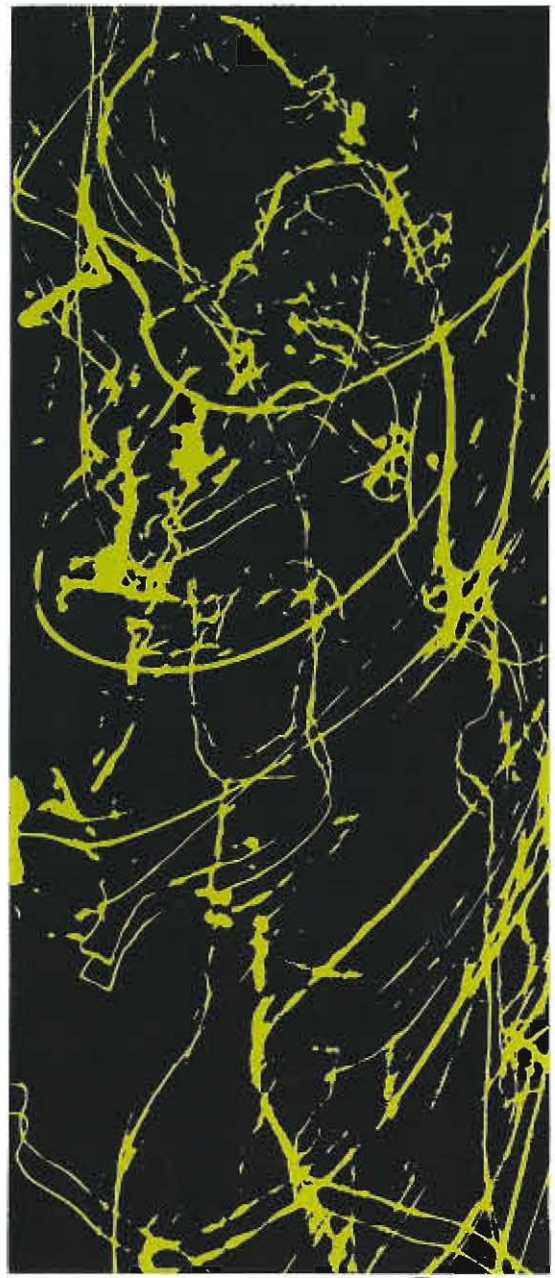
sai™ Bubble Generator Systems*

Air Flow Visualization and Measurement



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6 August 2004

PACKING LIST

Purchase Order No. 49567

SHIP TO: Minnesota State University, Mankato
MSU, M Receiving Room
207 Wiecking Center
415 Malin Street
Mankato, MN 56001

SHIP VIA: FedEx 2 Day Service

This shipment consists of the following items:

Box 1. SAI™ Model 5 Console with one Mini-Vortex Filter, one Plug-In Head, Outlet Tube, Tygon Tubing, Wand, Air & Helium Supply Lines, Funnel, Beaker and Instructions Manual

Box 2. SAI™ Basic Light with Case, Iris, Slit, Bogen Grip Action Ball Head, Tripod Base & Extension Kit, extra 300W Tungsten Halogen Lamp and one pair of Gloves w/ SAI™ Pen

Box 3. SAI™ 1035 Bubble Film Solution, 1 gal

Total Packages: 3

Order shipped complete.

sai™ Helium Bubble Generator

What Is a Helium Bubble Generator?

Flow visualization is an extremely powerful tool for gaining insight into complex flow phenomena. It can save valuable time in the design of better aerodynamic configurations and provide considerable assistance in interpretation of test data.

The SAI™ HELIUM BUBBLE GENERATOR is a compact and unique tool which produces helium-filled, neutrally buoyant bubbles of uniform size for visualizing airflow patterns. The bubbles are extremely durable and rarely collide with objects in the airstream because they faithfully follow the flowlines. For example, they will pass through various fans and blowers quite readily without bursting.

The motion of the bubbles in most flows can be readily photographed and or video taped using suitable lighting. Furthermore, with a special SAI™ light source, the motion appears as dashed lines instead of continouous traces. Since the length of the dashes are proportional to the local velocities, this allows a quantitative measurement of the whole flowfield.

Key Features:

Superior Tracing of Air Motions... The helium-filled bubbles will follow any laminar and turbulent airflow, steady or unsteady, which cannot be traced by any other technique.

Ease of Operation... The SAI™ HELIUM BUBBLE GENERATOR has been designed for ease and simplicity of operation in practically any location. Fine controls are provided to adjust for generation of "perfect" bubbles.

Safe Operation... Non-toxic and non-corrosive SAI™ Bubble Film Solution insures clean and safe operation.

Quality of Construction... Quality components assure high reliability and durability.

SAMPLE BG APPLICATIONS

The Analysts	*Oil Drilling Equipment Testing*
Baker Company	*Biological Safety Hood Flow Analysis*
Bell Aerospace	*Surface Effect Ship Development*
Bell Laboratories/North Andover	*Natural vs. Forced Convection For Electronic Cooling*
Bell Laboratories/Whippany	*Underground "Vault" Ventilation*
Boeing/Seattle	*Flow Over Wing Flaps*
Boyce Thompson Institute	*Plant Environmental Chamber Efficiency*
Caterpillar	*Cascade Tunnel And Flow Through Axial Fans*
Cornell/Agriculture	*Calf Barn Ventilation*
Cornell/Plant Science	*Plant Pollination*
Electrolux	*Vacuum Cleaner Power Nozzle Efficiency*
Federaciones/Puerto Rico	*Airflow About Grain Storage Tanks*
Ford Motor	*Motor Cylinder Swirl*
Fram	*Truck Pre-Air Cleaners Circulation*
G. E. Environmental	*Electrostatic Precipitators*
Gulf Science	*Flow Through "Channels"*
Harrison Radiator	*Radiator Flow*
Hewlett - Packard	*Airflow Patterns In Disk Drives*
IBM/East Fishkill	*Clean Room Airflow Patterns*
IBM/San Jose	*Disk Drive Containment Control*
Lincoln Laboratories	*Electrostatic Precipitator Duct Flow*

Marley Cooling Tower	*Airflow About Cooling Towers*
McDonald's	*Circulation Around Grills And Fryers*
McDonnell - Douglas	*DC9 Body Ventilation*
Merck Sharp & Dohme	*Clean Room Airflow Patterns*
NASA/Ames	*Helicopter Flow Field*
NASA/Lewis	*Turbine Blade Cooling And Horseshoe Vortex Analysis*
NCR	*Electronic Cooling - Forced And Natural Convection Studies*
Oklahoma State University	*Combustor Flow Patterns*
Overly	*Air Bar Effectiveness In Paper Drying*
Owens - Corning Fiberglas	*Cooling Nylon Fibers*
RCA	*Satellite Communication Terminal Flow Patterns*
Reel Vortex	*Lawn Mower Development*
Riley Stoker	*Coal Burner Flow Studies And Mixing Patterns*
Singer	*Gas Meter Design*
Texas A & M	*Space Shuttle Turbulence Study*
Thatcher Glass	*Furnace Jet Effects*
University Of Florida	*Greenhouse Ventilation Design*
University Of Wyoming	*Aeolian Process And Sand Erosion*
U. S. Bureau Of Mines	*Mine Ventilation And Safety Studies*
U. S. Navy	*Parachute Aerodynamics*
Walker	*Flow In Exhaust Systems*
Weyerhaeuser	*Dry Kiln Circulation*