

The background of the top half of the page is a screenshot of a CAD software interface. It shows a 3D model of a mechanical assembly with various colored parts (purple, green, yellow, blue). The top of the screenshot displays a toolbar with numerous icons for functions like 'Sketch', 'Pull', 'Mask', 'Fill', 'Combine', 'Split Body', 'Split Face', 'File', 'Shell', 'Offset', 'Align', 'Tangent', 'Point', 'Mirror', 'Chamfer', 'Inch', and 'Assembly'. Below the toolbar, there are some text prompts like 'Double-click to select a chain of loops' and 'Triple-click to select a solid'.

REDUCING PRODUCTION TIME & COSTS USING CAD SOFTWARE

ATD Saves Automotive Manufacturer Time,
Costs Using CAD Software

When a manufacturer in the automotive industry sought help in creating a new part, the company turned to Automation Tool & Die for its experience and innovation. Using cutting-edge CAD software, ATD was able to identify a failure, quickly adjust the design and develop a new part — all while saving their client a significant amount of money.



Automation
Tool & Die



THE CLIENT

The automotive manufacturer, who had previously worked with ATD for product design, planned to create a new trailer hitch that was similar in style to other low alloy metal trailer hitches currently running through its presses. However, the part in question had a slightly more complex geometry, requiring a more in-depth look.



THE CHALLENGE

As is common in any industry, the automotive manufacturer planned to make the new trailer hitch in essentially the same way as its existing ones. However, even though the parts looked similar in appearance, ATD was able to identify some areas of concern with the new hitch — primarily that a crack would form in one particular place.

“After performing the simulation, we were able to tell them that if they went down the path they’ve used for these other tools they’ve built and are running, this part was going to fail,” said Robert Matis, ATD senior tooling engineer and estimator. “Right up front, in the very early stages of the laying out of this tool, we were able to get that in front of them — before steel was ordered, before die was set, before a lot of costs were accrued.”

He said it’s not uncommon for manufacturers to need input regarding part design.

“They either aren’t using the right people, the right process or the right software to prove out that their own designs aren’t going to work,” Matis said. “We actually take the time and make the investment to take their basic model and see how it’s going to form and show them that the part will fail.”



THE SOLUTION

ATD's CAD software offers the ability to work from a native file, providing a highly accurate part profile that requires as little editing as possible. This reduces the chance for potential errors, increases accuracy, lowers costs and shortens time to market for customer parts.

After using computer-aided simulation, ATD was able to prove the failure to the automotive manufacturer without actually making the part — saving the company hundreds of thousands of dollars and a significant amount of time.

“We were able to make these compensations in the die by adding extra raw material and then trimming it away after it was formed, cutting away where the crack actually occurred so that the crack was never in the finished component,” Matis said. “Had we not gone to those design lengths, the entire tool may have been scrapped.”

Due to its design, the solution of applying additional material did not add any costs to the piece price.

“We were able to put that extra material in a dead area — the scrap area — of the part itself, so there was no additional cost they would have to accrue when they went to make this part,” Matis said. “We were able to achieve a part that did not crack for them, and they didn't have to go back to their customer and raise any prices or eat any added costs.”

This was possible because ATD was able to use CAD software to change a tool that wouldn't function into a tool that would function by adding another station — before it was machined, during the least expensive part of the process.





THE RESULTS

In the end, ATD enabled the automotive manufacturer to create a new trailer hitch that was proven to succeed and came with no added costs. CAD software and simulations helped ATD design the part and narrow its tolerances to ensure perfect operation — all during the design process, prior to development.

“The software heads off any potential issues where we’d have to redesign the parts, which takes time and costs money,” Matis said. “If we had not done the stress analysis in the forming simulation and brought it to their attention, the tool may never have worked properly and would have required a rebuild.”

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