INSPECTION XPERT®

CASE STUDY

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 lead times and improving the accuracy of reported data.

"When you look at collapsing these functions, you aren't just looking at an improvement in one area — you are looking at a total process that, in our experience, is five times faster."

Launched in 2005, InspectionXpert was designed to simplify the process of creating inspection forms and ballooned 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.

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 with the parts and will be filled out by the machinists and inspectors throughout the process; and
- compare drawing revisions to evaluate the manufacturing impact.

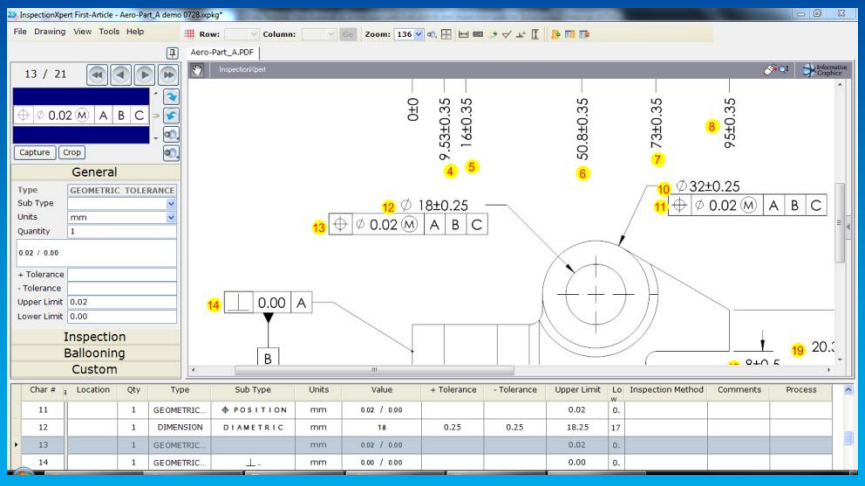

Figure 1. The InspectionXpert First-Article user interface shows sequentially numbered balloons that are automatically added to a print each time a user highlights an element.

These vital functions are easily recognizable by any manufacturer that works with prints and must deliver a

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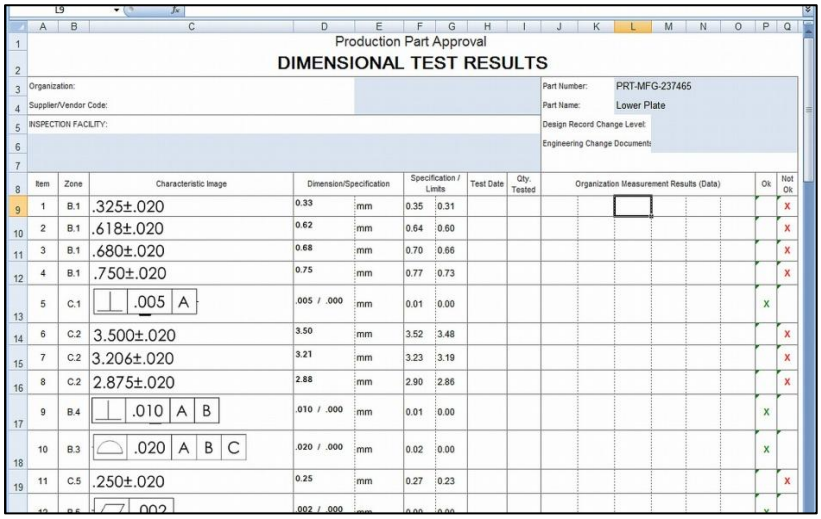
data sheet deliverable in addition to a part. What is often overlooked, however, is how much opportunity for improvement exists in this standard process. In my experience, companies use hand bubbling, Adobe Illustrator, CAD systems, and a variety of other suboptimal tools to move quickly through one 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 three 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.

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**).



Production Part Approval

DIMENSIONAL TEST RESULTS

Organization:
Supplier/Vendor Code:
INSPECTION FACILITY:
Part Number: PRT-MFG-237465
Part Name: Lower Plate
Design Record Change Level:
Engineering Change Document:

Item	Zone	Characteristic Image	Dimension/Specification		Specification / Limits		Test Date	Qty. Tested	Organization Measurement Results (Data)	Ok	Not Ok
1	B.1	.325±.020	0.33	mm	0.35	0.31					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	.005 / .000	mm	0.01	0.00				X	
6	C.2	3.500±.020	3.50	mm	3.52	3.48					X
7	C.2	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	.010 / .000	mm	0.01	0.00				X	
10	B.3	⌓ .020 A B C	.020 / .000	mm	0.02	0.00				X	
11	C.5	.250±.020	0.25	mm	0.27	0.23					X
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Figure 2. The Dimensional Test Results 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.

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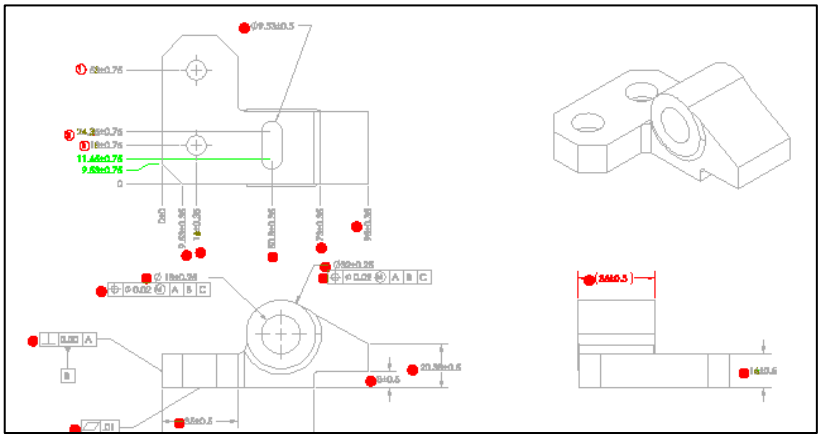

Figure 3. InspectionXpert's Replace Drawing feature automatically compiles a color comparison chart for comparing drawing revisions, reducing the opportunity for human transcription error. Changes are highlighted in red (removed items) or green (added items).

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!

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The learning curve for InspectionXpert is not a steep one. Our users typically are comfortable enough to use the tool after less than one day of training, and become fully operational after less than a week of training and use. Jeff Cope and the staff at Extensible CAD Technologies have been very diligent in developing InspectionXpert First-Article 2010 to ensure optimal functionality. At this point, MIC Group users would mutiny if anyone suggested taking away this tool.

I recommend InspectionXpert First-Article for anyone involved in contract manufacture using prints and data sheets. Original equipment manufacturers 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 day
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

Nathan Byman is general manager at MIC Group in Brenham, Texas (www.micgrp.com).

INSPECTION XPERT®

CASE STUDY

The InspectionXpert product line eliminates the manual ballooning of inspection drawings and manual creation of inspection sheets for first article and in process inspections. InspectionXpert ships with standard report templates including AS9102 and PPAP forms, or you can created an unlimited number of report templates using the InspectionXpert Template Editor.

Create Inspection Documentation from PDF files

InspectionXpert First-Article® works with PDF and TIFF file formats to help you quickly and accurately created ballooned inspection drawings and inspection reports. InspectionXpert First-Article works well for quality departments who receive scanned drawings or drawings in multiple CAD formats. InspectionXpert First-Article functions independently of any CAD program, and the easy-to-use interface means you can train anyone in your company to create inspection documentation for your quality inspectors.

Program Requirements:

- Windows XP Professional SP2, Windows Vista Business, or Windows 7 Professional or higher (32 bit or 64 bit)
- Microsoft Excel 2003, 2007 or 2010
- Adobe Acrobat Reader version 7.0.7 or higher

Create Inspection Documentation from CAD files

InspectionXpert® is also a software solution partner for popular CAD programs including Solid Edge, CATIA, AutoCAD, SolidWorks, and Pro/ENGINEER. InspectionXpert's CAD-integrated versions work as an add-in to a CAD program to automatically balloon the 2D drawing (InspectionXpert for CATIA will also balloon the 3DCATIA Model) and export to an Excel-based template. This CAD-integration means an even faster and more accurate way to create inspection documentation.

Program Requirements:

- Windows XP Professional SP2, Windows Vista Business, or Windows 7 Professional or higher (32 bit or 64 bit)
- Microsoft Excel 2003, 2007 or 2010
- InspectionXpert for SolidWorks® requires SolidWorks® 2009, 2010 or 2011
- InspectionXpert for AutoCAD® requires AutoCAD® or AutoCAD Mechanical® 2009, 2010 or 2011
- InspectionXpert for Pro/ENGINEER® requires Pro/ENGINEER® Wildfire 3, Wildfire 4 or Wildfire 5, or Creo 1
- InspectionXpert for CATIA® V5 requires CATIA V5 R18, R19 or R20
- InspectionXpert for Solid Edge® requires Solid Edge ST1, ST2 or ST3

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