

## Human Factors & Ergonomics

***With predictive analysis and human factors testing under the same roof, our firm is rethinking user-centered design.***

HELP Design Co., the product development team at Stress Engineering Services, Inc. (SES) goes beyond the conventional approach to human factors by harnessing the analytical and testing horsepower of SES to generate product-specific anthropometric data to both guide formative usability studies and develop the specifications against which summative studies are measured. By utilizing SES's testing and analytical capabilities, HELP can simulate the effect of conceptual devices on human tissue before even a prototype is made. And with a prototype or competitive device in hand and access to SES's 30,000 sq. ft. testing facility, HELP can instrument devices and users to identify the real-time forces they experience while using a device. Our team has also developed several encoder-equipped prototypes for use with surgical simulators or to test the performance of prototype devices against existing competitors, on simulated tissue.



A computer simulation used to determine the effect of a heated probe on human tissue.

The US Food & Drug Administration's regulations and guidance regarding medical device development are in place to assure the safety and efficacy of new devices. With this enhanced focus, many design firms have found new outlets for their voice of customer research practices. These qualitative practices contribute effectively to forming high level design requirements, but they often fall short of providing the actionable metrics from which detailed product specifications can be created.

HELP Design Co. couples voice-of-customer and observational research methodologies with computer simulation and testing to develop actionable human factors metrics for both formative and summative usability studies. These metrics also provide the foundation of product-specific anthropometric data that drives the sizing calculations that yield a safe and usable device.



Our team uses observational research methods, including contextual inquiry and storyboarding, to illustrate surgical procedures, such as this gastric bypass, to look for opportunities to enhance device safety.

With these unique testing and analysis capabilities and our design-by-analysis approach to product development, our design team develops product-specific anthropometric data to drive the size, shape and force limitations of a new device and balances those human factors constraints against the technical, cost and clinical requirements necessary to create a successful device.

If your team is focused on the delivery of a safe, reliable and efficacious new medical device on an aggressive schedule, our unique approach to human factors and usability will get you there.



Unlike a traditional, styling-driven design firm, HELP Design Co., the product design & development arm of Stress Engineering Services, has the technical capabilities to anticipate and accommodate design constraints from the outset to deliver conceptual design that works.

Far from limiting innovation, informing the creative design process with technical requirements at the conceptual stage enhances creative output. Why? Because ignoring design constraints not only wastes time and money, it provides no criteria by which to judge the success of ideas. HELP uses a unique brainstorming and ideation process to generate innovative concepts informed and enhanced by its technical expertise, not limited by it.

Even in the earliest stages of a product's development, our design process integrates comprehensive technical expertise with design savvy to produce innovative concepts that fuse form, function and meaning. We understand the uniquely challenging requirements of developing products on time and under budget. That is why our design process is informed by real metrics to generate real concepts, not blue sky abstractions.

## Upcoming Events

### [MD&M West 2018](#)

February 6-8 | Anaheim Convention Center | Anaheim, CA

**SES Medical - Booth #2493**

**Polymer Laboratory at Stress Engineering - Booth #2491**

*Use promo code SPECIAL for a free expo pass or 20% off conference pricing.*

## Technical Resources

### [Human Factors & Ergonomics](#)

**Stress Engineering Services Inc. (SES) provides expert engineering consulting services for:**

- **New Product Development**
- **Polymer Science & Engineering**
- **Systems Engineering**
- **Risk Assessment**
- **Human Factors**
- **Sustaining Engineering & Failure Analysis**
- **Package Development**
- **Verification & Valication**

**The SES approach leverages engineering mechanics, polymer science/ materials engineering, and human factors expertise to deliver custom solutions to meet each client's unique need. SES's services help clients achieve not only technical success in avoidance or remediation of failures, but also commercial success in removing costs from their process and product designs.**

To learn more about Stress Engineering Services Inc., visit our [website](#) or contact us at 513-336-6701.

ISO 13485:2016 & ISO 9001:2015 Certified  
ISO 17025:2005 Accredited for Several Test Methods

HOUSTON | CINCINNATI | NEW ORLEANS | CALGARY | SINGAPORE