

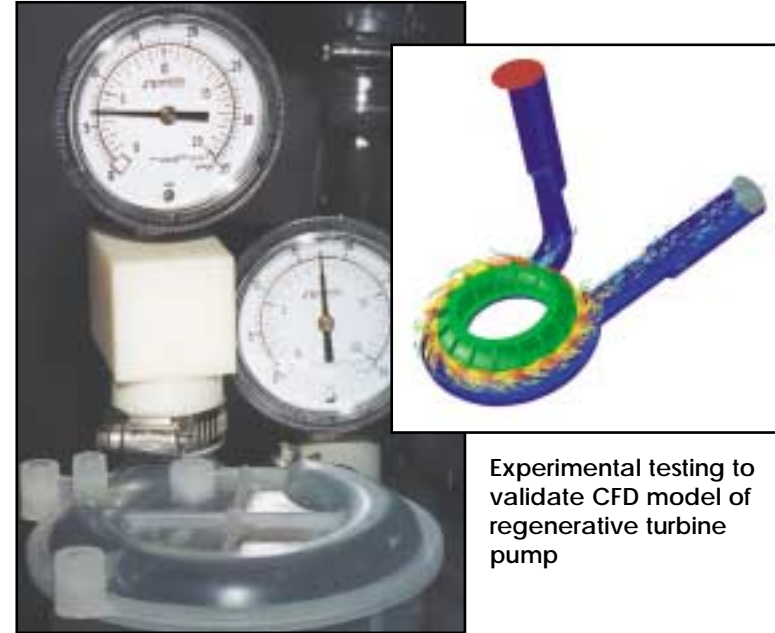
Make SES Your One-Stop Engineering Source

Fluid flow • Heat transfer simulation • Stress analysis • FEA simulation • Vibration analysis and testing • Strain Gage testing • Systems modeling • Mechanical integrity/fitness for service • Custom instrumentation • High speed data acquisition

Testing & Analysis

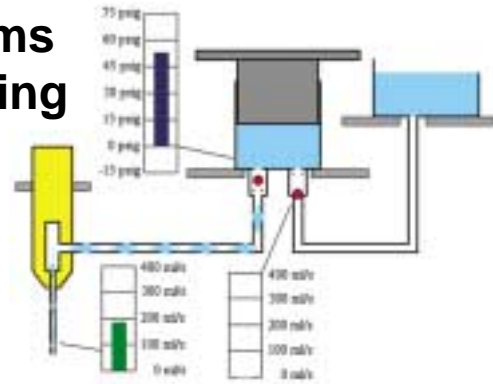


SES drying laboratory for measuring drying rates in a wide range of materials under controlled conditions



Experimental testing to validate CFD model of regenerative turbine pump

Systems Modeling



Filling system model illustrating fluid and structural system response

SES Offers Custom Analysis Tools For...

- Fluid flow
- Heat transfer simulation
- Stress analysis
- FEA simulation
- Vibration analysis and testing
- Strain Gage testing
- Systems modeling
- Mechanical integrity/fitness for service
- Custom instrumentation
- High speed data acquisition

SES can help you meet process design and development challenges without expanding your engineering staff.

Call us today.

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SES PROCESS TECHNOLOGY GROUP

A DIVISION OF STRESS ENGINEERING SERVICES, INC.

Industrial Process Design, Analysis and Testing Specialists

The SES Process Technology Group (PTG) is a full-service engineering consulting firm committed to technical excellence and customer service. Our multi-disciplinary staff have the expertise to solve the most complex problems using a combination of advanced technologies, innovative applications and classical engineering methods.

We can help you:

- **Evaluate** process and equipment designs
- **Understand** processes from the inside
- **Optimize** process efficiency
- **Accelerate** design cycles
- **Save time and money** by reducing design iterations
- **Arrive at the best** and most cost-effective product concept

- Aerospace • Automotive • Oil & Gas • Chemical • Plastics & Fiber
- Consumer & Health-Care Products • Pharmaceuticals • Biomedicals
- Food • Water • Mining • Metals • Fertilizers • Paper & Pulp
- Glass Manufacturers • Petrochemical Plants • Electric Utilities
- Foundries • E&C Companies • Electronics

Uniquely Skilled Using State-of-the-Art Tools

SES is an industry leader in applying computational fluid dynamics (CFD) methods to process fluid mechanics, heat and mass transfer analysis. We can provide 'virtual prototyping' of your design concepts, testing a variety of alternatives in less time and at a lower cost than building physical prototypes. Small improvements in process efficiency often result in significant savings, and when classical methods of analysis prove most cost effective, we employ them with equal skill.

Separation

Gas-Solid
Liquid-Liquid
Gas-Liquid
Liquid-Solid

CYCLONE
Evaluate design
Improve efficiency

Analysis shows 1 micron particles escape while 10 micron or larger particles are trapped.

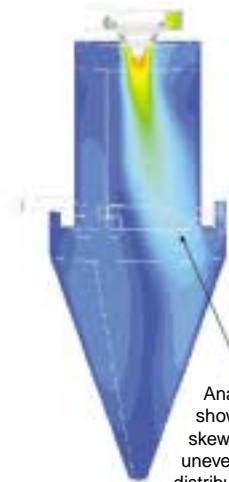


Drying

Air flow
Heat & mass transfer

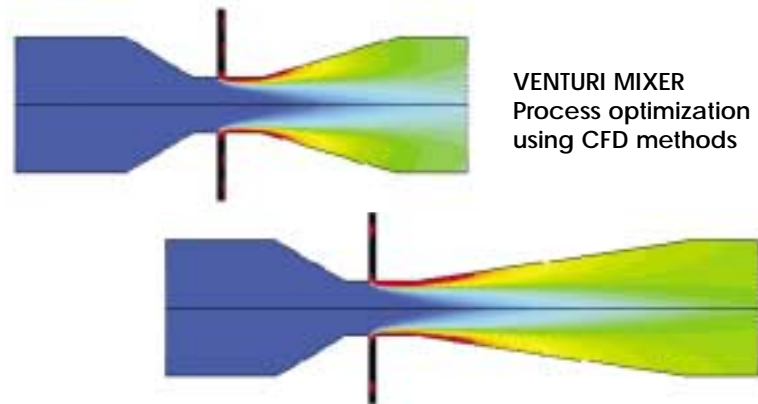
SPRAY DRYER
Improve product quality
and reduce downtime

Analysis shows airflow is skewed due to uneven pressure distribution in air dispersing head.

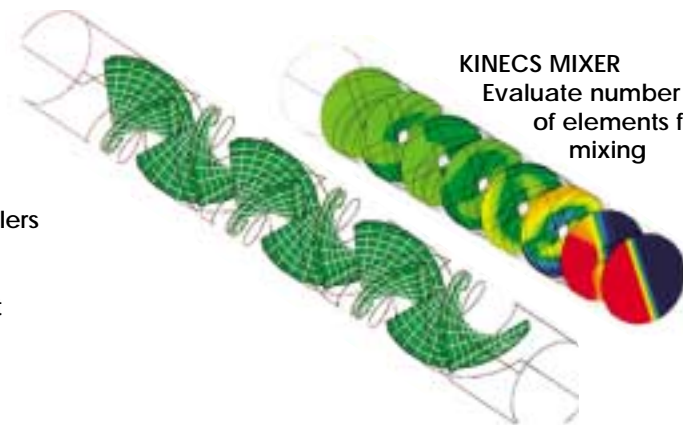


Mixing Liquid-Liquid, Liquid-Solid, Gas-Liquid

VENTURI MIXER
Process optimization
using CFD methods



KINECS MIXER
Evaluate number
of elements for
mixing



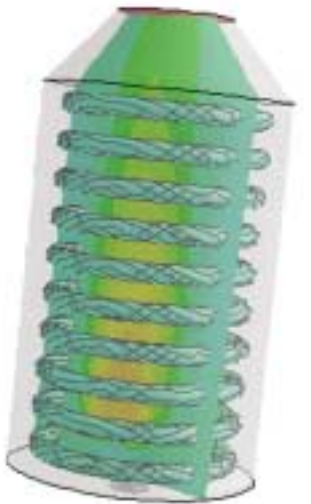
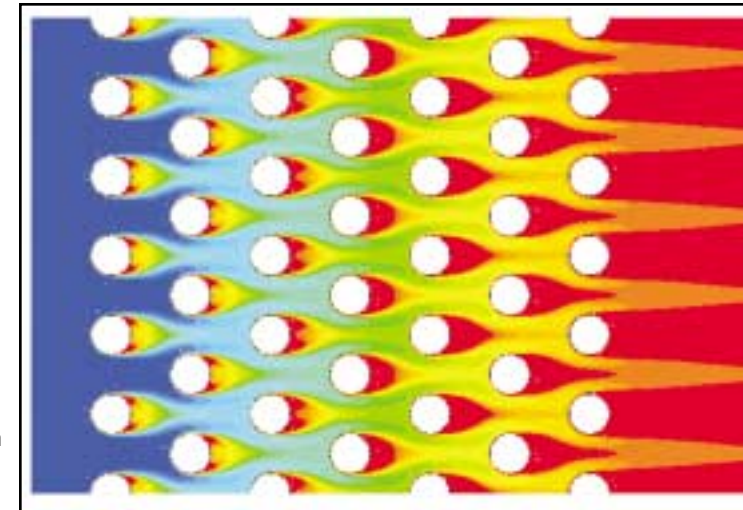
STIRRED TANK REACTORS
Optimize placement of impellers
Achieve proper mixing
Reduce power consumption
Increase product through-put



Combustion Systems

Furnaces
Burners
Process Heaters
Regenerators
Reformers

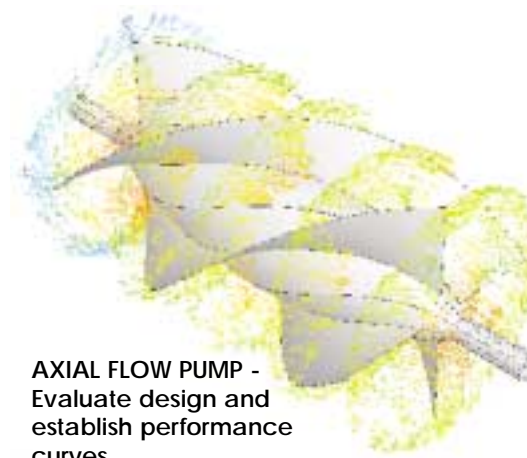
HEAT EXCHANGERS
Analyze heat transfer
Estimate pollutant formation
Study new concepts
Virtual prototyping



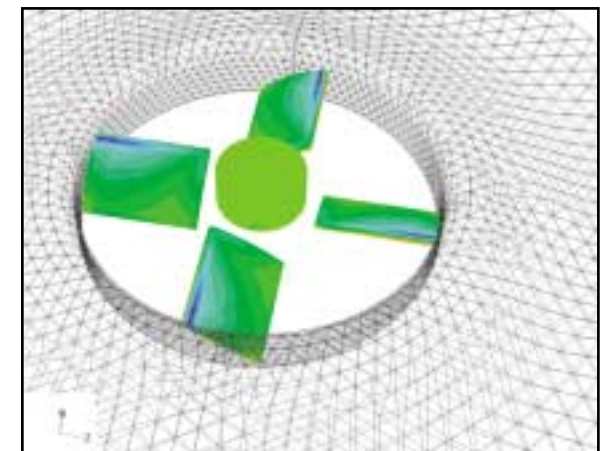
PROCESS HEATER
Identify hot spots
and zones of local failure

Fluid Moving Devices

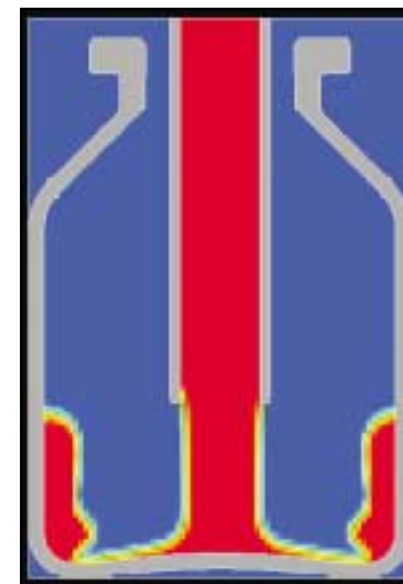
Pumps
Compressors
Fans
Regulators
Valves



AXIAL FLOW PUMP -
Evaluate design and
establish performance
curves



FAN ANALYSIS - Fan performance curve generation and blade design optimization



BOTTLE FILLING PROCESS
Optimize filling time
Reduce splashing and waste
Profile filling efficiency

SES also offers simulation expertise in:
Vibration Stress Analysis
Extrusion
Casting
Injection Molding Analysis
Blow Molding Analysis
Atmospheric Flows
Accident Investigation