

HANDS-ON TRAINING SHIFTS UP A GEAR

Interactive boards signal a new approach to military technician training, by Phil Creaney, INOVEX Digital Training.



Left: A brand-new training system was devised to support the introduction of the Swiss Army's new Spz 2000 armoured infantry fighting vehicles.

Right: The ITBs provide a very easy-to-use student interface based upon schematics of a vehicle's primary systems.

When the Swiss army ordered 186 new Spz 2000 armoured infantry fighting vehicles (AIFV), a brand-new training system was devised to take account of the major technological advances in the vehicles' functions and operation.

Head of the training project is Staff Warrant Officer Peter Stettler who worked with digital training specialists, INOVEX and manufacturer Alvis Hägglunds to develop the training programme.

"The influence of new technologies was a key issue in our training strategy," he explains. "In the past, our AIFVs were operated by electro-mechanical controls with maintenance instructions in hard copy form. Today, everything is computer-enabled – from the vehicle's databus instrumentation and control systems to the on-board electronic manuals. Our approach to training

delivery needed to reflect this."

Peter Stettler, a graduate of the United States Army Sergeants Major Academy, has long-standing experience as an instructor for tank technicians and electricians, as well as leading the development of computer-based training (CBT) programmes for main battle tanks (MBT) and AIFVs.

Instructor-led programme

An early decision was made by the team to reduce reliance on the actual AIFV for training and instead to develop an instructor-led blended learning programme involving e-learning, software and hardware simulation. The use of interactive training boards (ITB) is one element in the Swiss Army's comprehensive OMEGA training programme that trains 80 maintenance technicians a year. These tend to be raw army recruits with a civilian background

as automotive or industrial technicians.

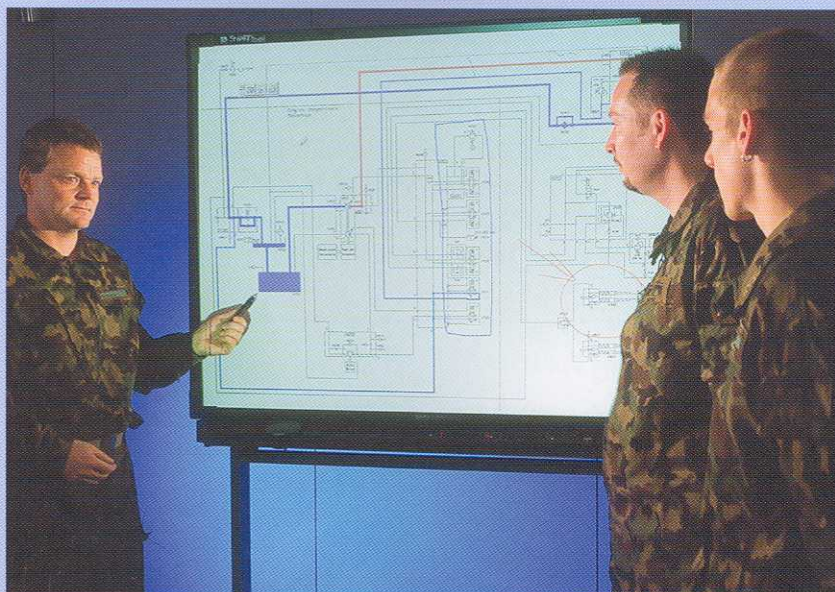
Following a CBT induction course which is common to technicians and crew, a further more detailed CBT course is provided for maintenance technicians to gain knowledge of vehicle systems – with instructors able to provide coaching and support rather than just classroom-based instruction. On completion of this stage of learning, instructors then introduce the student technicians to the ITB for pre-troubleshooting simulator training.

In essence, the ITBs enable students to build upon their knowledge and skills through an analytical group approach to problem solving. Powered by a standard PC and using twin backlit whiteboards, the ITBs provide a very easy-to-use student interface based upon schematics of the vehicle's primary systems: electrical, electronic, hydraulic, weapons etc.

Students work in groups of three or



Left: The ITBs provide a very easy-to-use student interface based upon schematics of a vehicle's primary systems.



four to solve complex tasks set by the instructors and displayed on the ITB. Through normal group interaction and by accessing the ITB's comprehensive 'infopool' of technical information on the vehicle, the students can solve each task.

Analytical approach

In what is defined as a 'constructivist' approach to learning, students build up a deeper understanding of the operation of the vehicles' systems thereby encouraging an analytical approach to fault diagnosis. So for example, the instructor might set a group task to identify and link to a function chain the elements of the hydraulic system that are used to operate vehicle ramps. This then lays the foundation for later training to troubleshoot a ramp operational failure.

"The vital element here is peer group learning," explains Peter Stettler. "Students actively construct their own knowledge. Learning in this way is active ►

"LEARNING IN THIS WAY ACTIVELY HELPS REINFORCE TEAMWORK – AN IMPORTANT PRECONDITION TO FULFIL TROUBLESHOOTING AND MAINTENANCE TASKS IN THE FIELD".

- mental work, not passive reception of teaching, and also actively helps reinforce teamwork – an important precondition to fulfil troubleshooting and maintenance tasks in the field".

Within the OMEGA training programme, ITBs also play a vital role in supporting the hardware simulator platform, extending the training benefits of the platform at much lower cost. The hardware troubleshooting simulator can be used to train students in fault diagnostic routines but, for those faults only apparent within a moving vehicle (for instance, gun and turret stabilisation failures) the ITBs are again employed.

Practice with feedback

Complex software simulation techniques within a virtual motion platform enable groups of students to gain understanding and experience without necessitating a full-motion platform. ITBs are also used to display a diagnostic feedback system for students to familiarise themselves with the vehicle's embedded and off-board notebook-based diagnostics system.

Probably the single most important factor in troubleshooting training is extensive practice with feedback. The ITBs are an efficient and cost-effective alternative to using the hardware troubleshooting-simulator or even the actual vehicle.



Staff Warrant Officer Peter Stettler, head of the Swiss Army's OMEGA training project.

High quality on a limited budget

Like most military organisations today, the Swiss Army needs to deliver high quality training on a limited budget. The increasing sophistication and complexity of equipment, the reduced number of services subject matter experts, even less training time and the

need to cut down reliance on real equipment are all demanding a fresh approach to training strategies.

Health, safety and environmental issues also limit opportunities for live training. E-Learning, CBT and software simulation are proving invaluable in addressing these pressures. The application of IBTs in a small-group CBT approach has added a new dimension to synthetic learning. It is seen as the ideal training aid and most cost-effective method for training in complex technologies as well as a bridge between traditional CBT and the hardware simulator/live system.

INOVEX Digital Training is leading the way in the use of ITBs for technical training delivery. With headquarters in Switzerland and offices in the UK and Abu Dhabi, the company develops training solutions for defence customers worldwide. Using state-of-the-art media technologies, it specialises in CBT, computer aided instruction and E-learning programmes employing software-based simulation techniques. ■

Phil Creaney is a graduate in electronics and has worked in the field of product support, technical publications and training for over 25 years. He gained valuable experience in user and technician training while working within a technical publication organisation, before running his own specialist training services company. Now as managing director of INOVEX's UK operations and a member of the company's executive management team.



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