

Reliability for Combination Products

A Great Opportunity...with Unique Reliability Challenges

With the strong growth in personalized medicine and the recent finalization of cGMPs for combination products by the FDA, opportunities for bringing these products to market have never been greater. These opportunities are accompanied by challenges, which are often found at the interfaces between the subsystems of the components that have been integrated into a single device or delivery system solution.

We have the tools, expertise and reputation for designing reliability into devices, drug, and biologics as well as helping clients improve the reliability of existing products.



The SES approach to reliability includes four primary activities:

1. Definition & Planning
2. Modeling & Prediction
3. Testing & Analysis
4. Estimation & Documentation

Contact us today to learn more!

Making Your Equipment IIoT Ready: Custom Sensor Development for IIoT and Machine Learning Applications



STRESS ENGINEERING
SERVICES, INC
IoT APPLICATIONS
LABORATORY™

Your data is the heart and soul of the Industrial Internet of Things (IIoT) and Machine Learning (ML), but virtually no manufacturing systems are ready to leverage this transformative technology. IIoT and ML initiatives contemplate data and data analytics and systems with much greater fidelity than currently available from standard process monitoring data feeds. The environment envisioned includes sensors transmitting data from key locations on equipment or process systems, wherever they may be needed, to enable new actionable insights and decision making while providing a foundation to exploit machine learning opportunities. The problem is, there are very few off-the-shelf sensors available that can be conveniently adapted to the hardware to provide these new data streams.

No matter what industry, Stress Engineering likely has experience transforming machine components and mechanical elements into online IIoT-capable sensors designed to provide real-time operational data for equipment efficiency and process improvement.

Long before computing power evolved to its current state, enabling the reality of IIoT and ML, we developed the sensor and data acquisition capabilities to help clients solve difficult equipment performance and efficiency problems. Stress Engineering IoT Applications Lab™ uses those same skills and capabilities, leading us to the forefront of these exciting new Industry 4.0 technologies!

Case Study

Creating Custom Sensors, New Raw Data Streams & Custom Analytics

A client engaged Stress Engineering to overcome throughput limiting problems on their fleet of retort vessels used to sterilize millions of products annually. Standard data feeds available from the retort itself were unable to shine a light on any equipment-related attributes that could be correlated to the problem. We were asked to conceive of an approach to create custom sensors that would provide new, relevant dynamic data streams that could be analyzed, and then provide actionable, predictive insights relevant to early problem detection and root cause problem analysis as well as ongoing process insights.

Click [here](#) to read more about our approach.



A digital twin of the retort system was used to identify the actual load path through the pedestals into the foundation. Once designed, each pedestal was calibrated in a load frame in our laboratory. The completed sensors were installed on the retort system to collect data in real-time.

Upcoming Events

IoPP November Meeting - Tour of Stress Engineering Services

November 9, 2018

[Register Now!](#)

MD&M West 2019

February 5-7, 2019 | Anaheim Convention Center | Anaheim, CA

SES Medical - Booth #2097

Polymer Laboratory at Stress Engineering - Booth #2095

Missed our latest newsletter?

Click [here](#) to read about IIoT and Biologic Drugs in Combination Products

Stress Engineering Services Inc. provides expert engineering consulting services for:

- **New Product Development**
- **Material Science & Engineering (Full Polymer & Metallurgical Labs)**
- **Systems Engineering**
- **Risk Assessment**
- **Human Factors**
- **Sustaining Engineering**
- **Failure Analysis**
- **Package Development**
- **Verification Testing**
- **Equipment Validation & Development**

Our services help clients achieve not only technical success in avoidance or remediation of failures, but also commercial success in removing costs, risk and time from their process and product designs.

PHARMACEUTICAL | SURGICAL DEVICES | DRUG DELIVERY | MEDICAL EQUIPMENT
OCULAR | IMPLANTS | DENTAL | DIAGNOSTIC DEVICES | ENT | VETERINARY | VASCULAR

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
ISTA Certified Testing Laboratory Member

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