

# Flotek 1440



## Low turbulence. Research grade. Real world data acquisition.

Designed in conjunction with NASA Lewis Research Center in Cleveland, Ohio, Flotek wind tunnels bring advanced aeronautic design principles to the university or industrial laboratory. From aeronautics to fluid dynamics to calibration of air flow sensors, these precision-built tunnels set new standards for performance and cost effectiveness.

### True laminar airflow.

Flotek design and engineering is simply unmatched in its class. Entrance cones are designed with the correct shape and contraction ratio to create a smooth, continuous increase in velocity, and to maintain ultra low turbulence as the airflow enters the test section. Exact design of the intake shape reduces adverse gradients to effectively eliminate boundary layer and wall separation.

### Consistent velocity profile.

Flotek 1440 delivers velocities up to 90 MPH (132FPS, 33.5 M/S). Test section panels are milled and installed with countersunk screws for a smooth interior. Velocity profile across the test section is exceptionally consistent, and turbulence measures 0.2% or less. The removable test section measures a full 12" x 12" x 36" and features Plexiglas top and side walls to allow full view of the test in progress.

Airfoils are designed to NACA 4415,

2415, and 0015 dimensions. Tunnel body construction is of 11 gauge steel to reduce vibration and provide quiet operation. Hardware is Aircraft Mil Spec, and electrical components meet UL, NEMA, and IEC specifications.

### So truly advanced, it's simple.

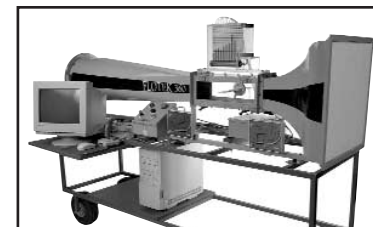
Flotek can be configured to fit dozens of different applications. Virtual instrumentation, real time data display, data logging to disk, computer control of airfoil angle of attack, and much more. For classroom use, Flotek comes with a comprehensive yet easy to follow lab manual. Only a tool as advanced as Flotek can provide this level of performance and flexibility for precision industrial, laboratory, or advanced classroom use.

In any application, Flotek wind tunnels are built to generate detailed, accurate, repeatable data. Flotek is your data source.



Flotek Data Acquisition Systems are available in National Instruments with Labview software, or Computer Boards with Labtech software.

Screens are ready to load in your application and require no lengthy programming.



Flotek Model 360 is also available for compact objects, high school labs and smaller test facilities. This highly portable unit is designed and built to the same rigid aeronautical standards as the 1440.

# Flotek 1440 Features & Specifications

## Flotek 1440:

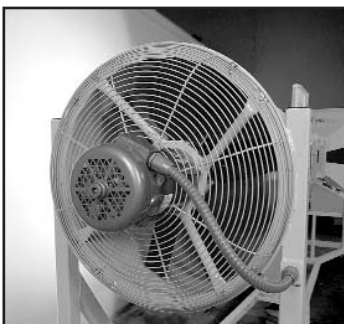
- Developed under strict guidelines and specifications to provide ultra low turbulence, straight-line (laminar) air flow, permitting true aerodynamic engineering, data acquisition & analysis
- Easily accessible, removable test section
- Aircraft Mil Spec quality hardware for durability and reliability
- Industrial rated electrical components meet UL, NEMA, and IEC specifications in Hoffman enclosures
- Data retrieval using either water manometers or optional analog/digital, graphical interface computer program
- Industry standard, virtual instrumentation data analysis software packages
- 12" x 12" test section, 36" length allows larger experiments
- 0-90 MPH (132 FPS, 33.5 M/S) test section velocity
- 42" x 42" inlet; 14' overall length
- Variable speed, 2 H.P. direct current industrial Baldor motor

- 24" composite blade adjustable pitch fan
- Tuned, plastic honeycomb flow straightener
- 11 gauge steel tunnel body
- NACA standard 4415, 2415, 0015 airfoils allow comparison to published theoretical data

### Safety

Safety in the laboratory and the classroom is a primary concern. Flotek wind tunnels feature solid construction and industrial quality components for safety and reliability.

Electrical power cabling is fully encased in the frame. Flotek's fan unit is fully recessed behind the guard. And because of Flotek's advanced aerodynamic design, its operation is quiet too.



## Computer Data Acquisition System Options

Instrumentation, control, and data acquisition are at the heart of a high quality wind tunnel system. Flotek wind tunnels are designed to integrate totally with industry standard data acquisition and control packages. Choose National Instruments with Labview software or Computer Boards with Labtech software. Flotek can support a highly sophisticated system of real and virtual instrumentation providing real time data display of 16 simultaneous channels (pressure taps), data logging to disk, computer control of wind speed and airfoil angle of attack, and more.

## Flotek Custom Design Services

If you need a larger, special purpose tunnel, Flotek can design, build and deliver wind tunnels custom built to your size and velocity specifications, in either open loop or closed loop configuration. Please contact the company.

## Flotek 360 Specifications

- 6" x 6" test section, 18" length
- 0-65 MPH (95 FPS) test section velocity
- 21" x 21" inlet; 7' overall length
- Variable speed, 1/2 H.P. direct current motor
- Designed to fit on standard 8' conference table
- Easily moved from site to site with optional rolling stand
- Quiet operation: Tested at 62 db (OASPL)

## Theoretical vs. Actual

Flotek 360:

NACA 2415 AIRFOIL:  $V=75$  fps

Theoretical Data  
Upper surface: \_\_\_\_\_ ■  
Lower surface: - - - - - ●

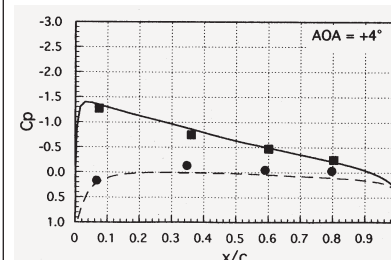


Chart shows close conformity of actual data points to theoretical performance of NACA 2415 airfoil in a Flotek 360. Flotek 1440 generates 16 data points and shows nearly identical performance.

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Visit the Flotek Website at [www.gdjinc.com](http://www.gdjinc.com) to get the latest information about Flotek products and programs.

**GDJ INC.**

7585 Tyler Boulevard • Mentor, Ohio 44060

Phone: 440.975.0258 • e-mail: [jgilbert@gdjinc.com](mailto:jgilbert@gdjinc.com) • Internet: [www.gdjinc.com](http://www.gdjinc.com)