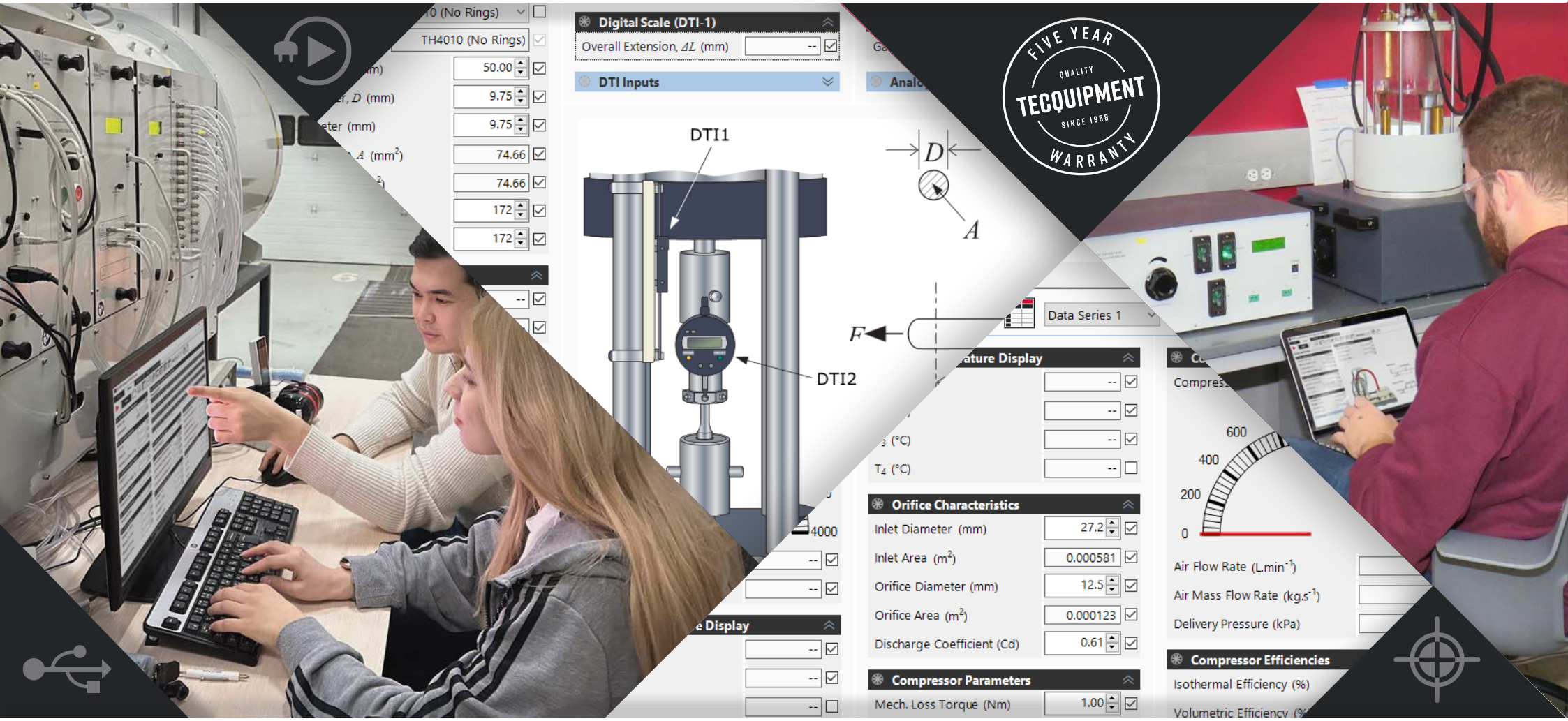
VDAS®

VERSATILE DATA ACQUISITION SYSTEM

TECQUIPMENT



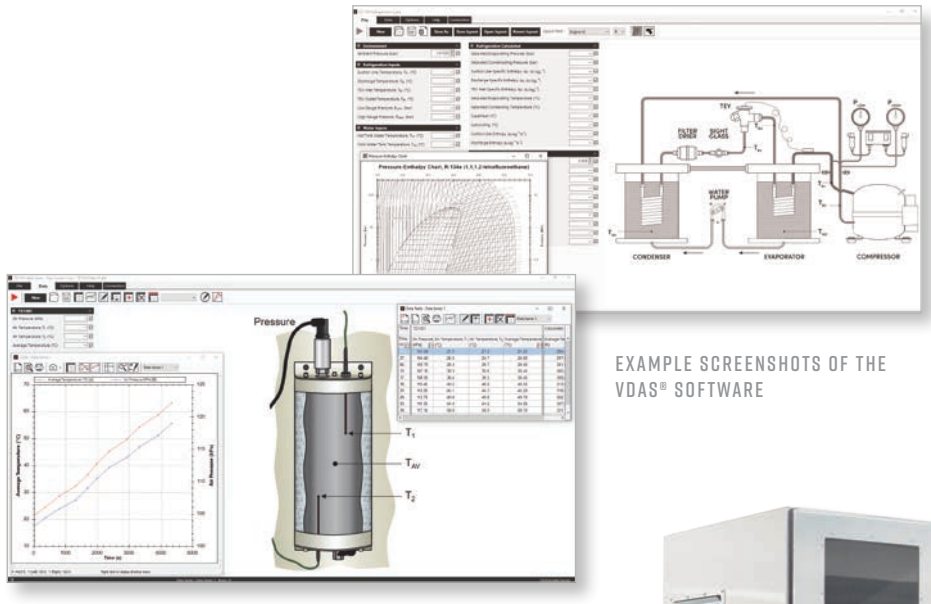
TECQUIPMENT.COM

INTRODUCING VDAS® MKII

TecQuipment's proprietary Versatile Data Acquisition System (VDAS®) is a high-capacity, accurate and user-friendly automatic data acquisition hardware and software package that extends into several TecQuipment product ranges and over 90 products.

Perfect for educational engineering labs, VDAS® MkII is a modern and cost-effective way to improve laboratory teaching by enabling real-time display and capture of experiment data.

For individual student use, or lecturers demonstrating experiments to a whole class, VDAS® MkII gives real-time calculation, recording and charting with fast data export. This makes efficient, productive and effective use of time for students and lecturers.



EXAMPLE SCREENSHOTS OF THE VDAS® SOFTWARE

WHAT ARE THE FEATURES AND BENEFITS OF VDAS®?

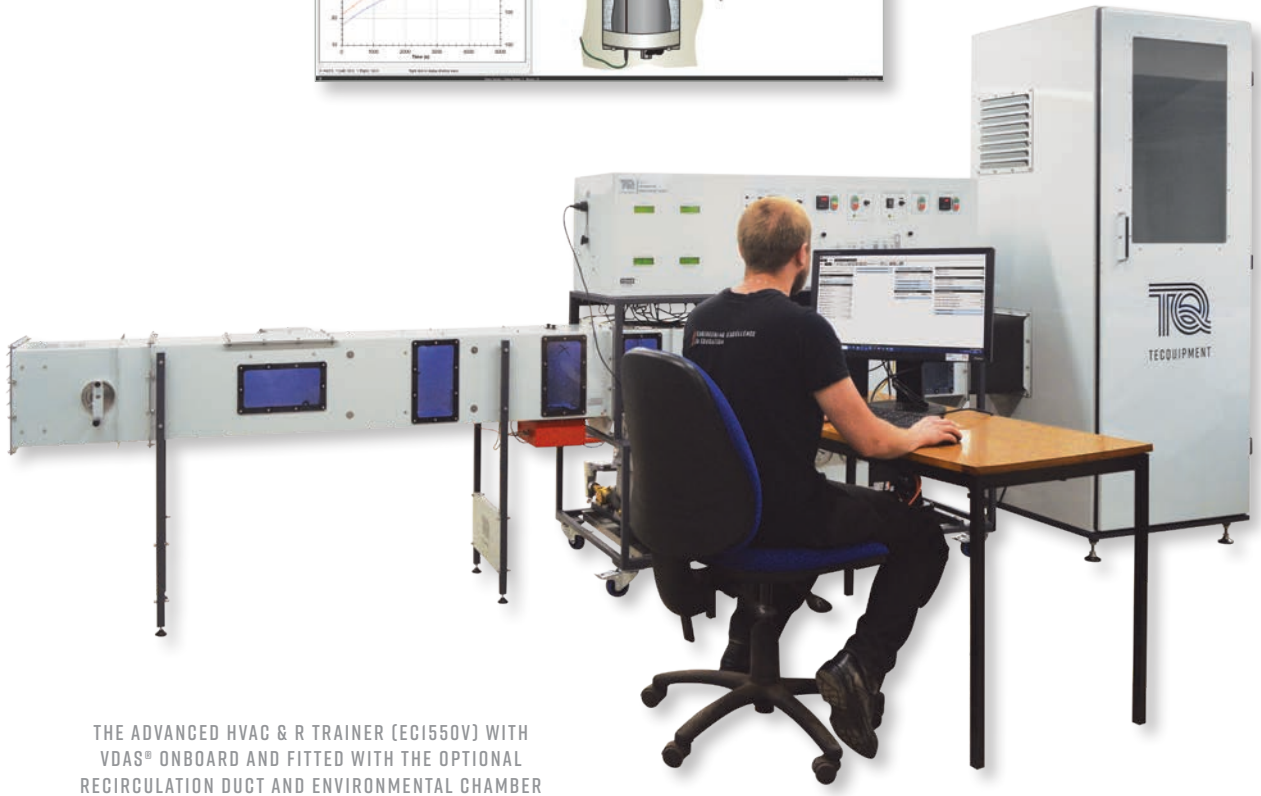
- Modern, cost-effective automatic data acquisition hardware, software and accessories to enhance teaching and laboratory sessions
- Real-time traces, data capture, monitoring and display of experiment readings on a computer (PC)
- Intuitive and easy-to-use software, with clear, customisable display and layout options
- Automatic calculation, recording, charting and data export for efficient use of students' and lecturers' time
- Available in both frame-mounting and benchtop options for convenience
- Similar software layout for all VDAS®-compatible products – no need to learn new software when changing experiments

FREE UNLIMITED SOFTWARE DOWNLOADS

PLUG AND PLAY OPERATION

NO CALIBRAITON

USB CONNECTIVITY



THE ADVANCED HVAC & R TRAINER (ECI550V) WITH VDAS® ONBOARD AND FITTED WITH THE OPTIONAL RECIRCULATION DUCT AND ENVIRONMENTAL CHAMBER

VDAS® MKII EXPLAINED

The VDAS® MkII hardware is a computer interface module and connects the sensors and instruments of a TecQuipment VDAS®-compatible product to a suitable PC running the VDAS® software.

Manually recording data from experiments can be difficult – it takes time and can be repetitive. Some experiments require the user to take many readings from several instruments in a short time. Other experiments require the user to take regular readings over several hours or days. It is often necessary to adjust controls and instruments while taking readings. Humans can also make mistakes when they read an instrument, write down the data, or enter it into a computer. This can lead to errors in the data and may give faulty results.

VDAS® MkII is an excellent tool for use with many of TecQuipment's products. It removes the need to read, record and save data from experiments manually. It also reduces the chance of human error. VDAS® can record lots of data in a short time, or automatically take readings over several hours. It also saves the data in electronic form so the user may view it later, or produce charts and tables.

VDAS® software works with VDAS® MkII-compatible hardware to display real-time traces and record analogue data as a user-friendly alternative to an oscilloscope on selected TecQuipment products.

As a real-time data capture device for engineering experiments, VDAS® MkII works with a growing list of over 90 TecQuipment products (see page 7).

There are three types of VDAS® interface:

BENCH-MOUNTED VDAS® UNIT (VDAS®-B)

A hardware unit that sits on a bench and can serve many benchtop pieces of VDAS®-compliant equipment in a laboratory.

BENCH-MOUNTED VDAS® UNIT (VDAS®-B MKII)

FRAME-MOUNTED VDAS® UNIT (VDAS®-F)

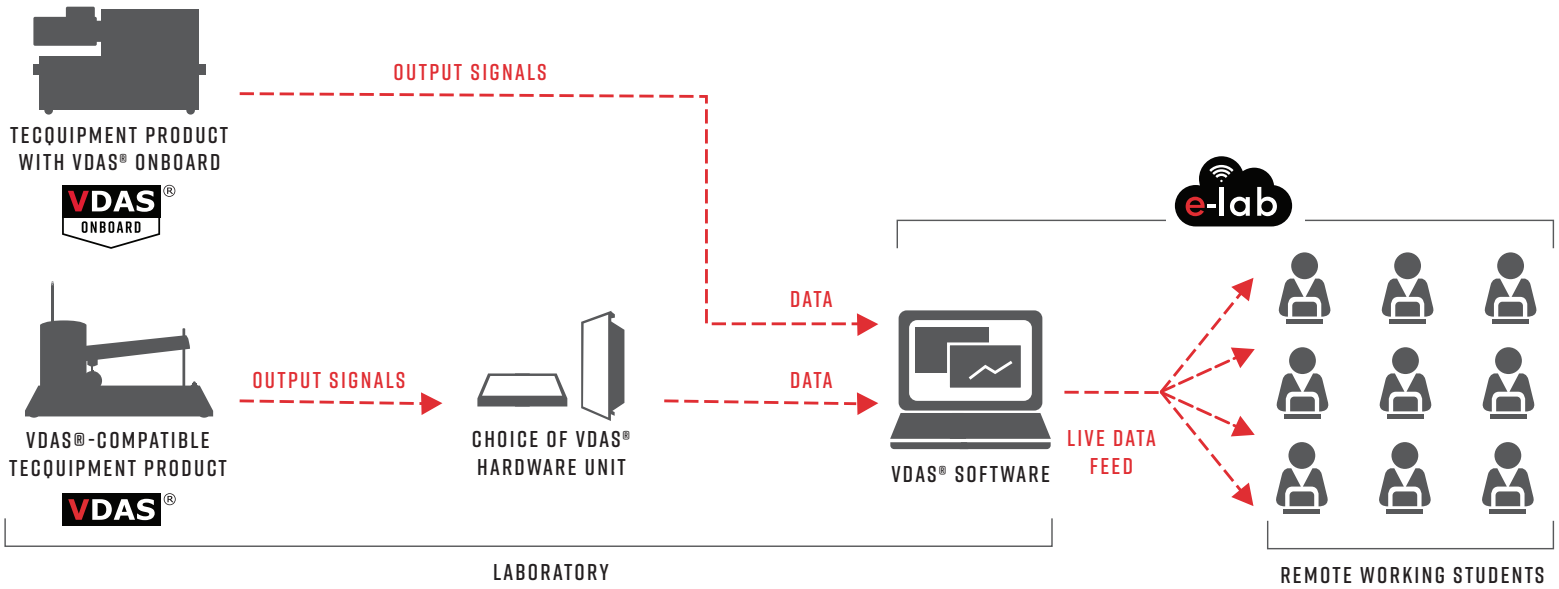
A hardware unit that is mounted on a frame and can serve many pieces of VDAS®-compliant equipment in a laboratory.

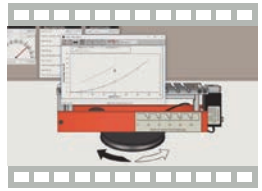
The above units are electronically identical, but their cases are physically different.

FRAME-MOUNTED VDAS® UNIT (VDAS®-F MKII)

VDAS® ONBOARD

The VDAS® MkII interface is built in to the TecQuipment product and therefore requires no additional hardware.





VDAS® FAMILIARISATION

HOW TO IDENTIFY VDAS® COMPATIBLE PRODUCTS

TecQuipment products that are supported by VDAS® MkII can be quickly identified by this logo and require a VDAS® hardware unit in order to gather data.

The hardware unit is available in either frame-mounting (VDAS®-F) or bench-mounting (VDAS®-B) versions. Both units work the same but the choice gives more convenience to the user. For example, some TecQuipment VDAS®-compliant products have an integral instrumentation frame, so the frame-mounting interface unit is the best choice.

Products featuring the VDAS® Onboard logo have the VDAS® interface integrated into the hardware of the product as standard. For these products it is not necessary to purchase an additional VDAS®-B or VDAS®-F unit. Simply download the free software from the TecQuipment website, fit the supplied USB cable between the apparatus and a suitable computer, select the apparatus being used from the VDAS® software options menu and the system is ready to go.

HYDRO-ELECTRIC TURBINE (AE10000V) WITH VDAS® ONBOARD

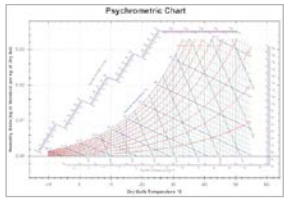
VDAS® SOFTWARE

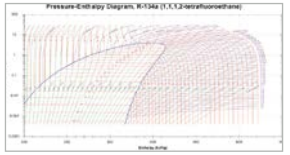
For both VDAS® MkII and VDAS® Onboard, the software is intuitive and easy to use, with clear and convenient data display options. The software looks and works in a similar way for each TecQuipment VDAS®-compliant product. This saves time as the user does not have to learn how to use new software when changing experiments.

The VDAS® software is available to download free of charge for an unlimited number of users from the TecQuipment website: TECQUIPMENT.COM/DOWNLOADS

BENEFITS OF THE VDAS® SOFTWARE

- Works with existing TecQuipment VDAS®-compatible products
- Records data manually or automatically
- Data capture set by time or intervals
- Display of real-time data in digital form or as an analogue meter
- Real-time traces of analogue signals
- Data logging for printing and later analysis
- Exports data for use by other software
- Performs real-time calculations to generate user-defined data
- Creates and prints charts and data tables
- Customisable layouts





VDAS®-RELATED SOFTWARE

VDAS® e-lab software works with TecQuipment's VDAS®-enabled products that can be used remotely, allowing students to interactively engage and participate in laboratory experiments for an adaptable, blended learning approach (see pages 4–6). Annual licences for VDAS® e-lab software are available for single, five and an unlimited number of experiments.

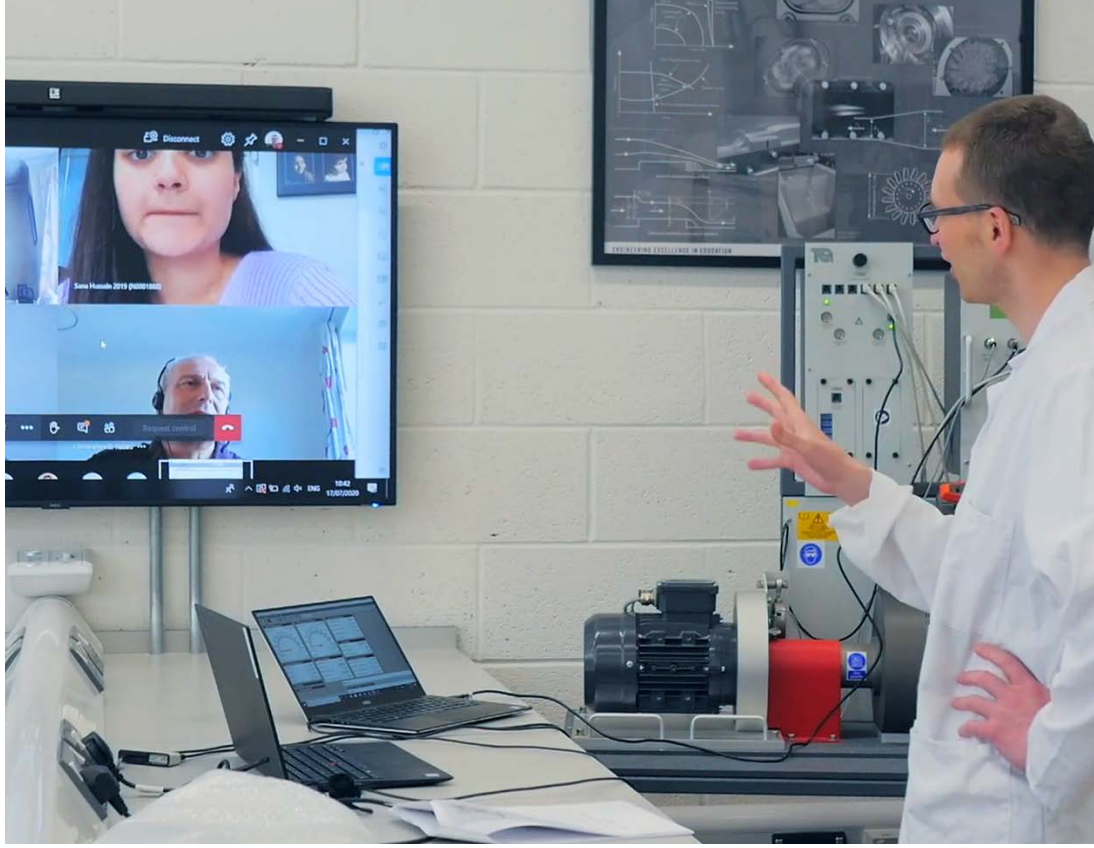
HDMS is a user-friendly, simple software tool for manual data entry and recording of data for many of TecQuipment's hydraulics experiments.

PRODUCT FEEDBACK

Your insights will help us improve the software's functionality, usability and design to better meet your needs.

INTRODUCING VDAS® E-LAB

VDAS® e-lab is a flexible and easy-to-use cloud-based system from TecQuipment. The software works with TecQuipment's VDAS®-enabled products and can be used remotely, allowing students to interactively engage and participate in laboratory experiments for an adaptable, blended learning approach.



DATA CAPTURE SOFTWARE

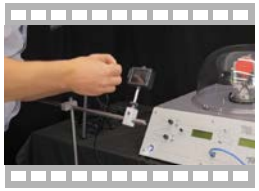
Live experimental data direct from the laboratory can be processed by an unlimited number of remote students.

- Students can individually manipulate the experiment data remotely
- Provides automatic calculation, recording, charting and data export remotely
- Low network bandwidth requirement of 1 Mbps to increase accessibility
- To monitor engagement, the connection status of students' are time logged
- Suited to remote classroom demonstrations, laboratory experiments and group work

MULTI-CAMERA VIDEO

For live streaming of experiments and demonstrations, TecQuipment can supply the necessary cameras, tripods and fittings. Chose from four different bundles containing cameras, tripods, stands and mounts.

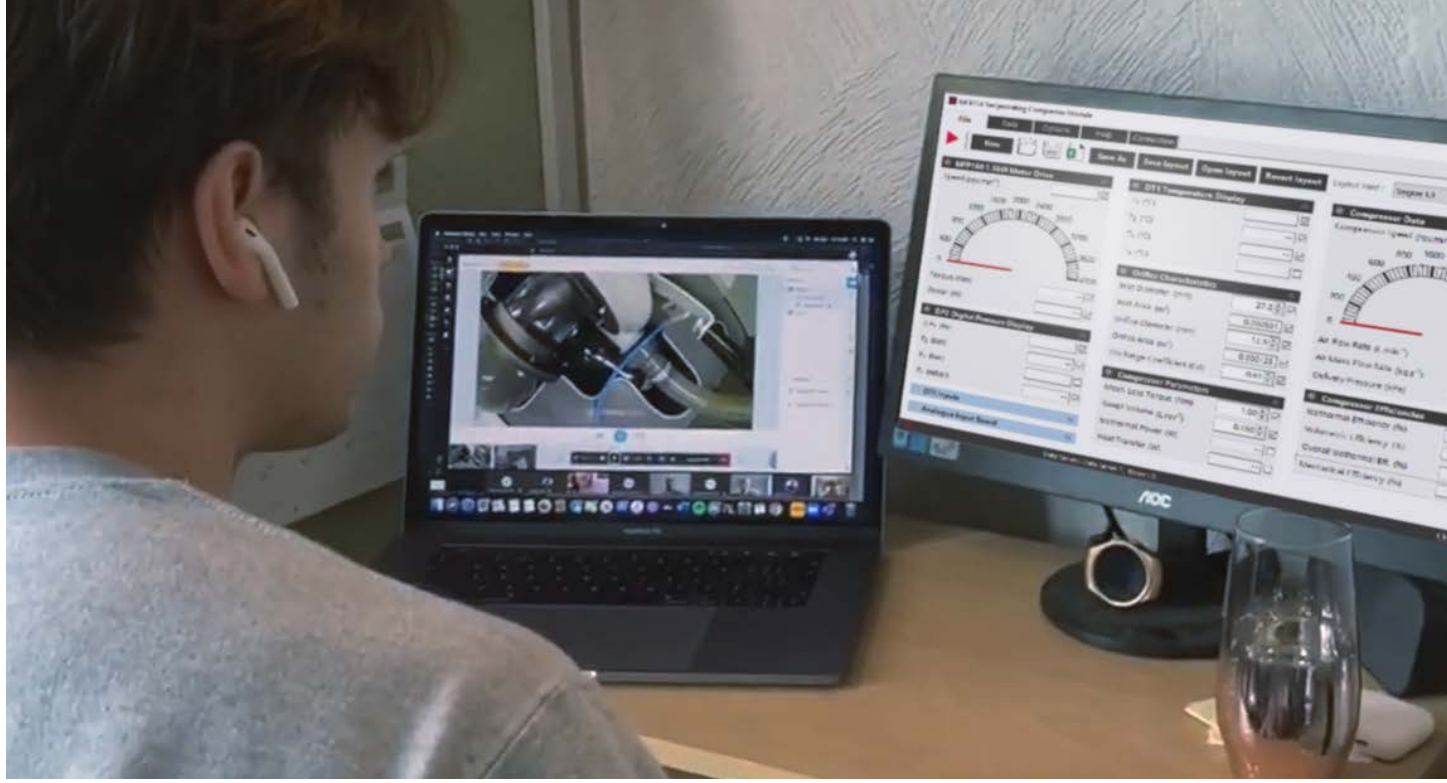
AN INTRODUCTION TO VDAS® E-LAB



QUICK-START GUIDE FOR TUTORS

QUICK-START GUIDE FOR STUDENTS

VDAS® e-lab: FREQUENTLY ASKED QUESTIONS



Why should I buy VDAS® e-lab rather than simply send my students a file of experiment data?

VDAS® e-lab encourages students to actively engage in the process and allows students to capture their own unique data set in direct response to observing the experiments in real time. This provides a better learning experience as the student observes the experimental procedure and may often need to request specific changes of the experimental parameters. The possibilities for plagiarism are greatly diminished, with lecturers being able to identify exactly who has participated in the experiment and, where doubts may exist, compare data sets between students.

If I already have VDAS® software, can I use this remotely?

No, you will need to download the latest VDAS® (4.0.0 upwards) AND the institution will need to purchase an annual VDAS® e-lab licence that will enable you to use the VDAS® e-lab remote live data-sharing functionality.

LOW NETWORK BANDWIDTH REQUIREMENT OF MAX 1 MBPS

MONITOR ENGAGEMENT WITH A TIME-LOGGED STATUS OF STUDENTS' CONNECTION

When I purchase VDAS® e-lab, do you send the software by post?

No, visit **www.tecquipment.com/downloads** to download the latest version of the VDAS® software. It is the same version of the software for both the person demonstrating the physical experiment and the student remotely receiving live experiment data. The VDAS® e-lab licence unlocks the remote capability within VDAS®.

Can I use the same VDAS® e-lab licence on multiple computers?

The licence is specific to the experiment and can be easily transferred to other computers.

If I have a single licence for one experiment, can I use it on different physical versions of that experiment? For example, I have one Universal Testing Machine on site 1 but I also want to use it with another Universal Testing Machine that is located on site 2.

Yes, it is not specific to the single product, but it is specific to the experiment.

Do my students need a licence of VDAS® e-lab?

Not if they are receiving the live experiment data. Students download the latest version of VDAS® (4.0.0 upwards) and will be given a connection ID from the demonstrator, who requires the licence to be active on their PC. The demonstrator could also be a student who has been provided with the licence information.

How do I renew the annual licence?

You will be contacted by TecQuipment near your renewal date about the renewals process.

What are the computer and Internet requirements for students to run VDAS® e-lab?

Students and the demonstrator each require a computer with Windows 8 or 10 operating system and 500 Mb of hard disk space, plus at least an Intel 5 or equivalent processor. A maximum Internet speed of 1 Mbps is required. For many VDAS® experiments, the requirement is much less than this.

Is the data stored in the cloud?

No, the cloud is used to distribute the data only.

How does VDAS® connect to the network?

The VDAS® hardware connects to a PC, which must be connected via WiFi/Ethernet to the internet and the cloud to share the data.

Is a demo licence available?

Yes, for a two-week free demonstration licence please contact **sales@tecquipment.com**

What is the difference between VDAS® software and VDAS® e-lab?

The VDAS® software is part of the entire VDAS® solution from TecQuipment that includes hardware that is either Onboard, or available separately. VDAS® e-lab is the remote data transfer functionality within the VDAS® software. VDAS® software is available free of charge, but in order to access the VDAS® e-lab remote data functionality an annual licence is required.

Can students work independently recording and analysing experiment data?

Yes, because each student is working within their own version of VDAS®, receiving the live experiment data through the VDAS® e-lab functionality.

Can experiment data be shared?

Yes, they can either save the experiment data as a .dat file that can be opened within VDAS® by another person, or exported as an Excel or HTML document. If you are running an online classroom session at the same time, there is the option to share your screen as well.

What teaching equipment can I use VDAS® e-lab with?

The teaching equipment needs to be VDAS® enabled and have VDAS® either Onboard or have a separate VDAS® hardware unit (VDAS®-B or VDAS®-F) connected to the apparatus and a suitable computer running VDAS® 4.0.0 or higher.

Do I need VDAS® integrating hardware (VDAS®-B and VDAS®-F)?

If the experiment does not have VDAS® Onboard, you need to have a VDAS® hardware unit connected to the teaching equipment and the demonstrator's computer running VDAS® with VDAS® e-lab enabled.

HERE TO HELP YOU

A team of specialist customer care personnel are available to answer a range of question relating to technical details, spare parts and maintenance:

CUSTOMER.CARE@TECQUIPMENT.COM

REMOTE VIEW HARDWARE: FREQUENTLY ASKED QUESTIONS

Can I run VDAS® e-lab separately to the Remote View Hardware?

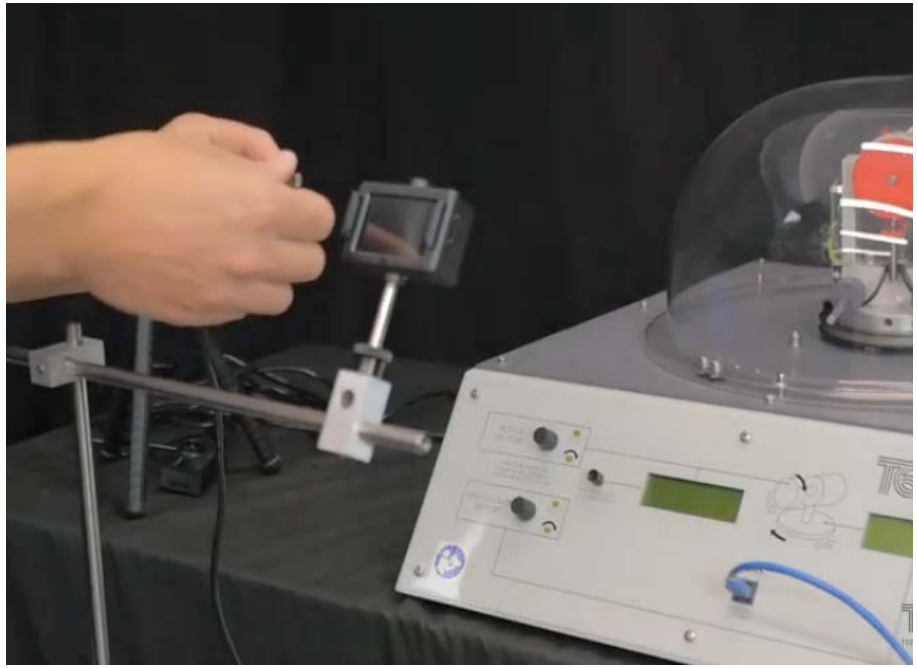
Yes, they are entirely independent of each other.

Can I use the Remote View Hardware with other equipment?

Yes, this is independent to VDAS® and VDAS® e-lab. You can use it on non-VDAS®-enabled TecQuipment products like the Engineering Science range, and third-party non-TecQuipment teaching apparatus in your laboratories.

You recommend using ManyCam to integrate the live streaming of multiple cameras into one visual feed, but can I use other software for this function?

Yes, other options are available on the market. We recommend ManyCam because of its extensive functionality and that it is compatible with the major online meeting classroom platforms.



VDAS® ENABLED PRODUCTS

AERODYNAMICS

Subsonic Wind Tunnel AFI300
Subsonic Wind Tunnel* AFI450S
Subsonic Wind Tunnel* AFI600S
Flight Demonstration Wind Tunnel** AF4IV
Nozzle Flow Apparatus AF27
Intermittent Supersonic Wind Tunnel AF300
Continuous Supersonic Wind Tunnel AF302

FLUID MECHANICS

Pipe Surge and Water Hammer H405
Flumes FC300*
Centrifugal Pump Test Set H47
Advanced Series and Parallel Pumps** H53V
Two-Stage Series and Parallel Pumps H83
Multi-Pump Test Set** H85V
Advanced Hydrology and Rainfall Apparatus** H3I3V
Centrifugal Pump Module MFPI01
Axial Flow Pump Module MFPI02
Positive Displacement Pump Module MFPI03
Reciprocating Compressor Module MFPI04
Centrifugal Compressor Module MFPI05
Centrifugal Fan Module MFPI06
Axial Fan Module MFPI07
Pitot-Static Traverse 450 mm MFPI07A

MATERIALS TESTING AND PROPERTIES

Thin Cylinder SMI007
Diaphragm SMI008
Thick Cylinder SMI011
Strain Gauge Trainer SMI009
Digital Strain Display SMI010
Torsion Testing Machine, 30 Nm SMI001
Rotating Fatigue Machine** SMI090V
Creep Machine SMI006
Benchtop Tensile Testing Machine SMI002
Universal Testing Machine SMI000
Unsymmetrical Cantilever Apparatus SMI003
Beam Apparatus SMI004
Euler Buckling Apparatus SMI005

NEXT GENERATION STRUCTURES

All 22 experiment modules** STS2-STS22

THEORY OF MACHINES

Air Bearing Apparatus TE96
Cam Analysis Machine** TMI02IV
Balance of Reciprocating Masses** TMI022V
Geared Systems TMI018
Centrifugal Force TMI005
Governors TMI027
Free Vibrations of a Mass-Spring System TMI64
Free Torsional Vibrations TMI65
Free Vibrations of a Cantilever TMI66
Free Vibrations of a Beam and Spring TMI67
Free and Forced Vibrations** TMI016V

THERMODYNAMICS

Ideal Gasses –Boyle's Law TDI000
Ideal Gasses – Gay-Lussac's Law TDI001
Expansion of Perfect Gas** TDI004V
Filmwise and Dropwise Condensation and Boiling TE78
Emissivity – Natural Convection and Radiation** TDI011V
Unsteady State Heat Transfer** TDI009V
Heat Transfer Experiments TDI002
Free and Forced Convection TDI005
Benchtop Heat Exchangers TD360
Cross-Flow Heat Exchanger TE93
Radiant Transfer Experiments TDI003
Water-to-Air Heat Exchangers TDI007
Peltier and Seebeck Effect TDI008
Temperature Measurement and Calibration TD400
Saturated Steam – Marcet Boiler TDI006
Thermal Power Plant with Steam Engine Trainer TDI050
Thermal Power Plant with Steam Turbine** TDI060V

ENGINES

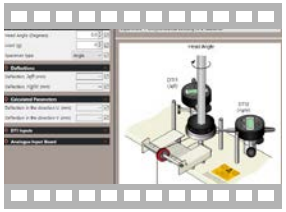
Small Engine Test Set TD200
Regenerative Engine Test Set TD300

ENVIRONMENTAL CONTROL

Cooling Towers** ECI000V**
Advanced HVAC & R Trainer** ECI550V**
Refrigeration Cycle** ECI500V**
Air Conditioning Trainer** ECI50IV

ALTERNATIVE ENERGY

Photovoltaic Cells TE4
Focusing Solar Energy Collector TE38
Flat Plate Solar Energy Collector TE39
Hydro-Electric Turbine** AEI000V
Wind Turbine Dynamics** AEI005V



SETTING UP A CONNECTION IN VDAS®

* Supplied with VDAS-F, VDAS-FC or VDAS-B as standard

** Supplied with VDAS® Onboard as standard

TECQUIPMENT