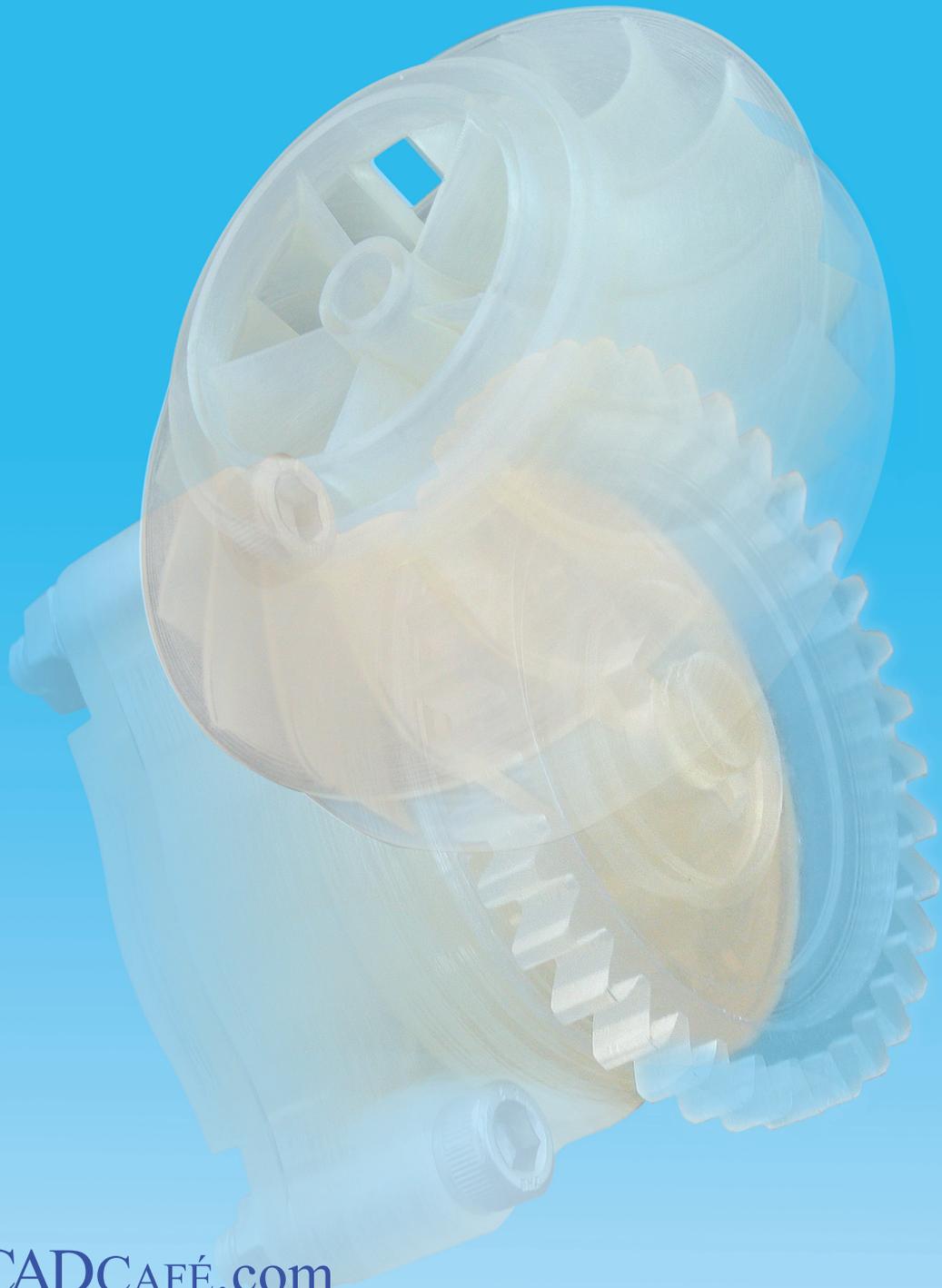


Solido SD300Pro

Desktop 3D Printer | Capable and Affordable



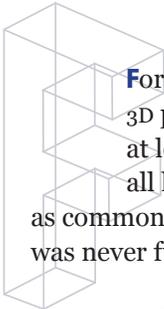
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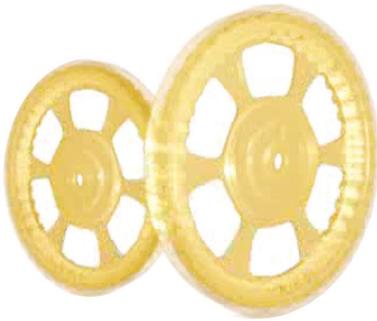
Solido revolutionizes 3D desktop printing by creating a new standard for price, performance, and ease of use

By Jeffrey Rowe



For the past several years, we have heard that a 3D printer on everyone's desk was imminent, or at least, just around the corner. However, as we all know, that promise of a 3D printer becoming as commonplace as multi-function paper printers was never fulfilled, until now.

I first saw the Solido SD300Pro 3D printer at the PTC/USER conference in June. After that initial exposure, I really wanted to see the machine up close and test its capabilities.



While most "low cost" 3D printers have been relegated to being used for rapid prototyping, this machine has some real possibilities for low-volume manufacturing, as well. The unit itself is just slightly larger than a desktop document printer, making the machine portable and easy to move around.

The Solido SD300Pro builds parts by laminating and cutting sheets of engineered plastic from a spool using a process known as laminated object manufacturing (LOM). In the past, LOM machines have received negative comments from users because removing unwanted material could be painful/difficult, and the lamination process was unable to produce thin walls and high levels of part detail.

With my experience with the Solido SD300Pro, I can say it overcomes the issues that were formerly concerns and obstacles to the technology's acceptance. First, multiple parts can be nested to run simultaneously, thus minimizing material waste. To its credit, too, Solido is addressing the waste material concern in a unique way with an innovative recycling program. Scheduled to start sometime in the fourth quarter 2009, each Solido SD300Pro 3D consumable

kit will ship with a pre-paid pouch for sending excess material and consumables containers for recycling. This is a win-win solution for customers who will receive "green points," for credit on their next order of consumables; and is a true market differentiator for Solido in addressing the increasing awareness and importance of "green" solutions.

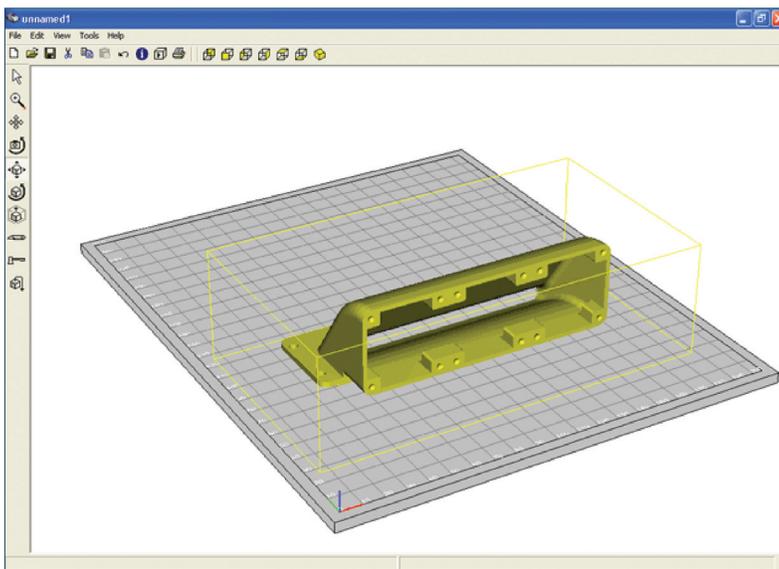
Also, there is no toxicity associated with the SD300Pro's build material. This is a contrast to some competitor's build and/or support material that can have toxic properties and must be carefully handled and disposed of. Second, removing excess material can be done quite quickly with a simple pair of supplied forceps and peeling it away. Third, I produced parts with thin walls (although the company recommends wall thickness built along the Z axis not be less than 1mm), intricate detail, and even undercuts, so I was satisfied that former objections to the LOM process were definitely overcome with the Solido SD300Pro.

Beyond rapid prototyping, some of the customers currently using Solido 3D printers for manufacturing applications include Siemens; Iscar, an Israeli precision metalworking tool manufacture; ABB (Italy), a manufacturer of robots and electronics; and Dainese, an Italian manufacturer of protective motorcycle gear.



Setup and Software Overview

Setting up the SD300Pro is very simple and straightforward. Easy-to-follow instructions are included with the unit, so you should be up and running in just a few minutes. Load the consumables, install the software (called SDview) on your computer, and connect the computer to the SD300Pro with the supplied USB cable and you're ready to produce your first part. The machine has LCD display for menu commands, LED status indicators, and emits status beeper codes, so you always know its status and state of readiness.



Creating Parts

The SDview software creates models with two outer shells – an outer one called the Channel and one actually touching the model called the Cocoon. SDview cuts and glues the residual material of the channel in a way that lets it be pulled out in a continuous spiral peel. After the channel is cleared, the model surrounded by the cocoon can be pushed out. The cocoon completely surrounds the outer surface of the model and fills all the cavities. The cocoon is removed by finding the start of the peel and using the forceps to remove the peel in a zig-zag manner using the z folds that were created with SDview. Finally, the SDview software creates peeling cuts that are necessary for removing excess post-build residual material with the forceps. Peeling cuts are applied as the final stage in preparing the model for printing.

SDview is the front-end application that prepares, edits, and manipulates 3D CAD models and drives the SD300Pro. Model creation actually begins when you export 3D model files from virtually any CAD or animation source in the STL format. SDview is also able to make corrections to STL files that may not be optimized for 3D printing. There are a couple things to remember when using SDview that will make your work easier. First, you can save build time and material by splitting large models into smaller sections, arranging the sections to optimize the build space, and then gluing the separate sections together (with cyanoacrylate – Super Glue) after they are removed from the machine and post-processed. Second, your model block must contain peeling cuts that allow for easy removal of excess material – the only post-processing required of parts produced by the SD300Pro.

Once you're done prepping the model with SDview, you're now ready to send the data to the SD300Pro and build a 3D model. You can click the Build Model button in the toolbar, select Build model from the File menu, or just press Cntrl + B. Next, build parameters will be displayed, such as the number of layers needed to print the part, time needed to build the part, etc. Throughout the build process, the status of the build updates continually until a message reading "Model Complete" is displayed.

Select Lift Model and the model block raises off the build table and can be removed from the machine. Once the model is removed, it is time to do some post-processing, which goes quickly by peeling using forceps. Next, push the model encased by the cocoon by inverting the block and pressing the underside with both hands. Remove the residual material surrounding the model by pulling the z folds. The 3D model is revealed and is now ready to be drilled, filed, sanded, or painted for final finishing.



Final Thoughts

Overall, I was very impressed with the Solido SD300Pro 3D printer for a number of reasons. Some of the benefits of the machine include simplicity/ease of use, low initial cost, low total cost of ownership, quality and integrity of parts (transparent, rigid, and durable), the ability to produce flexible “living hinges,” size and portability of the machine, and virtually no maintenance required except to replace consumables.



The Solido SD300Pro printer will hit the market at under \$10,000 in production quantities sometime in Q3 2009. As a matter of fact, the SD300PRO Pro printer will retail for \$9,950 (US).

The start-up kit contains the software for running the 3D printer and a high-quality set of forceps for removing excess material costs (\$685). A consumables kit consisting of an 8kg roll of engineered plastic laminating material (it is available in five different colors), glue and anti-glue cartridges, anti-glue pens costs \$360 (US). Other than replacing the consumables, the SD300Pro requires virtually no maintenance, which is a welcome change

from some of the other 3D printers I've seen and talked to users about. I consider the Solido SD300Pro the first step in bringing affordable and capable 3D printing technology to the masses. Actually, a very big step. Today, the professional design office environment; tomorrow, the home. The Solido SD300PRO PRO looks like it will finally fulfill the promise that other companies have made in the past with a truly affordable 3D printer with some excellent capabilities and potential.

Don't let the price of the Solido SD300Pro fool you into thinking that this is anything less than a full-featured 3D printer. As a matter of fact, I was so impressed with the Solido SD300Pro, that it is one of the very few products I have reviewed that I would consider purchasing.

By Jeffrey Rowe

Jeffrey Rowe has more than 30 years experience in product design, engineering, and manufacturing. He has authored and co-authored technical books, and has written literally thousands of technical pieces that include articles, white papers, analysis reports, online help systems, and other educational material in an ever-evolving variety of formats.



More Information/Contact
www.solido3d.com

Printer Specifications

Technology	3D printing - Plastic Sheet Lamination; Laminated object manufacturing (LOM)
Build Material	Engineered Plastic (PVC); 8kg roll; 168 µ thick
Material color	Amber transparent, Red, Blue, Black, and Cream
Layer thickness (Resolution)	0.168 mm , 0.0066" (Z)
Maximum model size	160 (6.3") X 210 (8.3") X 135 (5.3) mm (XYZ) (in.)
Plotting accuracy*	+/- 0.0039 in. (XY)
Dimensions	W465 (18.3") x L770 (30.3") x H420 (16.5") mm (in)
Weight without cartridge and roll	36 Kg (79.3 lb)
Weight with cartridge and roll	45 Kg (99.2 lb)
Power consumption	620W (maximum power, in process) 100-250VAC, 50/60 Hz.
Internal Operating temperature	35°C (95F)
Sound level	Max 65 db(A)
Max ambient humidity	80% Relative Humidity
Input File Formats Supported	STL
Output File Supported	SDM (Proprietary)
Interface	USB

*Accuracy and repeatability of every machine is tested and verified before shipping.