



Linear Motion Manufacturer Saves Time, Reduces Errors with InspectionXpert

In 1983, a small company, Pacific Bearing Company, tackled what had become an industrial headache: failing linear ball bearings. With patented and innovative technology, the company has grown significantly since its founding, expanded its technology, and now operates as PBC Linear, a manufacturer of hundreds of linear motion products from individual, out-of-the-box components and mechanical sub-assemblies to complete linear systems.

The company's linear motion components are sold assembled in pre-engineered systems, slides and stages to a vast array of industries, including the military, medical device, lab automation, packaging, and industrial markets. All the company's products are manufactured at the company's manufacturing facility in Roscoe, IL. With its wide variety of products, making sure products are designed efficiently and make their way through the product development process in a timely manner is essential to staying ahead of their competitors.

Challenge

The engineering team using SolidWorks mechanical CAD software creates 3D models of the company's products. Once the models are approved and ready for production, 2D dimensioned drawings are generated from the 3D models. The company's team of engineering technicians then creates inspection sheets associated with each individual product for production. The inspection sheets are provided to production as Excel spreadsheets.

Traditionally this process was done manually, with the engineering technicians entering dimensions from the drawings by hand in order to create the inspection sheets, a process referred to as "chaotic" by Mike McKee, one of the engineering technicians at PBC Linear. It would also require a lot of the technicians' time to complete each one; a single four or five-sheet drawing would require several pages of Excel files to do manually and would take anywhere from hours to up to a day to complete.

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The problem with this method was twofold: besides being time-consuming, it was also inherently error-prone. "Sometimes the technicians might see the dimension, but type in the wrong dimension onto the inspection sheet and not catch it until things were down the line," says McKee. "The chance of human error is always there and sometimes these errors wouldn't get caught until it reached the production floor."

Solution

McKee knew there had to be a better method, a way to "take the human error element out of the equation." In 2007, he began researching possible automated solutions and came across InspectionXpert for SolidWorks by Extensible CAD. The startup had just begun selling a solution that appeared to do exactly what McKee needed: automated ballooning and creation of inspection drawings from CAD drawings and models.



McKee worked closely with Extensible CAD President Jeff Cope to see if InspectionXpert for SolidWorks would be the solution they needed. McKee sent over some PBC Linear CAD files to Cope so the company could demonstrate how the software could help them save time and reduce the chance of error when generating inspection sheets. The demo showed how InspectionXpert for SolidWorks works directly inside the SolidWorks application to pull information or dimensions directly from the source drawings or models, and then populate the Excel spreadsheet in minutes, a task that would have required hours of manual work.

Results

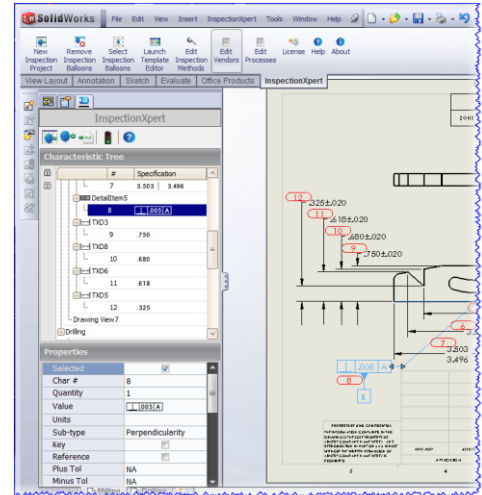
McKee presented the demonstration to upper management and his team of four engineering technicians – all of whom were very impressed and immediately decided to purchase four seats of the software. “Even on a six- or seven-sheet drawing with a couple of hundred dimensions, with InspectionXpert for SolidWorks at the most it would take us five minutes to create an inspection sheet,” says McKee. “Without the software, it would have taken a technician a day to create that same inspection sheet.”

Besides removing the possibility of human error and speeding the process, McKee says, “It makes us considerably more productive because that’s primarily what we do daily, create drawings and inspection sheets.”

The software outputs inspection sheets in the form of Excel spreadsheets, tailored specifically to PBC Linear. The inspection sheet is then attached electronically to the drawing and stored in the company’s PDM system, so it follows the drawing through the entire workflow. Down the line, when someone goes into the PDM system to search for a particular drawing, they can also find and print out the associated inspection sheet as well.

McKee said Cope and his team at Extensible CAD Technologies worked very closely with his team at PBC Linear, listening to their needs and adding functionality to the InspectionXpert software to fulfill those needs. “We were one of their first customers, so we were able to have a lot of input as far as different functionality. When we ask if it could do something, Jeff would add it.”

An added benefit was the fact that the company’s inspection sheets are now AS9100 compliant, a huge benefit since the company is in the process of trying to obtain AS9100 certification. “We found out that what we’re doing with these inspection sheets is actually 100% AS-compliant now so we’re on our way to doing that now.”



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Char No.	Reference Location	Characteristic Designator	Requirement	Ra	UoM	Upper Limit	Lower Limit	Result
1.1			1. INTERPRET PER ASME Y14.5 - 1994					
1.2			2. ANODIZE PER STD-105AX					
1.3			3. BREAK ALL SHARP EDGES .05.					
2		[002]				.002	0	
3		465			in	.465	.465	
4		[020 A B C]				.020	0	
5		[070 A B]				.070	0	
6		2.875			in	2.885	2.855	
7		3.296			in	3.209	3.302	
8		3.503 3.496			in	3.503	3.496	
9		[005 A]				.005	0	
10		.750			in	.770	.730	
11		.680			in	.700	.660	