

ECOINVENT CUTS PART PRODUCTION COSTS BY 62%



Fortus 3D Production Systems Help Industrial Equipment Company Cut Costs on Low-Volume Production

“[With FDM] we can make quick, durable and inexpensive prototype parts in-house, which gives our engineers the freedom to test new designs uninhibited by technological restrictions.”

— Oleg Muzylev,
Head of Engineering, Ecoinvent.

Ecoinvent's desktop hydraulic laboratory press

Based in Russia, closed joint stock company, Ecoinvent has been developing, producing and supplying training equipment to industrial vocational schools and institutions since 1997. The company is a permanent member of the Intergovernmental Association of the developers and producers of educational equipment (MARPUT) and provides industrial products and machinery to 300 educational institutions throughout Russia.

Its products are used for a wide array of purposes, including machine building, instrument making, electrical engineering, electronics, pneumatics, hydraulics, and robotics. They range from simple designs such as stamps for metal working to complex equipment like Ecoinvent's centrifugal pumps testing system used in plumbing. Ecoinvent also designs and produces mobile robotic devices which can be used for site inspections, wrecking, reconnaissance missions and mine clearance.

Small Batch Requirements

As Ecoinvent caters to a niche market, it produces its machines and parts in small quantities. In most cases, these will be produced as a one-off or in small batches for a single school or small group of training or educational facilities. With such low production volumes, outsourcing the manufacturing of its parts to machining centres was proving too costly. These centres use more traditional production methods – such as injection moulding and CNC milling – which are aimed at higher volume manufacturing and were therefore not efficient and cost effective enough to meet Ecoinvent's small-batch requirements.

With a view to bringing production in-house, Ecoinvent conducted research into rapid prototyping and manufacturing methods, and identified Fused Deposition Modelling (FDM) from Stratasys as the best solution for producing its diverse range of products and parts. FDM offered the best combination of functionality and cost efficiency to meet Ecoinvent's unique requirements. As a result, the company purchased a Fortus 3D Production System from Stratasys' Russian reseller, SOLVER Engineering & Consulting.

“We chose Stratasys because its FDM technology produces more robust parts and prototypes,” said Oleg Muzylev, head of engineering at Ecoinvent. “Stratasys is a trusted brand and the leading manufacturer in additive manufacturing technology. The 400mc machine provides the functionality we need and is more cost effective for our low volume production runs.”

Cost Comparison

The Fortus 400mc machine has saved Ecoinvent as much as 62% in production costs for its machine parts. For example, by using the Fortus machine to produce the frame to house the oil level indicator on its compact desktop hydraulic laboratory press, Ecoinvent saved more than \$100. The cost to produce the part on a milling machine was nearly \$130, while building it on the Fortus machine reduced the cost to only \$25.

Added Benefits

Ecoinvent has also experienced a number of additional benefits from using the Fortus 3D Production System that it had not initially expected. Its wide range of build materials allows Ecoinvent to use the machine to not only build prototypes for light load-bearing end-use parts but also, in some cases, to replace metal parts with plastic ones in heavy load-bearing units. Stratasys' use of high-grade ABS-plastic allows Ecoinvent to test more precisely how a simulated part will work before the start of serial production.

Using the machine has also helped Ecoinvent to remove many barriers to designer innovation. "Before we had the Stratasys machine it was nearly impossible to fulfill our designer's ideas because our technological capabilities could not keep up," said Muzylev. "We can make quick, durable and inexpensive prototype parts in-house, which gives our engineers the freedom to test new designs uninhibited by technological restrictions."

The Fortus 3D Production System is also capable of being run unmanned and can therefore operate 24 hours a day, seven days a week. One machine is currently fulfilling all of Ecoinvent's production requirements. "Were Ecoinvent to grow in the future it would certainly look to increase its Fortus range and capabilities according to our needs," concluded Muzylev.



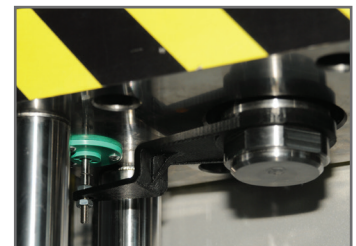
The frame to house the oil level indicator on the hydraulic laboratory press was produced with ABS plastic on a Fortus machine.



Top: Painted FDM oil level indicator frame. Bottom: FDM oil level indicator before painting.



This drive piece was produced on a Fortus machine to be installed directly into a press system as an end-use part.



The ABS drive piece installed in the press system.

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