

Power Bus Way Ltd.

Customer Success Story

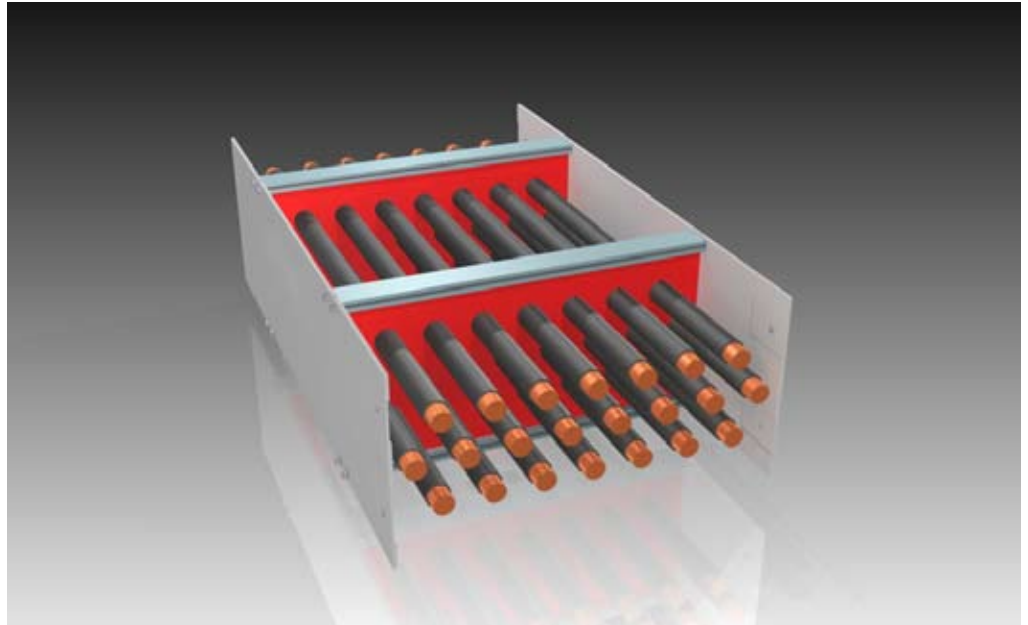
Autodesk® Inventor® Professional
Autodesk® Vault

Thanks to Inventor and iLogic, we completed the engineering in half the time. Not only does Inventor help us control our costs, it also helps to improve our throughput and cycle time, from order to delivery. Inventor gives us a real edge in a competitive industry.

—Peter Sisley
President
Power Bus Way

Conveying power.

Power Bus Way gains a competitive edge using Autodesk® Inventor® software to design easy-to-assemble cable bus systems.



Project Summary

Peter Sisley co-founded Power Bus Way in 2007 believing he had a better way to design and manufacture cable bus systems. The rapidly growing company has gained a foothold in the electrical bus duct industry by developing an extremely strong, easy-to-assemble aluminum enclosure for high-ampacity electrical power cables. Suitable for any company using large amounts of electrical energy, the product is custom designed and manufactured to meet each customer's unique needs. From the very beginning, Power Bus Way has connected its entire product development process through a single digital model, streamlining design, marketing, and manufacturing. While still a young company, Power Bus Way enjoys a distinct competitive advantage: a highly automated Digital Prototyping workflow that saves time, reduces costs, and boosts manufacturing throughput. Autodesk® Inventor® Professional software with iLogic technology takes Power Bus Way beyond 3D to Digital Prototyping, helping the company to:

- Complete custom orders four times faster
- Increase engineering productivity with rules-based design
- Assists in compliance with the Canadian Standards Association (CSA)
- Create compelling visualizations that support marketing efforts

The Challenge

The cable bus systems that Power Bus Way produces protect power cables—and the people and animals in their vicinity. Each cable bus system Power Bus Way makes must address a customer's specific needs and adhere to structural strength specifications required by Power Bus Way's CSA certification. While customized for each customer, all of the company's designs are based on a common set of standards.

"There are certain things you have to do—or not do—when designing safe and effective cable bus systems," explains Sisley. "We wanted a way to implement a rules-based design process that would automate time-intensive manual tasks and support our standards. We knew an improved process for creating digital prototypes would dramatically reduce design costs and delivery times while increasing manufacturing throughput."

As a new player in the industry, Power Bus Way also wanted a way to market its products effectively. "It's our goal to be pre-selected as a supplier," explains Sisley. "That requires differentiating ourselves by making life easier for both the consulting engineers recommending our systems and the electrical contractors installing them."

Autodesk®

Power Bus Way turns its product design process into a competitive advantage using Autodesk Inventor Software.

The Solution

Using Autodesk Inventor software with Inventor iLogic technology, Power Bus Way has dramatically simplified the way it develops digital prototypes for its custom cable bus systems. Inventor iLogic technology lets the company easily create parts and assemblies that define multiple product configurations and automatically update them in real time based on logical relationships between design parameters. Rules are created graphically from native Inventor parameters and embedded directly into the Inventor data model. To stay in line with its CSA certification, these rules take into account structural strength specifications.

“We have a general model layout with built-in dimensions and parameters,” explains Brad Barrett, design engineer at Power Bus Way. “When we populate those parameters, it automatically generates the model, configuring everything for us. For example, when we choose to use a certain type of cable, Inventor and iLogic will automatically generate all the circles and diameters for the correct cable spacing.”

FEA As Needed

In some cases, when the products a customer wants fall outside the norm, Power Bus Way relies on the finite element analysis (FEA) features in Autodesk Inventor Professional to test the structural integrity of its systems. For example, the company recently worked on a large hydro generation station with a 500-foot shaft. The 16,000-pound cable enclosure Power Bus Way designed had to be supported entirely by the top of the shaft. Concerned about the stresses in the joints at the top of its enclosure, Power Bus Way conducted FEA and modified its designs based on the results. “If we hadn’t been able to model the mechanical stresses, we would have had to provide a much more complicated splicing system for the enclosure,” says Barrett. “That would have driven up manufacturing costs and made the unit more complex and expensive to install.”

The Automation Advantage

Most of the time, however, Power Bus Way uses iLogic technology and the copy-design feature in Autodesk® Vault software to customize each design based on an existing generic model template. Not only is the process much faster than creating new models manually, it helps to reduce errors too. “When you calculate manually, there’s a higher chance for error,” says Ian Lawrie, director of business development at Power Bus Way. Sisley adds, “Once you set up the correct relationships and parameters in iLogic, it’s impossible to deviate from your established rules. Inventor will simply block you. It gives us an added level of quality control.”

Using Inventor iLogic technology for automation has had another unexpected, but welcome benefit for Power Bus Way. Ian Lawrie explains: “Automation is actually improving our quality of life. Inventor reduces mundane tasks, making our jobs more fun. It’s an often-overlooked soft advantage that actually means a lot.”

Streamlined Manufacturing

The Inventor models automatically customized by iLogic technology are accurate digital prototypes. With direct read and write of true DWG™ files, Inventor enables Power Bus Way to create precise manufacturing documentation from these digital prototypes, helping to reduce errors and deliver designs to manufacturing in less time.

“Inventor automatically generates manufacturing drawings for components we subcontract,” says Barrett. “For components we manufacture in-house, we bring DWG files of our digital prototypes directly into our computer-aided manufacturing software. There’s little possibility for error—and we’re not wasting time detailing every manufacturing drawing every time.”

Selling Ease-of-Assembly

As a growing company, winning new customers is priority one for Power Bus Way. Using the digital

prototypes it creates in Inventor software, the company can highlight the most attractive feature of its products: ease of assembly. “We used the Inventor Studio application to transform a digital prototype into a 3D animation,” says Sisley.

Sisley credits visualizations like these with winning engineers over to Power Bus Way systems, despite their relatively short time on the market. “An animation is even better than a hardware sample that’s already built and assembled,” he adds. “When engineers see moving parts fitting together, they see how easy our products are to assemble. They come away convinced that we’re a legitimate high-tech company with great products.”

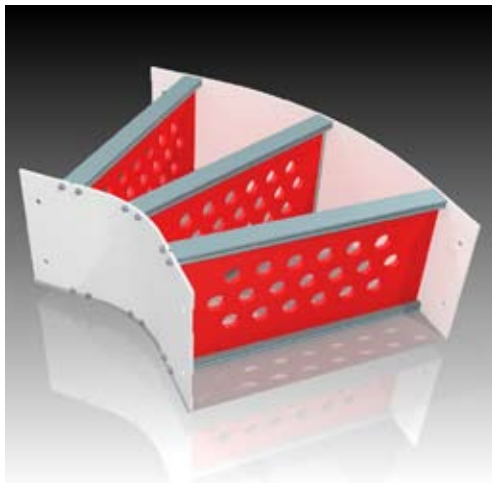
The Result

With Digital Prototyping, Power Bus Way is confident that its designs will work before they are built. In addition, the company’s new Inventor iLogic-powered rules-based design process is saving a tremendous amount of time and reducing costs. “On our first project, we slogged through all the calculations by hand,” says Sisley. “We did another project last spring that was twice as large as our initial project. Thanks to Inventor and iLogic, we completed the engineering in half the time. Not only does Inventor help us control our costs, it also helps to improve our throughput and cycle time, from order to delivery. Inventor gives us a real edge in a competitive industry.”

For More Information

To learn more about how Autodesk Inventor software with iLogic technology can help you design better products, win more business, and gain a competitive edge, visit www.autodesk.com/inventor.

To learn more about Power Bus Way, visit www.powerbusway.com.



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—Brad Barrett
Design Engineer
Power Bus Way

Images courtesy of Power Bus Way Ltd.

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