MEDICAL DEVICES

stratasys

3D PRINTING FOR MEDICAL

SHAPING NEXT GENERATION MEDICAL DEVICES

Researchers at The Jacobs Institute design and test next-generation medical devices using Stratasys 3D Printing of real patient anatomy.

THE **3D PRINTING SOLUTIONS** COMPANY

MEDICAL DEVICES

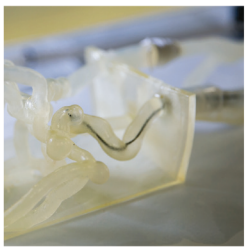
From Prototypes to Production

3D PRINTING FOR THE NEXT GENERATION OF MEDICAL DEVICES

For more than 25 years, Stratasys has been the trusted leader in the 3D printing industry with the largest installed base of 3D printers in the world. Our solutions help empower medical innovation that save lives; expand our knowledge of human anatomy; and support medical progress that enhances device testing and development.

> “3D printing gives us the real, uncanny ability to design a product, design a treatment and design an approach.

Michael Springer, The Jacobs Institute
DIRECTOR OF OPERATIONS AND ENTREPRENEURSHIP



DRIVING MEDICAL INNOVATION

Our 3D printing solutions give researchers and medical device companies the tools to accelerate progress. Our rapid prototyping solutions provide organizations the power to quickly realize new products in near real-time, helping take an idea from concept to production. Additionally, Stratasys systems enable medical device manufacturers to gather feedback earlier in the development process by creating clinically relevant and anatomically accurate models for validation and verification testing.

USING MODELS FOR DEVICE ADOPTION

Stratasys 3D Printing solutions increase physician confidence and adoption of medical devices and procedures by creating realistic demonstrations that can be used anywhere without the limitations of controlled facilities for cadavers or animal testing. Our solutions help physicians create clinically relevant demo kits and sales aids for world-class training.

PERSONALIZING PATIENT CARE

Stratasys provides medical device manufacturers with proven technology to create patient-specific models that enable personalized care, reducing surgical risks, eliminating failures and improving success rates.

IMPROVING MANUFACTURING EFFICIENCIES

Stratasys helps medical device companies reduce the cost and time to develop tools and fixtures for research and manufacturing. Our 3D printing solutions provide design freedom to produce complex shapes and eliminate tooling for parts that don't require injection molding, while maintaining high performance.

EXPERT UNDERSTANDING OF THE MEDICAL MARKET

Stratasys has invested significant resources into developing technology specific to the medical marketplace and has the expertise necessary to stay on top of the industry's needs. When you partner with Stratasys, you benefit from the knowledge, accomplishments, clinical training and global experience of our dedicated medical team. Combined with our history of transformative 3D printing technology, Stratasys helps to ensure our solutions are the right fit for your specific business challenges and applications.

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THE POWER OF 3D PRINTING

APPLICATIONS	KEY BENEFIT	STRATASYS SOLUTION	DELIVERING VALUE
Rapid Prototyping/ Prototype Tooling	Accelerate time to verification and validiation	FDM, PolyJet, and Stratasys Direct Manufacturing – Biocompatible materials – Multi-material and multi-color – High performance Thermoplastics – Injection molding that can support high temperatures	– Complete more design revisions in less time – Eliminate failures faster through rapid iteration – Create functional parts for testing – Communicate ideas and gain physician feedback – Validate designs quickly, accurately and cost-effectively with 3D printed injection molds before investing in tooling
Clinically Relevant Models for Device Validation and Verification	Improve device design, accelerate development and save costs by testing on models that mimic the target pathology and anatomy	PolyJet – Multi-material and multi-color – Rubber-like materials to match flexible tissue – Harder materials to match bone/ calcification	– Use real patient anatomy from early design parameters to statistical validation – Customize models to assess performance in a full range of clinical cases and pathologies – Conduct testing in any environment; no need for biohazard controls – Store models digitally, and print them when and where needed
Manufacturing End-Use Parts, Jigs and Fixtures	Cost-effective production of low-volume, high-value parts and fit-for-purpose tools, jigs and fixtures	FDM, PolyJet, and Stratasys Direct Manufacturing – Biocompatible materials – Stratasys Direct Manufacturing service offering nine technologies	– Cost-effectively manufacture parts for clinical trials and pilot commercial launches – Eliminate expensive tooling for parts that don't need to be injection molded – Move quickly from prototype to final product – Produce organic, complex geometries and shapes that can't be manufactured any other way – Consolidate multi-piece assemblies
Physician Training, Education and Sales Demonstration Models	Drive technology adoption by increasing physician confidence and interest in new technology through clinically accurate models	PolyJet – Multi-material, multi-color – Rubber-like materials to match flexible tissue – Harder materials to match bone/ calcification	– Develop models from real human anatomy – Train and demonstrate in any environment – Simulate real tissue properties – Customize models to showcase device performance – Produce low volumes without costly tooling
Patient-Specific Pre-Planning Models, Molds and Cutting Guides	Improve clinical outcomes, increase efficiency and reduce waste using models based on real patient anatomy	PolyJet – Multi-material, multi-color – Rubber-like materials to match flexible tissue – Harder materials to match bone/ calcification	– Create realistic, accurate and versatile anatomical models – Replicate a range of anatomical structures from bone to skin to heart tissue – Clear materials enhance visualization and allow physicians to see all structures – Use color to embed distinct visible markers
Prosthetics/ Personalized Orthotics	Improve fit, form, function and affordability	FDM – Strong, durable materials – Biocompatible materials	– Manufacture completely personalized devices, especially sockets, to improve quality of life and clinical outcomes – Leverage open-source philanthropy, digital design education and bionics design integrated into a worldwide ecosystem

For more information on how Stratasys 3D Printing solutions can empower researchers and support medical device progress, contact:

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