created, never leave the central file server so the network has to handle a high volume of traffic.

No clear answer in the market

But implementing a product data management system would be costly and difficult. Cook estimated it would cost more than \$250,000 just to buy the software, pay for a complex implementation and train his users. Then there would be yearly software maintenance fees and the cost of having engineers away from their jobs taking training classes.

Hiring a custom programmer to develop a MacDon-specific file management system might avoid the costly, bolted-on product data management option. The problem with this solution was "re-inventing the wheel," and the technology lacked some key functions Cook desired, such as checking files in and out of central computer servers or recording product assembly structures in a common database in order to perform critical "where-used" queries.

The potential savings more than justified implementation of a product data management software system, but its costs and effort would be substantial. The custom program option was technically possible, and is currently in use at MacDon, but lacked some important capabilities and would require substantial and continued resources to meet the company's needs.

Solid Edge Insight technology

MacDon volunteered to alpha test Solid Edge Insight technology. Cook immediately knew he had an effective solution for the CAD users working at the design level and for himself in the role of Information Technology (IT) implementation.

MacDon's first experience with Solid Edge Insight technology was astounding, Cook said. "I was ready to install and implement this new design data management solution late in the afternoon. Thinking back to my research of such systems, I called my wife to say I would be late getting home. But after only one hour, I had installed and implemented the tools and easily made it home for dinner." Initial Product Data Management implementation time has been cut from four hours per workstation with traditional systems to 20 minutes with Solid Edge Insight, Cook estimated.

"The biggest bonus for me in Solid Edge's new technology is that design data management will now be invisible to the user - the engineer who needs to focus on design," says Cook. "The benefit to MacDon is two fold. First, we remove the burden on the engineer to learn and implement what historically has been a complex, separate software system. Secondly, we significantly increase the individual's design productivity."



Examples of design productivity gains MacDon measured with Solid Edge Insight technology include:

- Searching for design files takes seconds instead of minutes. "Searching our file system previously took so long that many users did not do it. They recreated work that had already been done," Cook says. Cook estimates that when an engineer recreates the missing parts, he has a one in three chance of getting the orientation correct. He also has little chance of getting the surfaces to match, so most of the mating constraints would fail in the assemblies. "With 32 CAD users doing some or all of the above I think that they would probably spend at least 5 to 10 percent of their work day fixing file management problems if not more."
- Probable 50 percent reduction in network traffic will provide designers with faster response times, allowing more design time.
- Opening large assemblies, a major time consumer, is much faster with Solid Edge Insight technology managing the data. "Across our engineering group, collectively we open as many as 90 assemblies a day. Because Solid Edge now allows that to be opened from a cache on the designer's computer, we can measure major time reductions for all our users."

Key Benefits for MacDon

Searching for design files takes seconds instead of minutes.

Probable 50 percent reduction in network traffic.

Design data management is now invisible to the user.

Significant time savings.

Cook points out that as an existing Solid Edge site, MacDon will greatly benefit from Solid Edge Insight technology. But he says new users who will just be starting to create designs in Solid Edge will benefit even more because they will be managing designs from the beginning.

"If I could have had this technology up front, our time savings would have been significant. Anyone evaluating CAD should make sure they can immediately begin managing designs as soon as they begin producing them."

Many aspects of this new technology yield productivity gains within the CAD system, Cook says. But other important bottom-line benefits for MacDon can't be measured in exact terms.

"If CAD includes design data management that is used by – but invisible to – the individual designer, it passively but powerfully enforces our design rules and makes all of our data consistent and of much greater value than ever before," Cook says.

About MacDon

MacDon began in 1949 as Killbery Industries Ltd., a manufacturer of agricultural equipment including sprayers, grain augers, discer seeders, cultivators and manure spreaders. Following the MacDonald family's purchase of the company in 1971, MacDon strengthened its leadership position by undertaking major OEM contracts on behalf of some of the world's largest agricultural companies, thereby assisting MacDon's rise as one of North America's largest manufacturers of windrowers. In 1986 MacDon introduced its MacDon brand of high performance harvesting machines into the United States through its own MacDon dealer network. The company passed a major milestone when it produced its 100,000th harvesting machine in the fall of 1996. Now, MacDon continues its commitment to pioneering innovative technologies to harvest the crops of today and tomorrow. For more details, visit <http://www.macdon.com>

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