



SES CONSUMERS PRODUCTS GROUP

A DIVISION OF STRESS ENGINEERING SERVICES, INC.

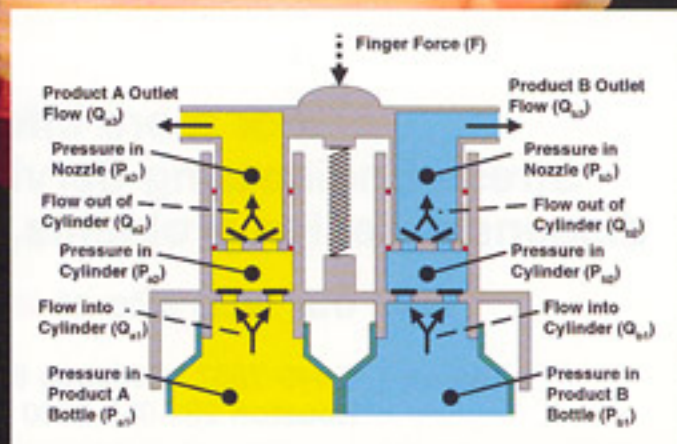
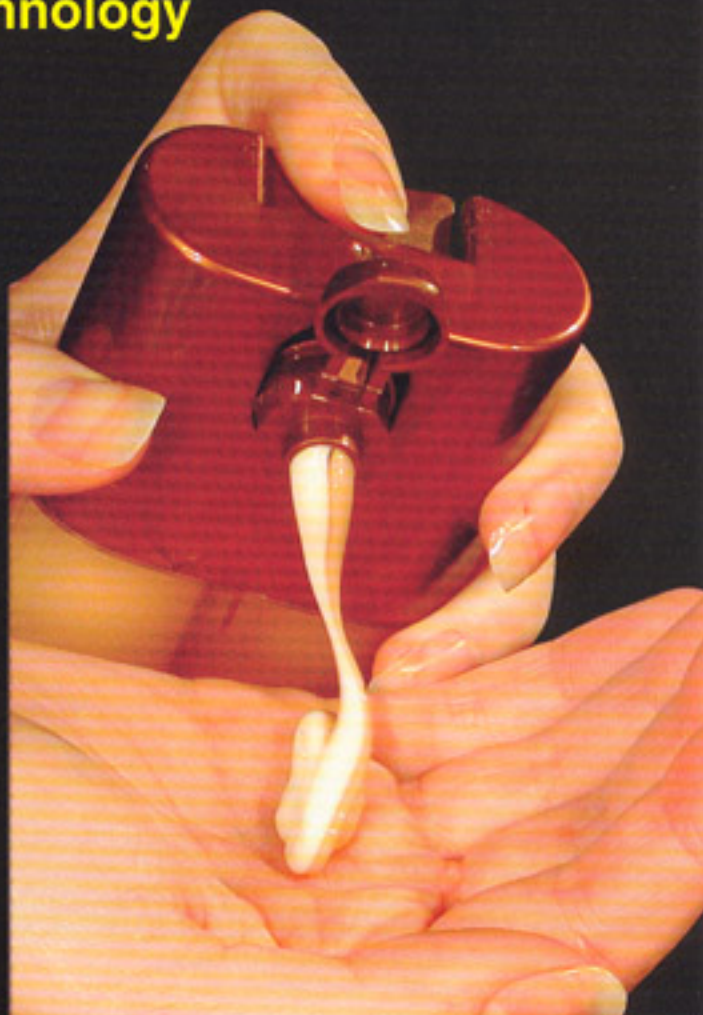
www.stress.com/packaging

Novel Dispensing Systems... It Takes Experience & Technology

- Dual dispensing devices
- On-demand mixing
- Motor-actuated delivery
- Powder delivery systems
- Thermally-driven dispensers
- Ultrasonic systems
- Devices using piezoelectric components and smart materials

We can help you:

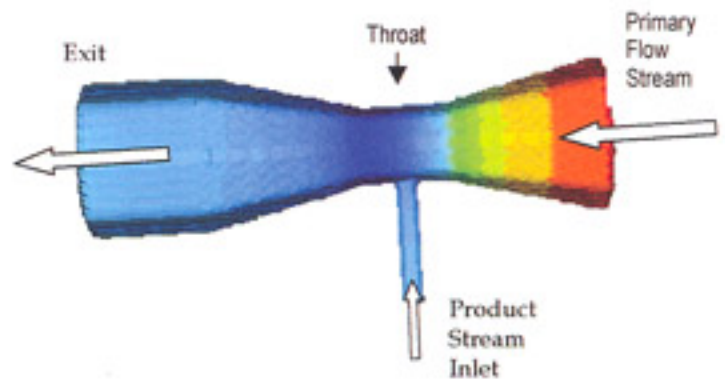
- Evaluate and improve novel dispensing systems in the concept stage.
- Understand the design impact of complex fluids such as mixtures with complex rheology, aerosols, and compressible fluids.
- Optimize the delivery system in the design phase – before prototypes are built.
- Design injection- and blow-molded plastic components for strength, ease of manufacture, and product life cycle integrity.
- Design packaging and seals for reliable and cost-effective single-use or reusable products.
- Test prototype systems and evaluate prototype molds.
- Develop energy-optimized systems to extend battery life in small motor applications.



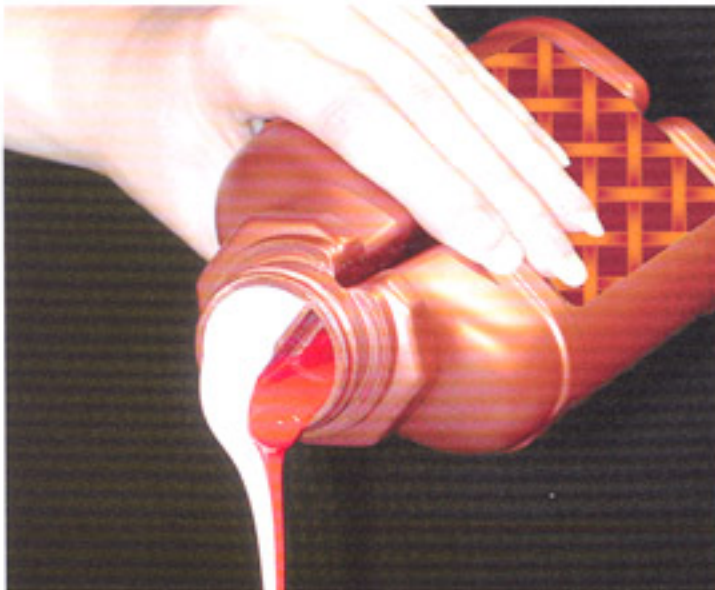
Systems Model of Dual Dispensing Pump

Advanced Technology

SES uses the latest in computer-aided design technology to power its design-by-analysis approach. This includes computational fluid dynamic (CFD) simulation of flow through devices, finite element (FE) modeling of seals and snap fits, and Moldflow simulation to support the design of injection-molded parts. Dual dispensing systems often benefit from the development of custom-written software which allows both SES and our clients to quickly assess the impact of a wide range of design choices.



Computational Fluid Dynamics Model of a Venturi Mixer
Analysis is Used to Set Product Dilution Percentage



Design of Dual Pouring Dispensers
- A SES Specialty -

Practical Experience

SES backs up its analytical expertise with solid experience and practical testing. Whether it is flow rate testing, force to dispense measurement, seal integrity assessment, environmental degradation studies, or basic viscosity, rheology and strength testing, SES has the custom laboratory facilities necessary to support successful dispenser design.

**For more information on how
Stress Engineering Services can help you solve your
dispenser design problems, contact the office nearest you.**

Visit our web site at www.stress.com/packaging

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Houston 281-955-2900 • New Orleans 504-828-4066