

Industrial machinery

Wiegel Tool Works

Die maker seeks competitive advantage through business transformation

Product

NX

Business challenges

Speed development of dies and sheet metal parts without compromising quality

Address challenges of complex dies with innovative solutions

Improve accuracy and timeliness of response to bids

Keys to success

Invest in technology and process changes that dramatically expand the experienced die design team's ability to produce, be creative and address complexity

Results

Die design time already shrunk by one-third

Faster, more informative and more accurate quotes delivered to customers

The 3D advantages of NX and the automation achieved with NX Progressive Die Wizard let Wiegel Tool Works deliver quality and innovation with shorter lead times

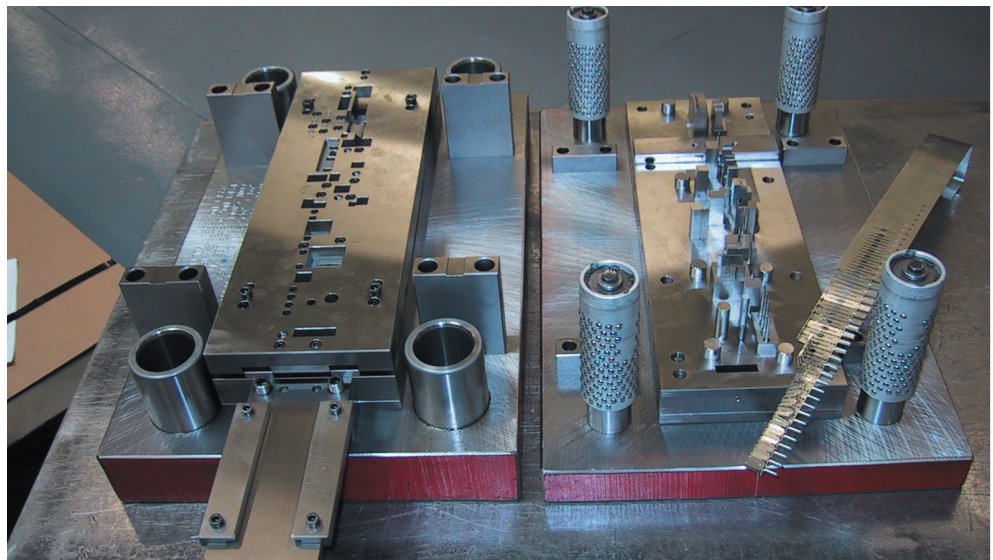
Wiegel Tool Works wanted to drive its "design and build" business to the same successful profitability levels as its "stamping" operations.

Technology isn't enough

Wiegel Tool Works (WTW) is guided by the philosophy of its President, Marty Wiegel, who exhorts his colleagues to ongoing improvement. This applies to the

company's products (progressive dies used to produce stamped metal parts) as well as its processes. Wiegel's philosophy has served the company well. Even during recent lean years, the company has prospered as a supplier to the automotive industry, with foreign and domestic customers. WTW also creates dies for parts used in telecommunications and electronics equipment. Customers appreciate WTW's efforts to exceed expectations and its ability to handle complex sheet metal formations.

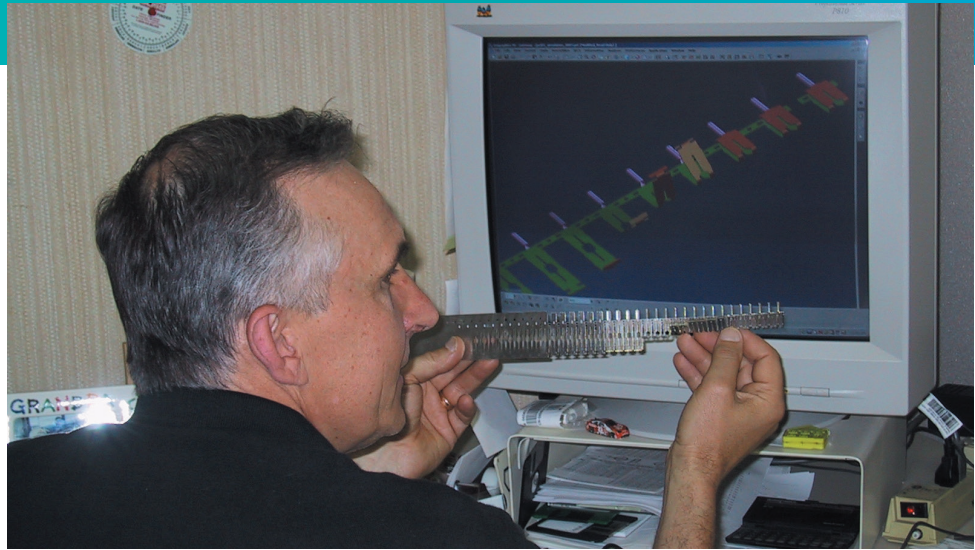
Constant improvement requires innovation – not change for the sake of change but new ways of working that make a difference for the customer. Several years ago, it became clear to WTW's engineering



Results *(continued)*

Improved material usage and more creative die solutions heighten customer satisfaction

More complex jobs won and profitability of “design and build” operation measurably increased



management that it was time to innovate in the area of die design. At the time, die designers were using 2D CAD to document the progressive dies that transformed flat strips of metal into formed parts. (Progressive dies are a series of stations that cut, coin, form and bend material into a desired shape. Each end product requires a unique set of dies.) Because the die makers were highly skilled they made the 2D approach work, accurately depicting complicated parts and multiple die stations in series of drawings. But 2D limited them in a number of ways.

For example, it was difficult in 2D to visualize interactions among various die components such as the base, inserts, standard parts and reliefs. A small fit or

clearance problem that might not be detected on a drawing could have a big effect on metal formation. Another problem with 2D was that numerous production-level drawings were required to communicate design intent to those who would build the die. “Some drawings needed as many as 120 details,” says Andrew Niewiara, engineering manager at Wiegel Tool Works. “In addition to being time-consuming to create, even very detailed drawings still left room for misinterpretation.” When that happened, either the die maker came to the engineering department to work out the problem, or the die went into production with the likelihood of later rework.

“Only NX really addressed the issue of speeding die design and truly addressing die complexity.”

Andrew Niewiara
Engineering Manager
Wiegel Tool Works



The most critical limitation of 2D, however, affected WTW and its philosophy of innovation and constant improvement. Because it took so long just to accurately convey design intent on drawings, there was little time left for exploring multiple die configurations or fine-tuning a workable design. WTW's customers wanted high-quality dies but they weren't willing to compromise on their delivery dates. In fact, while most were pushing for shorter and shorter lead times, many were also pushing the envelope in terms of die complexity.

Siemens offers the solution that addresses evolving market

After researching design software, Niewiara realized that upgrading from 2D to solid modeling would address many of the frustrations WTW had with its existing system. Solid models would permit far superior visualization of complex dies and make it possible to spot problems prior to production. Solid models could also be used to communicate with the shop floor, eliminating the need for so much detail in the drawings.

With many solid modelers to choose from, Niewiara continued his research, always keeping Marty Wiegel's push for innovation in mind. When he found NX™ software, he liked the 3D modeling functionality he saw. There was no doubt that this software could handle the complexity of WTW's dies and provide the improved visualization he was looking for. But what really sold him on this solution was when he realized that Siemens had also addressed the die designer's dilemma of how to achieve innovation within shorter cycle times. In an industry where metal requirements are typically known to be relatively simple and executable in terms

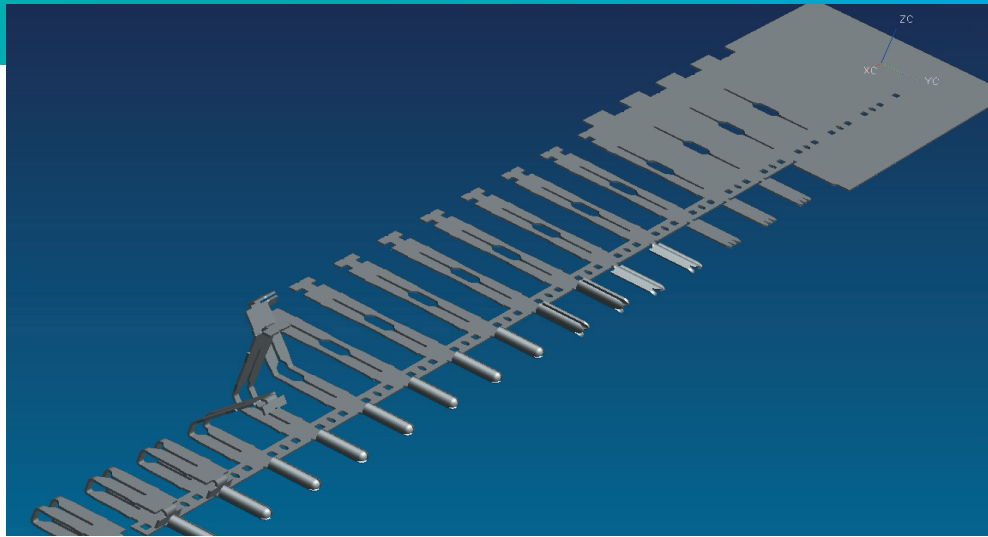
"Our purpose in looking at new advanced technology was to speed up die design without sacrificing quality. NX and NX Progressive Die Wizard gave us that plus the ability to be innovative with our die designs and readily address today's more complex die requirements."

Marty Wiegel
President
Wiegel Tool Works

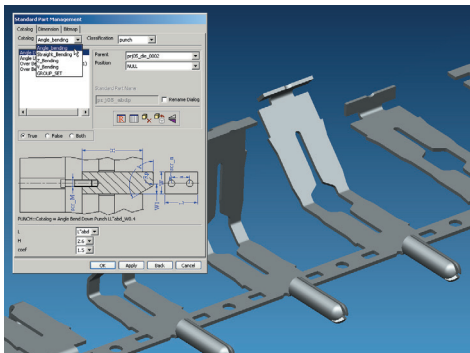
Progressive Die Wizard features enable WTW to fine-tune a strip layout to use the least material as possible.

of shape, more and more customers are wanting difficult delivery of complex contoured forms at competitive prices. There are, in fact, similarities to the consumer products industry, where most plastic-based products are now delivered in every conceivable freeform shape.

Siemens makes Wiegel's desire for innovation possible through an optional module called NX Progressive Die Wizard. This program takes 3D modeling a step further by incorporating specific knowledge-enabled functionality. Progressive Die Wizard encapsulates die making expert



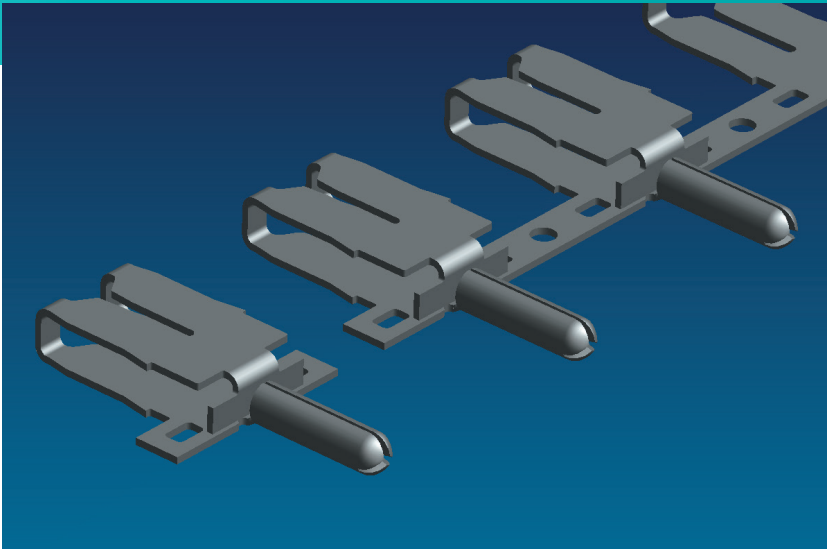
On their first use of NX and Progressive Die Wizard they reduced design time by 33 percent.



knowledge and best practices. It presents this intelligence via a user interface that guides die designers through the steps required to construct a progressive die. "Progressive Die Wizard is what convinced us to go with NX," says Niewiara. "Other programs could provide many of the benefits of solid modeling but only NX really addressed the issue of speeding die design and truly addressing die complexity."

"Our company's goal is to deliver on time, within the budget and with 100 percent quality. Software from Siemens supports this by using built-in intelligence and excellent visualization to speed die design. Quicker die design allows WTW to answer the industry's demand for faster, more complex tool design."

Andrew Niewiara
Engineering Manager
Wiegel Tool Works



Same steps but they go faster now

According to Niewiara, die designers still work through the same steps as previously, but using Progressive Die Wizard allows each step to happen faster. For example, instead of laboriously unfolding the customer's 3D part model manually, designers use feature recognition and feature rebuild tools in Progressive Die Wizard to turn the model into a metal design model in just minutes, regardless of the model's format or the design system it was built in.

Faster strips, improved material usage

Easy to use blank layout tools let designers efficiently lay out one or more parts on a strip, while minimizing material scrap. "Progressive Die Wizard embeds knowledge that formerly resided in the minds of senior die designers and uses this knowledge to automate much of the work of generating the strip," says Niewiara. For example, optimal material usage is important to many of WTW's customers, who use

expensive nonferrous materials and precious metal plating. In the past die designers performed calculations to determine the percentage of material being used and that which would end up as scrap. Progressive Die Wizard provides this information automatically. It also displays 3D strip layout simulations for immediate feedback about design and process changes. These features enable WTW to fine-tune a strip layout to use the least material as possible. And because the finished strip is a solid 3D model, designers can rotate it to inspect the problem areas. "And when we show the solid strip model to others, they can see exactly what we're talking about," adds Niewiara. "It's a lot more understandable than 2D."

Expedited die design

Progressive Die Wizard also automates much of the work of building the die. It includes customizable die base libraries, standard part libraries and insert group libraries to expedite the die structure design and ensure conformance to WTW's best practices. Changes, such as moving stations around to optimize function, are quickly implemented. And since every station is represented as a solid model, designers can predict how a die will perform in ways that weren't possible previously.

Although WTW's die designers were expert users of 2D CAD, the time they spent creating fully detailed drawings slowed them considerably. On their first use of NX and Progressive Die Wizard they reduced design time by 33 percent. Niewiara

The company has realized a business transformation that has resulted in happier customers, more business and improved profitability.

Solutions/Services

NX
NX Progressive Die Wizard
NX Machining
www.siemens.com/nx

Customer's primary business

Wiegel Tool Works specializes in progressive dies for formed sheet metal parts used in the automotive, telecommunications and electronics industries.
www.wiegeltoolworks.com

Customer location

Wood Dale, Illinois
United States

expects that eventually, as they become more familiar with the software and add WTW's own intelligence to Progressive Die Wizard, they will be producing dies in about half the time previously required.

Time for innovation

In addition to saving time, WTW die designers are now able to apply their experience and creativity to their work to an extent that wasn't possible in the past, resulting in more innovation. "Die building is very complex. You could have different versions of a die, from a very elaborate one to a simpler one that doesn't require as much detail," explains Niewiara. "With the 3D visualization we have now and the time we save through automation, we can produce the best dies we can envision. And the better the tooling, the higher the quality of the stamping, which is ultimately what our customers want." In other words, for companies that do business with WTW, the move to NX translates into excellent quality metal parts, optimal material usage and dies that serve them well through many, many cycles.

Direct link to manufacturing

WTW uses NX Machining to extend the benefits of the new design process into the realm of manufacturing. In the past, manufacturing engineers imported IGES versions of the 2D engineering drawings and used them to generate 3D data for toolpath creation. This was time-consuming. Also, it opened the door to error, either a misinterpretation of something on the drawing or the use of an outdated drawing. With NX Machining, the manufacturing engineer works directly off the 3D model. There is no possibility of misinterpretation since the user doesn't have to recreate the data. And there is no way to use an older version of a design.

Niewiara estimates that CNC programming time has been reduced by 25 percent with NX Machining.

Improved customer satisfaction, more business

For WTW, there is a clear bottom-line benefit to using the NX solutions: the ability to not only win business by responding faster to bids but also to handle complex jobs where vendors using 2D and even some advanced 3D technologies simply can't compete. Previously, die designers would look at a customer's drawing and envision how they might build the part, with the goal of determining the cost to WTW. "With NX, in a short time we can generate a nice strip and have a precise estimation of material usage," says Niewiara. "With 2D, some vendors are unable to determine whether they can even build the die, let alone quote it. Our costing and quoting is far more accurate, and we can give customers detailed information that we couldn't provide in the past." WTW's efforts to improve die design also have been highly successful. Overall, the company has realized a business transformation through the use of intelligent technology that has resulted in happier customers, more business and improved profitability for its "design and build" operation.



844-GEO-SUPT
support@geoplms.com
geoplms.com

Siemens PLM Software

Americas +1 314 264 8499
Europe +44 (0) 1276 413200
Asia-Pacific +852 2230 3308

www.siemens.com/plm

© 2017 Siemens Product Lifecycle Management Software Inc. Siemens and the Siemens logo are registered trademarks of Siemens AG. D-Cubed, Femap, Fibersim, Geolus, GO PLM, I-deas, JT, NX, Parasolid, Solid Edge, Syncrofit, Teamcenter and Tecnomatix are trademarks or registered trademarks of Siemens Product Lifecycle Management Software Inc. or its subsidiaries in the United States and in other countries. All other logos, trademarks, registered trademarks or service marks belong to their respective holders.

2749-A7 1/17 W