

September 2017

Stress Engineering Services, Inc. (SES) offers an integrated team of experts in creative design, functional engineering, design for manufacturing, materials, cost analysis, and reliability to deliver the highest level of innovation and technical success in developing products and packaging. SES provides expert engineering consulting services for:

- New product development
- Material science
- Risk assessment
- Human factors
- Failure analysis
- Package development
- Testing
- Industrial design

SES has extensive laboratory testing capabilities for evaluating materials, product performance, life assessment, and failure analysis. We have extensive simulation capabilities to predict mechanical, thermal, and fluid flow characteristics of complex problems.

**Be on the lookout
for these future
topics!**

Cold Chain Packaging
Solutions

Package Design for
Non-Thermal
Pasteurization Process

[Click here](#) to read last
month's newsletter on
E-Commerce Liquids
Packaging Solutions.

SES IoT Applications Laboratory

Although the so-called "Internet of Things" (IoT) is frequently associated with 5G cellular technology (which is still some distance in the future), the race to realize some of the promise of ubiquitous internet connectivity, analytics, and feedback has begun.



Cam sensor being developed for Stress Outdoor® Intelligent Bow technology

For decades, SES has been recognized by clients around the world as a premier supplier and developer of sensors and instrumentation systems along with tools to analyze large data sets to address a broad range of technical problems. This history has become the foundation of our focus on IoT application development. Responding to the needs of clients, SES has begun to focus significant effort on instrumentation planning, sensor development, embedded analytics, and data management for product manufacturers and industrial clients and manufacturers. The range of application to date is very broad and includes archery products, healthcare-related initiatives, pharmaceutical products, and safety-related applications aimed at reducing workplace

injuries.



Example of Intelligent Bow user app

One exciting application under development by Stress Outdoor®, a division of Stress Engineering Services, Inc., is "Intelligent Bow" technology for application in the crossbow and compound bow archery market. Intelligent Bow provides many advantages to both the user and the manufacturer.

There is no question that IoT is happening and an unimaginable range of opportunities and applications now exists. For custom sensor development, sensor component integration, and data analytics, SES is the one-stop resource that understands the fundamental physics of the applications and can develop the most robust solutions.

Polymer Laboratory at Stress Engineering Services

The [Polymer Laboratory](#) at SES has received ISO 17025:2005 accreditation for several test methods. The table below contains an overview of the tests.

Specific Tests and/or Properties Measured	Key Equipment or Technology
Glass Transition Temperature; Dynamic Mechanical Testing	Dynamic Mechanical Analyzer (DMA)
Transition Temperature & Enthalpies of Fusion; Glass Transition Temperature; Oxidative Induction Time; Specific Heat Capacity; Purity; Melting Temperature	Differential Scanning Calorimeter (DSC)
Material Identification	Fourier Transform Infrared Spectrophotometer (FTIR)
Material Composition; Rapid Thermal Degradation	Thermo Gravimetric Analyzer (TGA)
Coefficient of Linear Thermal Expansion	Thermo Mechanical Analyzer (TMA)
Hardness	Automated Shore Hardness Tester (A, D)

Upcoming Events

Clint Haynes, Vice President at Stress Engineering Services, Inc., will be presenting at the [2017 New Horizons Cleaning Products Conference](#).

Topic: Design Strategies to Eliminate Liquid Leakage in E-Commerce Transit Packaging

September 17-20, 2017

Tempe, AZ

This advanced meeting for cleaning products professionals will focus on the latest technologies and the challenges of emerging trends in the field.



Dr. Jay Yuan, a Principal at Stress Engineering Services, Inc., will be presenting on In-Silico (predictive computational methods) Package Transit Testing for E-Commerce at the [ISTA China Packaging Symposium](#).

September 20-22, 2017

Ningbo, Zhejiang Province
China

The Census Bureau of the U.S. Department of Commerce announced that the first quarter 2017 e-commerce estimate (\$106 billion) increased 14.7 percent from the first quarter of 2016. The e-commerce distribution channels become increasingly important for the brand owners. Compared with the traditional distribution channels, the e-commerce channels have four times as many touch points and the loading conditions are much more harsh and unpredictable. The current remedy is to add protective tertiary packaging (bubble wrap, air pillows, over-boxing cartons, etc.). The tertiary packaging materials not only increase the product cost, but also create heavy environmental burdens.

The presentation proposes an In-Silico package transit testing platform that challenges the traditional build-and-test package development process. The objective is to stimulate and verify potential breakthrough innovations at an early stage of the packaging development process. Case studies on In-Silico consumer unit (primary package) testing, sale unit (tray or corrugated box) testing, and transit unit (pallet load) testing will be presented.

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

ISO 9001:2008 & ISO 13485:2003 Certified

