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Giant tunnels to safeguard power supply network

\$2.4b effort to house 1,200km of cables is among deepest such projects worldwide

Jose Hong

A warren of giant tunnels which will safeguard Singapore's electricity supply network for the future has been completed.

The multibillion-dollar effort to house 1,200km of extra-high-voltage cables – more than thrice the distance between Singapore and Kuala Lumpur – is one of the world's deepest electricity supply projects.

Singaporeans will begin tapping this electrical source from next year, said energy utility company SP Group yesterday.

Given the depth, it will be easier to monitor and replace cables inside these tunnels and carry out upgrading works in the future, experts said.

Most tunnels will be about 60m beneath the earth – the height of a 20-storey Housing Board building – but some will be at 80m, the deepest among any tunnels here.

"We had to build 60m deep because Singapore lacks space. We had no choice," said Mr Michael Chin, SP Group's managing director of infrastructure and projects.

"If you look at the profile of Singapore, we have the MRT, which is 30m to 40m deep, then you have your Deep Tunnel Sewerage System, which is between 20m and 55m, so we 'chopped' (saved) our space at 60m," said Mr Chin.

The three tunnels are named the North-South, East-West and Jurong Island-Pioneer tunnels, and work on the \$2.4 billion project started in 2012.

SP Group said the high-voltage cables in the tunnels will mainly replace eight circuits running north and south or east and west across the country. These eight circuits,



SP Group staff riding electric bicycles yesterday in the tunnel network of the Underground Transmission Cable Tunnel Project. Above them is a prototype model of an automatic inspection vehicle, the final version of which will be used to monitor the tunnels for water seepage and fires. PHOTO: LIANHE ZAOBAO

built in the 1980s, are the oldest transmission cables still in use here.

The laying of cables, which will begin early next year, is projected to be completed by 2022. The first cables will go online by the end of next year.

About 500km of cables will be laid, which is less than half the capacity of the tunnels.

They will supply about 20 per cent of Singapore's peak demand, which last year was 7,149MW, according to Energy Market Authority (EMA) data.

EMA also projected electricity

demand to rise by about 2 per cent a year. The impact of the project on electricity prices is expected to be minimal.

Mr Chin said: "The immediate goal of the cable tunnels is to replace our ageing cables."

But, referring to the extra cable distance they can provide, he added: "We are also meeting Singapore's future needs."

For most of their distance, the tunnels are 6m in diameter, about two storeys high, but at junctions, they swell to 11m – the height of about three storeys.

The cables' lifespan is 30 years,

and they can be replaced up to four times inside the tunnels.

Crucially, they will be much easier to replace than cables that currently run under roads and require traffic to be disrupted as engineers dig up and cover the streets.

Said engineer Teo Chor Kok, a council member of The Institution of Engineers, Singapore: "With the cable tunnels, it is very easy for SP Group to do any cable works or upgrading with minimal disruption to traffic and Singaporeans."

He added: "It is very difficult to

monitor cables when they're under a road... Now, you can just go inside the tunnels with your equipment."

He said that one way SP Group could make the tunnels even better was through leasing space inside to telecommunications companies.

"They could lay optic fibre cables inside to allow massive kinds of infrastructure for other services," said Mr Teo.

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