



SES Process Technology Group



A DIVISION OF STRESS ENGINEERING SERVICES, INC

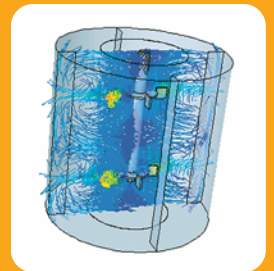


Pharmaceutical Process Development & Drug Manufacturing

Helping clients reduce schedule, cost, and regulatory risk in all areas of drug development and manufacturing is our business.

PROCESS DEVELOPMENT & TECHNOLOGY TRANSFER

You need to know as much as possible, as soon as possible. In taking a drug from the laboratory, through pilot scale, to full-scale production, you want to be certain that the technologies used will scale properly. SES uses computer simulation, physical modeling and on-site instrumentation to help insure success in the development and technology transfer process.



Computational fluid dynamics model used to scale-up a stirred reactor.

- 📦 Scale-Up/Scale-Down Studies
- 📦 Formulation Rheology
- 📦 *Unit Operations*: Applications, Development & Optimization
 - 🌀 Reactors, Mixers, Emulsifiers & Homogenizers
 - 🌀 Lyophilization
 - 🌀 Autoclaves & Sterilization Processes
 - 🌀 Solids Transport, Separation, & Drying Equipment
 - 🌀 Liquids Filling Systems
 - 🌀 CIP/SIP
 - 🌀 Process Heaters & Heat Transfer Equipment

PROCESS & EQUIPMENT TROUBLESHOOTING

Production failures are costly and time consuming. SES has the broad base of expertise necessary to help you quickly understand why a failure occurred, the consequences of the failure, and most importantly, how to get back into production safely and reliably. Our staff includes metallurgists, mechanical, chemical and electrical engineers, systems specialists, and structural analysts.

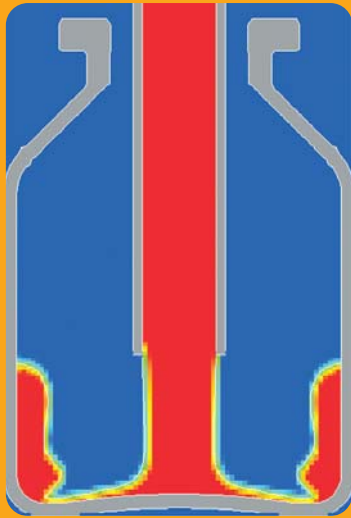
- ❖ Equipment Vibration & Fatigue Failure Investigation
- ❖ Corrosion Metallurgy
- ❖ ASME Code Calculations & Computer Stress Modeling
- ❖ Custom Instrumentation & Monitoring Systems

FACILITIES PLANNING & UPGRADING

SES assists its clients in the development of complete new facilities, planning new lines, and upgrading existing plants. We offer a range of engineering support, production planning, and economic analysis services.

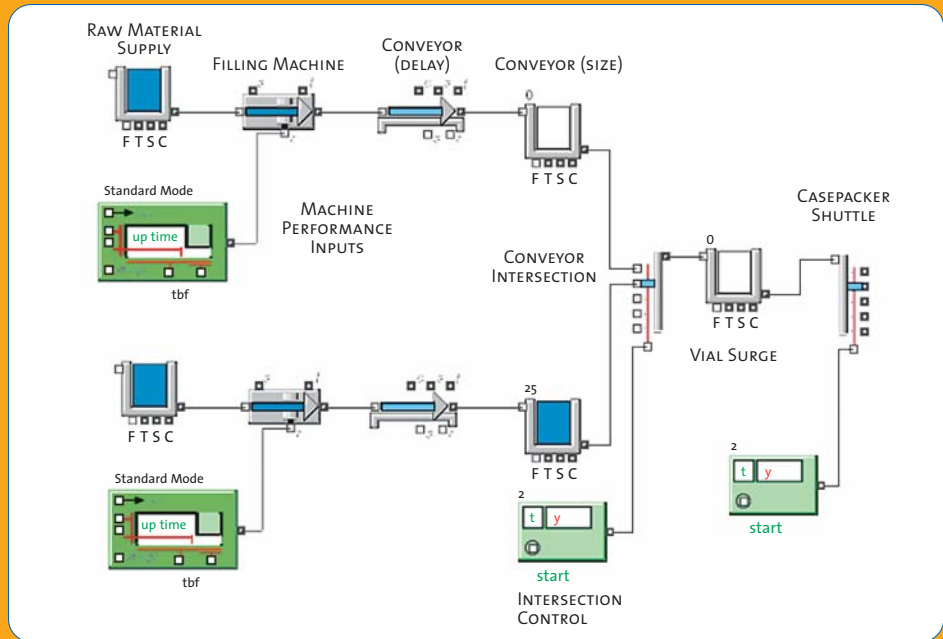


Metallurgical investigation of a corrosion failure



Bottle filling simulation to optimize filling time and reduce splashing.

- ❖ Equipment Selection & Evaluation
- ❖ Environmental Systems, Clean Rooms & Air-Handling Systems
- ❖ Emissions & Particulate Migration Studies
- ❖ Throughput Modeling for Production Planning & Optimization



Throughput Model of a Fill/Pack Line

SES Offers Process Development and Drug Manufacturing Solutions
CALL US TODAY AT 513-336-6701

VISIT SES ON THE WEB AT WWW.SESPHARMATECH.COM

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