

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!

Reducing the Cost of HPP Package Development

BIPATH - Package/ Process Design Pathway for Pressure/ Vacuum Management

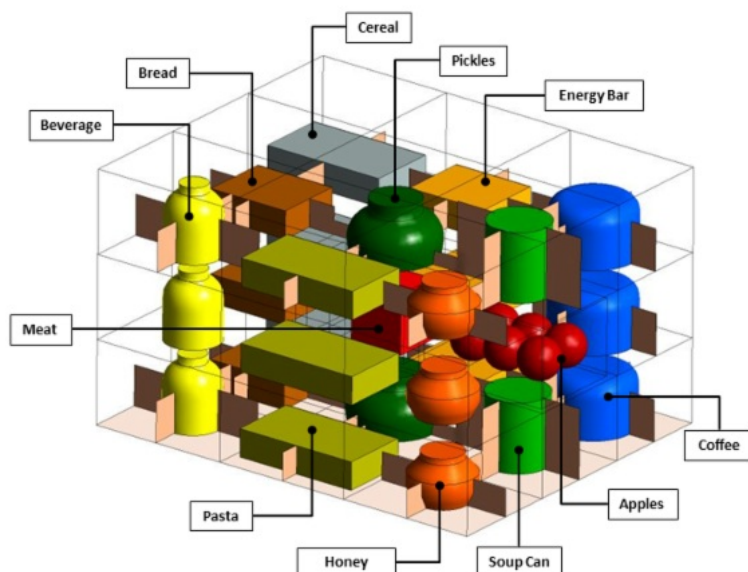
[Click here](#) to read our previous newsletter on SES IoT Applications Laboratory™.

Cold Chain Packaging Solutions



The demand to accommodate longer transit times in more extreme environments at low cost is driving the need for innovation in e-commerce based cold chain packaging solutions for the pharmaceutical and fresh grocery delivery industries.

Cold chain is a temperature controlled supply chain for storage and distribution of goods which maintains a given temperature range. It is used to ensure shelf life of temperature sensitive products for the duration of the delivery route where the shipment is being made. Poor cold chain packaging leads to deterioration of product quality, safety issues, recalls and fines (FDA) for temperature dependent items; loss of product, cost of reshipping and diminishing customer base all impact the bottom line.



SES has developed a concept that integrates a Package Assembly Cell (PAC) with real time transient heat transfer simulation methods to develop thermally optimized package solutions and package construction instructions that are unique to any particular pharmaceutical or grocery payload involving fresh or frozen products. Read more about the science behind the PAC [here](#).

Process Technology Transfer

SES provides key expertise required for technology transfer of pharmaceutical process, whether for facility relocation or disruptions due to weather. Using a combination of computer-based predictive analysis and specialized testing, SES provides customized solutions in transferring technology from one site to another or from a smaller-scale to a larger-scale (scale-up).



Leverage SES expertise for:

- **Technology Transfer:** Scale up/scale down, transfer from one site to another
- **Design/Develop New Process:** Layout process, mass, energy requirements, sizing of equipment
- **Define Process Window:** Define limits, identify key variables
- **Evaluate Existing Process:** Determine opportunity for improvement
- **Throughput Improvement:** Improve efficiency and production, cost savings
- **Technology Evaluation:** Scientific evaluation of suitability of technology
- **Design/Develop Specialized Test Methods & Data Gathering Techniques:** Specialized lab/pilot scale equipment, customized equipment
- **Design/Evaluate Facilities:** Clean room, manufacturing facilities
- **Mechanical Integrity:** Failure analysis/mitigation of mechanical systems
- **Explosion Protection Strategy:** Inerting and venting systems
- **Manufacturing Support:** Risk management, bottleneck prevention
- **Powder Processing:** Understand relationship between constituents, processing and desirable characteristics

Technical Resources

[E-Commerce Packaging Design, Testing & Breakthrough Innovation](#)

[Process Intensification and Throughput Increase](#)

[Pharmaceutical Technologies and Process Engineering](#)

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
ISO 17025:2005 Accredited for Several Test Methods

