

Winners of the highly competitive
SBIR PHASE II Awards

National Science Foundation
Directorate of Engineering
Education



Interactive Flow Studies is dedicated to support and enhance learning through the use of state of the art technology.

Interactive Heat & Flow Experiment with FLOWEX™ software are used as tutors and they serve to increase basic skills and knowledge of fluid mechanics and heat transfer.

Interactive educational PIV, CFD, CAD & FLIR technologies together with Rapid Prototyping technology are used as tools that can be applied to a variety of goals in the learning process and can serve as a resource to help develop higher order thinking, creativity and research skills.

See a Demo of FLOWEX™
at
www.interactiveflows.com



Educational Interactive Flow Visualization & Analysis System

- Heat transfer, Laminar, Transition & Turbulent Flow Visualization & Analysis.
- Air and/or Water Flow.
- Study heat transfer with an integrated Forward Looking Infrared (FLIR) Camera.
- Design your own flow inserts with Educational Computer Aided Design (CAD) integrated into user friendly FLOWEX™ software.
- Simulate the heat transfer & flow around the insert using Computational Fluid Dynamics (CFD), part of FLOWEX™ software.
- Perform interactive experiment with Particle Image Velocimetry (PIV), part of FLOWEX™ software.



Interactive Flow Studies
flowex@interactiveflows.com
www.interactiveflows.com

© 2012 Interactive Flow Studies

THERMOFLOW

HEAT TRANSFER & FLUID MECHANICS



Teach 21st Century Knowledge & Skills

Interactive Flow Studies
Technology In Science Education

- ❑ FLIR thermal imaging camera can be detached and used independently.
- ❑ Thermal camera with 3.5" touch screen easy to use interface mounted on an articulated arm.

- ❑ Interchangeable flow model inserts that can be heated.
- ❑ Special optical glass allows IR to pass through for thermal imaging.

- ❑ Standard Inserts:

 Metal - Array insert with posts

 Acrylic - Venturi insert with pressure taps.

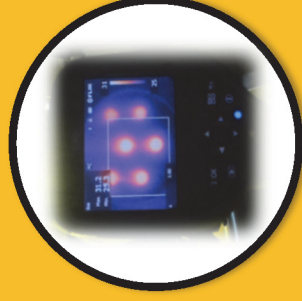
- ❑ Two water cooled 16W LED arrays for illumination of flow field for PIV analysis and flow visualization.

- ❑ Multichannel controller & data logger with touch screen LCD for:
 - ✓ Flowrate.
 - ✓ Heater control.
 - ✓ Pressure differential.
 - ✓ Inlet fluid temperature.
 - ✓ Outlet fluid temperature.
 - ✓ Flow model temperature.

- ❑ Digital camera for flow visualization and PIV analysis.
- ❑ Optional miniPIV upgrade.

- ❑ Equipped with a powerful water and an air pump. They can be run independently or at the same time.

- ❑ Portable and compact
- ❑ Dimensions: 10" x 21" x 25"
- ❑ Weight: 53 lbs.



Example

Test results for 80mm x 80mm x 5mm flow model Array Insert:

- Air**
 - Flow rate = 2 lt/min (Valve fully open)
 - Heated insert temperature = 92°C
 - Inlet air temperature = 22°C
 - Outlet air temperature = 27°C
- Water**
 - Flow rate = 4 lt/min (Valve fully open)
 - Heated insert temperature = 36°C
 - Inlet water temperature = 23°C
 - Outlet water temperature = 24°C