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# Revolutionary Blood Recycling Machine Developed Using Stratasys 3D Printing Undergoes Successful Patient Trials

**New Hemosep device enables patient to undergo open-heart surgery while upholding religious beliefs**

**UK-based company reduces prototyping costs by 96% using Stratasys 3D printed parts**

MINNEAPOLIS and REHOVOT, Israel, April 14, 2014 /PRNewswire/ -- [Stratasys Ltd.](#) (Nasdaq: SSYS), a leading global provider of 3D printing and additive manufacturing solutions, today announced that [Brightwake Ltd.](#), has developed a revolutionary blood recycling machine, called the Hemosep, using Stratasys' [Dimension 1200es](#) 3D Printer.



The Hemosep recovers blood spilled during open heart and major trauma surgery, concentrating the blood cells ready for transfusion back into the patient. This process, known as autotransfusion, reduces the volume of donor blood required and the problems associated with transfusion reaction. The prototype device features a number of Stratasys 3D printed parts, including the main filtration and cooling systems, enabling the Brightwake team to functionally test the system in its intended environment, before the final device is produced from metal. The device has been awarded the CE mark and is attracting global interest from distributors and healthcare providers.

"The Hemosep consists of a bag that uses chemical sponge technology and a mechanical agitator to concentrate blood sucked from a surgical site or drained from a heart-lung machine after surgery," says Steve Cotton, Brightwake's Director of Research and

Development. "The cells are then returned to the patient via blood transfusion. In a climate of blood shortage, this recycling methodology has the potential to be a game-changer within the medical industry, saving the National Health Service millions."

### **Successful UK Trial Upholds Patient's Religious Beliefs**

Successful clinical trials of over 100 open-heart surgery operations in Turkey confirmed the Hemosep's ability to significantly reduce the need for blood transfusions, and further trials are now continuing in the UK.

One of the first patients to benefit from the new Hemosep device is 50-year-old UK heart patient Julie Penoyer, who, as a Jehovah's Witness, requested not to receive donated blood products. Because the device captures, cleans and puts back lost blood lost during an operation, Hemosep was the perfect solution for her.

The success of Hemosep's use during Mrs. Penoyer's operation presents new possibilities for patients across the globe, whose religious beliefs mean that receiving donated blood is not an option.

### **Prototyping Costs Slashed by 96% and Lead-Times Eliminated Thanks to In-house Production**

For Brightwake, with medical device production demanding extremely accurate parts, capable of enduring the stress of functional and safety tests, the company's use of 3D printing has presented significant cost- and time-saving benefits.

"Previously we had to outsource the production of these parts which took around three weeks per part," explains Cotton. "Now we're 3D printing superior strength parts overnight, cutting our prototyping costs by 96% and saving more than £1,000 for each 3D printed model.

"3D printing has not only enabled us to cut our own costs, it has also been crucial in actually getting a functional device to clinical trials," he adds. "The ability to 3D print parts that look, feel and perform like the final product, on-the-fly, is the future of medical device manufacturing."

Originating in Nottingham's traditional textiles industry, Brightwake is a family-run creative development, engineering, production and research company specializing in innovative manufacturing solutions. With nearly 35 years' experience, Brightwake has now extended its expertise into the medical field, starting with the production of wound dressing for the UK's National Health Service (NHS). Armed with its Stratasys' [Dimension 1200es](#) 3D Printer from UK reseller Stanford Marsh, the company now has the in-house capability to extend its medical device manufacturing program beyond the Hemosep.

"In the fast-paced, competitive medical device industry, we are seeing more and more of our customers use 3D printing to bring their products to market more efficiently and cost-effectively," reports Andy Middleton, Senior Vice President and General Manager EMEA. "The ability to turn ideas into functional products quickly is something that in the long-term we believe will improve the quality of care, and in some cases, save lives."

**Stratasys Ltd.** (Nasdaq: SSYS), headquartered in Minneapolis, Minn. and Rehovot, Israel,

is a leading global provider of 3D printing and additive manufacturing solutions. The company's patented FDM<sup>®</sup> and PolyJet<sup>™</sup> 3D Printing technologies produce prototypes and manufactured goods directly from 3D CAD files or other 3D content. Systems include 3D printers for idea development, prototyping and direct digital manufacturing. Stratasys subsidiaries include MakerBot and Solidscape, and the company operates the RedEye digital-manufacturing service. Stratasys has more than 1,800 employees, holds over 550 granted or pending additive manufacturing patents globally, and has received more than 20 awards for its technology and leadership. Online at: [www.stratasys.com](http://www.stratasys.com) or

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