

Virtual-reality training tool developed for lathe operators

Irma Venter
Contributing Editor

Portoria-based company Naledi3d Factory has developed a virtual-reality (VR) training tool for lathe and milling-machine operators for the Department of Labour's National Skills Fund.

The program is fully interactive and allows the operator to 'walk' around the machine, view it from all angles, as well as fully operate the machine.

VR is defined as a computer-generated environment where the user is able to manipulate the contents of the environment – think a step up from graphically-advanced computer games.

"South Africa is under-resourced in good tool-making skills and doesn't meet the needs of industry. New ways of training are required and the use of virtual reality in technical skills development offers tremendous potential in helping to address the needs of the manufacturing sector," says Naledi's Bernd Oellermann.

The VR simulation allows the student to practise machining procedures and understand the main principles of milling and turning, but within the safety of a virtual environment, saving cost, and without the possibility of injury.

The virtual machines are true to life and provide feedback when mistakes are made.

A self-assessment section tests the learning gained, which includes safety and troubleshooting issues.

South African Qualifications Authority unit standards were used as a basis for the virtual lathe and milling machine, so as to conform to national standards.

The learning covered includes basic use of the machine, health and safety issues, tolerance and measurement, definitions and terminology, tips and tricks, as well as links to other resources.

The learning content was structured to include an introduction, background, basics, tasks, a self-assessment system and a reference section.

Naledi MD **Dave Lockwood** says virtual reality is an excellent train-



A view of the lathe and milling machine

ing and education tool as the text and the oral soundtrack may be in any language, and it overcomes illiteracy barriers because of the visual and interactive nature of the material. It also allows learners to explore in safety.

Computer literacy is also not a necessity, as mouse skills are needed at most.

Naledi's focus since its inception in 2000 has been on using VR to provide education and training content, the visual representation of new technology concepts as well as uses in construction, architecture and town planning.

The company has a strong history in development projects in Africa, funded mostly by donor agencies, for example developing a VR program for an HIV/Aids awareness project in Ethiopia, beekeeping training for emergent farmers in Zimbabwe and hygiene awareness in Uganda.

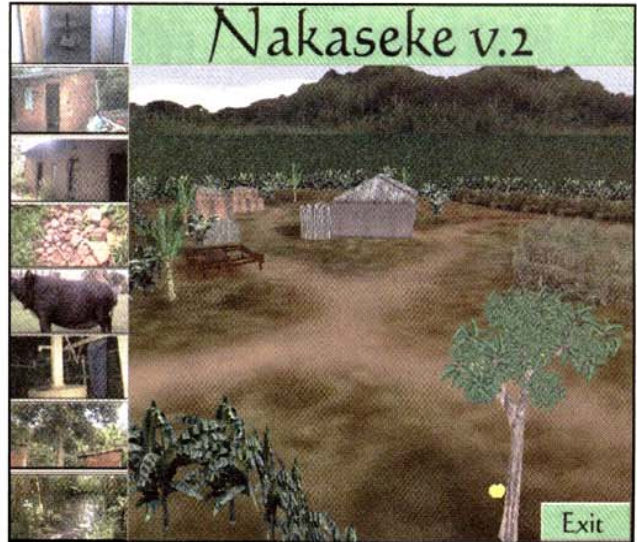
Other past projects include land-use planning in Soweto and assisting youngsters in Alexandra, in Johannesburg, in understanding how to obtain and retain employment.

Lockwood expects that Naledi, a resident within the Innovation Hub – which assists bright-spark local start-ups – will in future expand its development of visually interactive training material using VR, working with a range of partners.

"We can develop much more training content, such as bricklaying or for the mining industry where the effects of negligent behaviour can be shown and made very clear through VR."

Naledi also aims to grow its involvement with other local industry in terms of simulations, visualisations and visual marketing material.

ENGINEERING NEWS COUPON ON PAGE 82 E57222



The walkthrough environment of the rural hygiene project designed for Uganda



ENGINEERING NEWS

October 8-14 2004

Volume 24 no 39

Page 19