



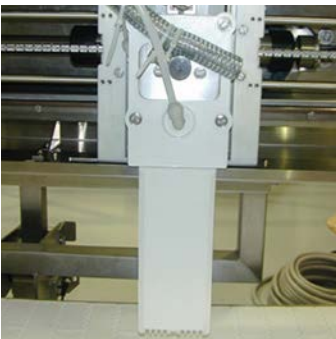
# Probing Reality

FDM PRODUCES “IMPOSSIBLE” PART FOR FOOD PACKAGING CUSTOMER

*“It would have been impossible to machine an internal cavity in a part this long and narrow. With the Fortus 3D Printer it’s perfect every time.”*

*– Norm Buggele, Executive Vice President  
and Chief Operating Officer, M-Tek*

## CASE STUDY



Redesigned gas probe on Corr-vac Mark III modified atmosphere packaging system.

M-Tek Inc., based in Elgin, Illinois, is a leading manufacturer of modified atmosphere packaging systems used for fresh poultry, other meats, seafood, cheese and produce. These systems remove the oxygen from the package and replace it with nitrogen or carbon dioxide in order to inhibit the growth of bacteria, reduce the risk of contamination, and improve the shelf life of products.

The process is built around a groove-shaped probe that is inserted into packages to remove the interior gas and replace it with inert gas. However, the plastic packaging is often drawn into the interior of the groove, which chokes off the probe and increases the time required to complete the exchange process. This is a condition referred to as “valve-off”.

M-Tek engineers solved this problem by including an internal void in the probe's design, but conventional CNC machining methods could not maintain the required tight manufacturing tolerances required for such a long, thin part.

## Solving the Impossible

M-Tek originally purchased a Fortus® 3D Production System from Stratasys® to build conceptual models and functional prototypes of machine components and assemblies with FDM® technology. But M-Tek's engineers discovered that FDM is also terrific for creating parts with intricate design features that are not possible with conventional CNC milling methods. With FDM, engineers were able to design a new probe that eliminated the valve-off problem.

## Engineering Results

M-Tek now uses probes made from polycarbonate that are created in-house on its Stratasys 3D printer. The redesigned probes makes it possible to draw the vacuum and inject inert gas into the package in 20% less time than was required by M-Tek's previous design, or by competitors' current designs.

Not only does the 3D printed tool eliminate the valve-off problem, but it can be produced in one day rather than the four days required previously — a 75% reduction in time — as well as a 56% reduction in cost. What's more, since injection time was the limiting factor on the cycle time of the packaging process, M-Tek's 3D printed probe has increased throughput by 20%.

"It would have been impossible to machine an internal cavity in a part this long and narrow," said Norm Buggele, Executive Vice President and Chief Operating Officer for M-Tek. "With the Fortus 3D Printer it's perfect every time."



A production Corr-vac Mark III packaging system with FDM components.

How does FDM compare to traditional methods for M-Tek?

| METHOD  | COST           | TIME            | THROUGH-PUT  |
|---------|----------------|-----------------|--------------|
| CNC     | \$500          | 4 days          | 100%         |
| FDM     | \$220          | 1 day           | 120%         |
| Savings | \$280<br>(56%) | 3 days<br>(75%) | 20% increase |

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