

FDM Gives Nova Tech Engineering Virtually Limitless Design Freedom at a Fraction of the Time and Cost

“FDM is the perfect fit for us. It allows us to easily change designs at any stage in the game without being penalized by cost or delays.”

— Jacob Rooney, Mechanical Designer, Nova Tech Engineering

SITUATION

Nova Tech Engineering (NTE), based in Willmar, Minnesota, produces automated machinery for use by poultry hatcheries worldwide. A key part of the company’s success has been its ability to customize its machines to manage numerous types, breeds and sizes of birds. However, as the business grew, the cost of machining numerous variations became increasingly inefficient, costly and growth-inhibiting.

“We were spending a lot of time and money machining low-volume components which was detrimental to our overall operational efficiency,” mechanical designer Jacob Rooney reflects. It is with these issues in mind that NTE turned to Fused Deposition Modeling™ (FDM®).

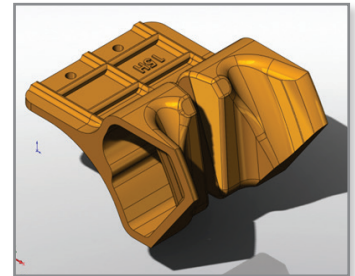
SOLUTION

FDM is an additive manufacturing process that builds thermoplastic parts layer-by-layer from computer-aided design (CAD) files. Using FDM, businesses can create finished parts and products at a fraction of the time and cost associated with traditional manufacturing. This allows manufacturers to immediately realize improvements in productivity, efficiency and quality. Plus, it gives them the freedom to quickly and cost-effectively redesign parts and products as needed. Finally, FDM allows businesses like NTE to create custom or low-volume products for specialty customers, as well as manage products in different stages of their life cycles.

How does FDM compare to traditional methods for Nova Tech?

Method	Production Time	Cost
Injection Molding	4 weeks	\$44,175
FDM	3 days	\$1,490
SAVINGS	25 days (89%)	\$42,685 (97%)

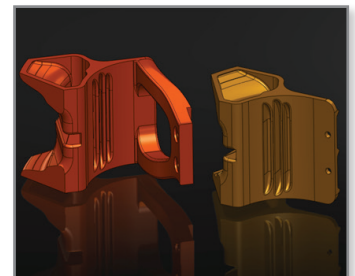
For first production lot of ten 12-piece carrier assemblies.



CAD model of component for Nova Tech Engineering (NTE) that includes features which would be costly and time consuming to mold or machine.



Numerous variations of this FDM part are needed by NTE’s customers for use in their daily operations.



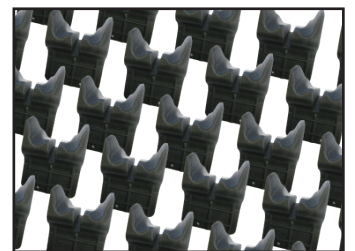
Design alternatives made possible with FDM include part consolidation (left).

RESULTS

“We bought our first two Stratasys® FDM printers mainly for prototyping. We later purchased another for pre-production and manufacturing,” said Rooney. “Today we use these printers for various applications such as rapid prototyping, creating casting molds, thermoforming, jigs and fixtures, and manufacturing finished parts.”

Another primary advantage for NTE is the design freedom that FDM Technology™ affords them.

“FDM is the perfect fit for us,” added Rooney. “It allows us to easily change designs to fit the parts to the equipment and the bird variety at any stage without being penalized by cost or delays,” says Rooney.



Production lot of NTE end-use parts.

In the past, parts were injection molded, CNC machined or RTV molded. With FDM, a number of previously troublesome parts – plus those that were impossible to injection mold — can now be produced.

Today, thanks to FDM Technology, NTE can create the many specialized parts their customers require but at a fraction of the time and cost. One example is the time and money it took to create ten 12-piece carrier assemblies. Prior to FDM, these took four weeks to produce at a cost of nearly \$45,000. Now, they take three days to produce at a cost of \$1,500 — savings of 89% and 97% respectively.

Finally, Rooney notes other advantages like digital inventory of the CAD designs, reduced outsourcing, just-in-time manufacturing, eliminated tooling cost, and the ability to combine components.

“Stratasys machines allow us to be very flexible in meeting industry needs,” Rooney said. “We can make changes very quickly to the geometry of our products to meet the greatly varying needs of our customers. Injection molding was just too costly because of the number of unique designs needed.”

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