TOUGH: Dr Ng Eng Hen (centre) triggering the demo for a material that stops bullets from piercing a watermelon. (PHOTO: THE STRAITS TIMES)

High-tech armour unveiled

By Shaun Tan

THE Temasek Defence Systems Institute (TDSI) celebrated its 10th anniversary yesterday by showcasing a host of student projects, including that of a lightweight, flexible body armour.

Called the Flexible Impact Protection Materials System, the armour entered development in January. It is designed to withstand multiple hits and to protect its wearer from bullets.

In his speech at the event, Minister for Defence Ng Eng Hen noted the importance of technology in the Third-Generation Singapore Armed Forces (SAF), while reiterating the crucial role played by its personnel.

“It is the people behind the technology...that provide the leverage for the SAF. In this critical human endeavour, TDSI has played a pivotal role,” he said.

The institute is a collaboration between the National University of Singapore and the United States Naval Postgraduate School, where military staff from both nations undergo an 18-month-long course.

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LIGHTWEIGHT, FLEXIBLE BODY ARMOUR: HOW IT WORKS

THE Temasek Defence Systems Institute team used a combination of shear-thickening materials to create a flexible body armour that hardens when struck by a projectile.

A shear-thickening material, usually a fluid, is a substance that becomes more resistant when subjected to severe stress. The material used in this particular system is polyvinyl alcohol, commonly found in children’s plasticine.

The armour is capable of stopping a 9mm round fired by a Magnum revolver and is designed to take multiple hits. This means that bullets are less likely to be embedded in it upon impact.

The flexible impact-protection system has attracted interest from several companies looking to use it in commercial products, such as hip protectors for the elderly and shields for goalkeepers in hockey matches.