



This annual exhibition provides our final year engineering students with the opportunity to showcase their projects to fellow students, staff, industry visitors and the public. It's also a chance for them to demonstrate their 'tech-readiness' in an era where technological innovation is competitive and valued.

— An SP spokesman

110 solutions developed by 400 final-year engineering students from Singapore Polytechnic (SP) were showcased at the SP Engineering Show 2016. They solve real-life problems faced by people from all walks of life. Reporters **SITI NUR AISHA OMAR** and **HO YUEN TENG** look at three innovative solutions.

Engineering real-life solutions

This drone can 'bee' a real help

Pest control workers clearing beehives face being stung by hundreds of angry buzzing bees defending their colony, which is usually somewhere high up on a tree.

So why not fly an unmanned aerial vehicle (UAV) near the hive and spray chemicals on it from a safe distance?

That was one scenario three final-year SP students worked on.

They built their Pest Controller's Assistant UAV from scratch, envisioning it being used for beehive destruction and rooftop inspection.

Their project was one of 110 developed by 400 final-year engineering students to solve real-life problems and which were showcased at the SP Engineering Show 2016.

Pest control company Pestbusters had approached the polytechnic with the problem.

Their workers have to don heavy gear and get close to beehives before spraying special chemicals to destroy them. They also have to scale heights to do visual inspection of roof tops.

One of the developers, Mr Yan Junfeng, 23, said: "Both types of work present great risks. With this tool, the pest controller can simply choose a comfortable location and remotely pilot the flying machine to carry out the otherwise hazardous tasks."

The team, which also included Mr Kenny Yeo Ling Zhi, 19, and Mr Andrew Teng Kai Hong, 21, took about a year to complete the project.

Pestbusters was so impressed by the prototype that it is trying to find a manufacturer to produce it..

Mr Yan said: "We just feel happy that an actual industry



Helping the blind with good vibrations

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partner is satisfied with our prototype. If this really takes off, it'll be like contributing to society, as we'd be making the lives of those working in the pest industry easier."

The annual exhibition ends today.

ENGINEERS: (From left) Kenny Yeo Ling Zhi, Andrew Teng Kai Hong and Yan Junfeng testing out their invention (far left).

TNP PHOTOS: GAVIN FOO



INVENTORS:
(From left) Lai Yue Shan, Siti 'atikah Mohd Raba'i and Nurridzuan B Supardi worked on the Sun Gauntlet (far left).

Helping the blind with good vibrations

She was rushing to school when she saw a blind man with a white cane walk into an advertisement board at Outram MRT station.

While Miss Siti 'atikah Mohd Raba'i, 25, was unable to tell if the man was injured, the incident stayed with her. It motivated her to come up with

an invention to help the blind avoid such accidents.

So for their final-year project at Singapore Polytechnic, Miss Siti and her team members, Mr Nurridzuan B Supardi, 24, and Mr Lai Yue Shan, 26, came up with the Sun Gauntlet – a pairing of a hat and glove that senses objects ahead and alerts the wear-

er to them. It only works with objects at waist level and above.

The hat and glove vibrate when there are objects ahead. The closer the user gets to an object, the higher the intensity of the vibrations.

The hat, which has a speaker, can even “talk” to the wearer, informing him of the objects ahead.

The Sun Gauntlet's sleeve has an attached Global Positioning System and Global System for Mobile Communications so the wearer can inform his next-of-kin of his exact whereabouts in the case of an emergency.

Miss Siti said: “We hope our in-

vention will further motivate the virtually impaired to be more independent and more confident with themselves.”

To ensure they were on the right track, they tested their prototype with Mr Kua Cheng Hock, 59, the first man to get a guide dog in Singapore.

Miss Siti said Mr Kua had advised them to focus on the hat because it does something that the cane is unable to do, which is to detect obstacles in front.

She said the team understands the limitations of their invention and are working to improve it.



TEAM:
(From left) Tan Jun Ren, Dylan Kevin Conceicao, mentor Iain Choi, Tan Jia Jing Roy, Lim Lu Xin and Theng Wen Jun Clarence and the scissor lift they built (inset).

TNP PHOTOS: GAVIN FOO

Giving wheelchair users a lift

They were given the challenge of helping a wheelchair-bound person easily get into a Housing Board flat with steps at the entrance.

And they delivered, with a scissor lift – a compact lifting device that raises the wheelchair to the same height as the flat's floor, so that it can be wheeled straight in.

The students, who are pursuing a diploma in aeronautical engineering, did it as part of their final year project.

The team comprised Mr Lim Lu Xin, Mr Tan Jia Jing Roy, Mr Tan Jun

Ren, Mr Dylan Kevin Conceicao and Mr Theng Wen Jun Clarence, all 19.

Their mentor, Mr Iain Choi, 35, got the ball rolling by telling them about a man he knew who had been struggling with getting his wheelchair-bound mother-in-law in and out of their flat.

The man, known only as Mr Lok, who is in his 50s, used a wooden ramp over the steps but it was too much effort. The team embarked on the project to help Mr Lok and others who face similar problems.

Mr Conceicao said: “We're very proud of our invention. Our group dynamics were very good and there was good teamwork.”

The team plans to install the lift in Mr Lok's flat by next month.

