THE ARMFIELD INC.

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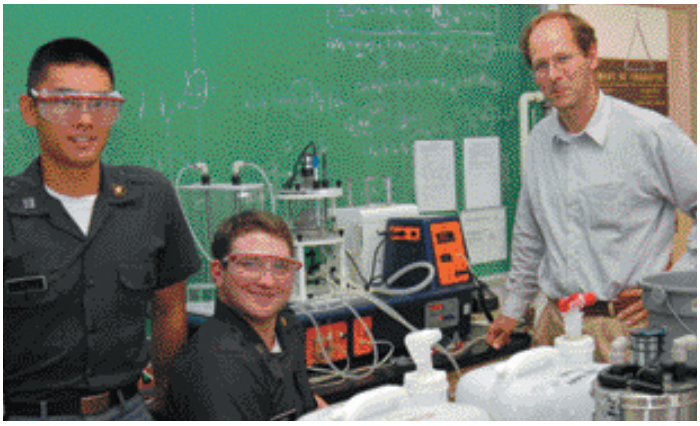
FACTFILE19

AN ISO9001 COMPANY

INNOVATORS IN ENGINEERING EDUCATION

ARMY EDUCATION IS MORE THAN SOLDIERING

Cadets entering the United States Military Academy at West Point are offered a great range of education opportunities to be woven into their military studies. One of them is the Chemical Engineering program, run by Dr Andrew Biaglow.



• *Dr. Biaglow with Cadets Bovey Zhu and Kevin Shipe in the Unit Operations Lab at USMA.*

He stresses that the USMA offers a classical chemical engineering education rather than a training curriculum, and is run through basic course units.

"It is possible that an officer will need knowledge of say, water purification or disposing of chemical munitions, for example, but at West Point we teach them general principles that can be applied in the broadest possible context."

He cites the examples of fundamental heat and mass transport phenomena that are taught with Armfield CER and HT10 series of experiments. The cadets particularly like the remote operation afforded by the HT10XC, since they don't actually need to be in the lab to run an experiment.

Cadets study heat exchangers using the Armfield HT30X heat transfer service unit and accessories and chemical reactors using the Armfield CEX chemical reactors teaching equipment. During these experiments, they are asked to compare their results to commercial CAD software, to confirm the design calculations.

"We will run through the Armfield experiments and then use simulation techniques to scale up, for example," he said. "We also make heavy use of computational fluid dynamics software to produce detailed models of the inner working of the Armfield equipment."

The chemical engineering major has been quite a success story. Starting in 2002 with three students it has now grown to 15. Since 1200 cadets are enrolled every year and have a big choice of majors including 12 in engineering alone Dr Biaglow sees the course growing in popularity. There was a time when every cadet graduated with the same degree but now a variety of programs are offered, which in turn attracts more and better students. Said Dr Biaglow:

"These cadets become soldiers and it is not until they leave military service that they become chemical engineers and the education they get here will allow them to do that. "

With that in mind the program is aiming to be ABET accredited.

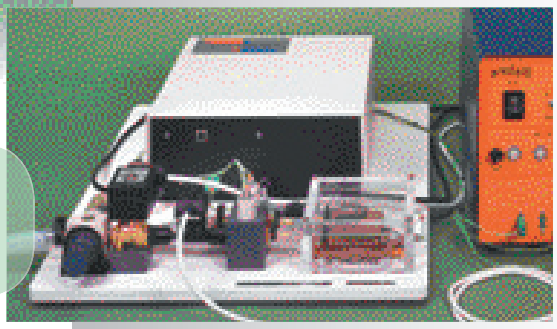
HT10XC Computer Controlled Heat Transfer Teaching Equipment

The Armfield HT10XC is a service unit, which can be used in conjunction with a range of small scale accessories for a wide range of demonstrations into the modes of heat transfer.

> more information - www.armfield.co.uk/ht10xc

• *HT10XC Heat Transfer Service Unit Shown with one of the available accessories, the HT11C Computer Controlled Linear Heat Conduction unit*

The story of how a team at MIT set up the HT10XC in Cambridge Mass to allow students at Cambridge University in England to conduct experiments is told on our website at: ***www.armfield.co.uk/mit.html***



• *HT18C Thermo-Electric Heat Pump*

Pumping it up with Armfield

The Armfield C3MkII Multi-Pump Test Rig *has been designed to demonstrate the operating characteristics (head-flow curves and efficiency) of a series of different types of pumps, each having a broadly similar input power.*

The rig can accommodate both rotodynamic and positive displacement pumps, and is supplied with the most common example of each type as standard (i.e. a centrifugal pump and a gear pump).

A range of other pump types is available as accessories, (including axial, turbine, flexible impellor, diaphragm and plunger, plus a second centrifugal pump for series/parallel demonstrations). Up to four pumps can be accommodated within the rig simultaneously for use within a single laboratory period, and each can be run without disconnecting any pipework or connections. Further pumps can also be interchanged straightforwardly by the customer, (but not recommended to be done by students). This totally new system benefits from electronic instrumentation, optional data logging and the use of a state of the art sensorless vector drive to accurately determine the torque provided by the drive motors.

As an option the unit can be fitted with two identical centrifugal pumps to allow simple series/parallel pump configurations to be demonstrated.

C3MKII Multi-Pump Test Rig.
view online: www.armfield.co.uk/c3mkii

Do you have a story to tell about your laboratory or work? Tell it in Factfile, distributed twice a year (Spring & Fall) to nearly 15,000 US academics. We like to have up to 500 words and a picture.
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