



MIC Group Selects InspectionXpert

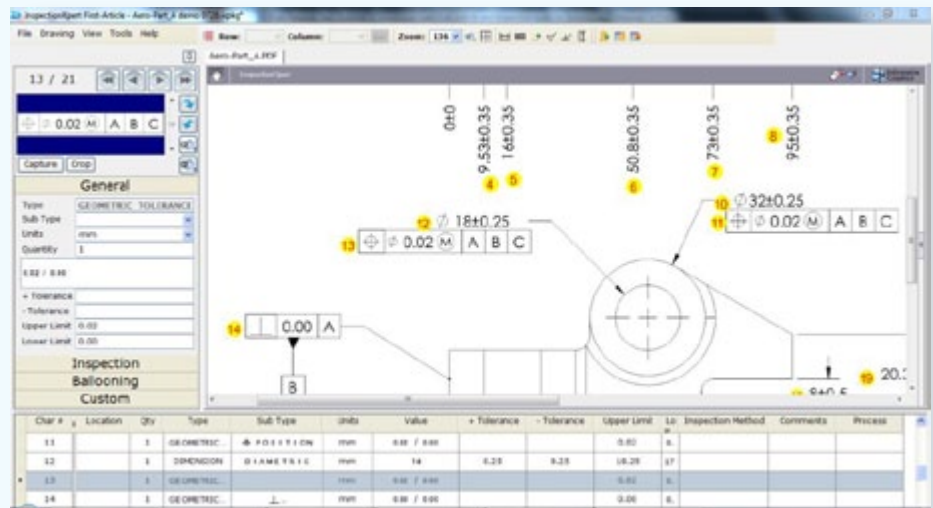
by Nathan Byman

MIC Group is a contract manufacturer of complex machined products and assemblies, specializing in exotic metals and serving the oil and gas, aerospace, and defense markets. A subsidiary of J.B. Poindexter Company, we have operations in Brenham and Houston, Texas; Duncan, Oklahoma; Monterrey, Mexico; and Kuala Lumpur, Selangor, Malaysia.

As a contract manufacturer, MIC Group must provide inspection data sheets with true, measured dimensions for every part we ship. On average, our parts have 300 dimensions to verify, and they often have as many as 1,800 elements. A tool called InspectionXpert First-Article has enabled our company to reduce this verification task from a five-person job to a one-person job all while reducing job time leads and improving the accuracy of reported data.

Launched in 2005, InspectionXpert was designed to simplify the process of creating inspection forms and balloon inspection drawings for first-article and in-process inspections. These reports and drawings are created directly from CAD drawings of just about any file format, including AutoCAD, SolidWorks, and Solid Edge, as well as CAD-neutral raster formats such as PDF and TIFF. The InspectionXpert platform is also fully integrated with many popular CAD packages including AutoCAD, SolidWorks, Solid Edge, Pro/ENGINEER, and CATIA V5, and even more integrations are in the works.

Figure 1. The InspectionXpert First-Article use interface shows sequentially numbered balloons that are automatically added to a print each time a user highlights an element.



The Challenge

Dimensioned drawings come to MIC Group in PDF and TIFF formats from a variety of customers, and with continually changing revisions. We use InspectionXpert First-Article 2010 to:

- apply sequentially numbered balloons (or bubbles) to the face of these prints so we can track the inspectable dimensions;
- create an inspection sheet, including the reference number and actual dimension, that will travel the parts and will be filled out by the machinists and inspectors throughout the process; and
- compare drawing revisions to evaluate the manufacturing impact.

These vital functions are easily recognizable by any manufacturer that works with prints and must deliver a data sheet deliverable in addition to a part. What is often overlooked, however, is how much opportunity for improvement exists in this standard process. In my experience companies use hand bubbling, Adobe Illustrator, CAD systems, and a variety of other suboptimal tools to move quickly through one facet or another of the process, and they typically treat the three processes above as discrete activities to be performed by different people.

The most powerful advantage of InspectionXpert First-Article 2010 is that it completes these tasks simultaneously and in less time than any one of them could be performed using any other familiar method. When you evaluate collapsing these functions, you aren't just looking at an improvement in one area - instead, it's a total process that, in our experience, is five times faster.

“Using this tool reduces the time required by more than 80%. We are doing in 2 days what would have taken 11 before.”

Figure 2. The dimensional Test Result report is automatically populated in Excel from a user-customizable template. Standard forms for Automotive (PPAP) and Aerospace & Defense (AS9102, EN9102) are included with the software.

Item	Date	Characteristic	Image	Dimension/Specification	Specification Limits	Test Date	Qty	Organization	Inspection Results (Date)	OK	Not OK
1	B.1	325±.020		0.25 mm	0.25 / 0.21						X
2	B.1	.618±.020		0.62 mm	0.64 / 0.60						X
3	B.1	.680±.020		0.68 mm	0.70 / 0.66						X
4	B.1	.750±.020		0.75 mm	0.77 / 0.73						X
5	C.1	.005 A		0.05 / 0.00 mm	0.01 / 0.00						X
6	C.2	3.500±.020		3.50 mm	3.52 / 3.48						X
7	C.3	3.206±.020		3.21 mm	3.23 / 3.19						X
8	C.2	2.875±.020		2.88 mm	2.90 / 2.86						X
9	B.4	.010 A B		0.10 / 0.00 mm	0.01 / 0.00						X
10	B.3	.020 A B C		0.20 / 0.00 mm	0.02 / 0.00						X
11	C.5	250±.020		0.25 mm	0.27 / 0.23						X

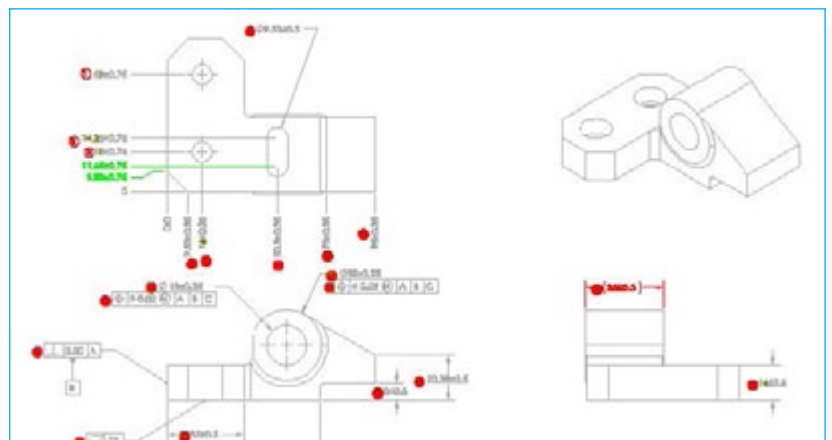


Figure 3. InspectionXpert's Replace Drawing feature automatically compiles a color comparison chart for comparing drawing revisions, reducing the opportunity for human transcription error. Changes are highlighted in red (removed item) or green (added items).

How It Works

Simply open prints in InspectionXpert First-Article 2010 and begin to highlight elements. Each time you highlight an element, a sequentially numbered bubble is added to the face of a print (figure 1), and the actual image of what was highlighted is transferred to the inspection sheet (figure 2).

During export, the software creates a PDF of the bubbled print, in addition to an Excel data sheet that contains the image from the print (or text if you choose to use the optical character recognition function). The process involves no redundant typing and there is no opportunity for human transcription error. Drawing comparisons generate red (removed) and green (added) visuals to clearly indicate what has changed (figure 3).

The table "Time Savings Using InspectionXpert" details a real-world example of our time savings. If I assume two revision cycles per part life that require two drawing comparisons or rebubbles, using this tool reduces the time required by more than 80%. We are doing in 2 days what would have taken 11 before. We currently have one person working full-time performing this job function. Without InspectionXpert, we would need at least four more employees to keep up with the current workload. The difference amounts to an annual savings of \$120,000 per year based on a \$30,000 employee salary!

I recommend InspectionXpert First-Article for anyone involved in contract manufacture using prints and data sheets. Original equipment manufacturer would do well to use the tool to provide data to their subcontractors, reducing the time required to receive product on the dock and increasing standardization across suppliers. Contract manufacturers can benefit from reduced costs, lead times, and data entry errors.

Time Savings Using InspectionXpert First-Article 2010		
Task	Using Old Methods	Using InspectionXpert
Original	3 days	1 day
Revision	3 days	1/2 days
DWG Comparison	1 day	10 minutes
*Data based on preparation of a 4 page, 8 foot wide drawing with 586 inspection dimensions.		

About the Author

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