

NOVEL PLANETARY EXTRUSION CUTTER REDUCES MANUFACTURING TIME AND IMPROVES QUALITY



CUSTOMER SITUATION

A midsize medical device company had previously engaged Vention to help design, develop, and manufacture polymer components to replace metal components in a surgical device. Given this successful relationship, the customer chose Vention to manufacture a key component of this device, an extruded polycarbonate tube in 2 sizes.

When cut by standard methods, the tubes were left with burrs that required time-consuming, off-line finishing operations, including internal and external deburring with washing and drying. The cuts were also inconsistent and often required additional work to ensure they were parallel. The customer wanted to avoid the increased costs associated with these additional operations.



VENTION SOLUTION

The Vention team's goal was to devise a cutting solution that would create clean and parallel cuts, allowing the customer to avoid additional manufacturing costs. First, the team worked with an equipment manufacturer to create an in-line cutter that held the tube rigid while the cutter rotated around it, like a lathe. While this method created a clean cut, it was time consuming and created a great deal of debris.

After many iterations, the team developed a planetary cutter that cut the tube from the outside in, moving with the product in its linear path out of the extruder. This solution was faster and took off much less material than the previous version.



OUTCOME

The new planetary cutter created a clean, parallel cut that required no secondary operations. This reduced manufacturing time and allowed the customer to avoid a 60% increase in manufacturing costs. The automation also increased quality by bringing a greater level of repeatability to the process.

In addition, the cutter had the ability to achieve end criteria that were previously only available with injection molding. This means that some components that are currently injection molded could be extruded at a fraction of the cost, saving the additional costs of tool development and maintenance.