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POWER GRID OF THE FUTURE

TNB working on a national grid that is smart, automated and digitally enabled

By D. RAJ and RJ DEVAN

A DRIVE on the North-South Expressway is always a pleasure, with undulating hills and little villages and homesteads dotting the scenery.

But one other thing will always be the same – the long, long band of wires stretching from tower to tower all along much of the highway, otherwise known as the national grid.

The grid is how electricity is carried from where it is generated to all the states and on to the districts and villages.

Not anymore. The days of the grid being just wires and cables carrying electricity from one place to another are over.

Welcome to the Smart Grid, the grid of the future.

Tenaga Nasional Berhad is now working on the national grid to become smart, automated and digitally enabled to ensure maximum efficiency, reliability and sustainability.

The smart grid will be able to ensure that excess energy – from power plants, solar farms or any other energy source – can be received and supplied to other power users.

A smart grid, by definition, is one that can communicate between supplier and consumer, allowing them to participate in changing demands, make a choice on energy used, save energy and reduce costs.

And there's more. The grid will be so smart it can heal itself.

Monitors and sensors placed along the grid will identify faults and inform engineers who can then remotely fix the problems, or with the help of drones.

All it takes is a man in Bangsar, Kuala Lumpur, to push a button.

The electricity grid of the future will not be just wires and cables carrying electricity from one place to another.

Power can even be rerouted to bypass problem areas. The days of massive blackouts are over. Any problem can be fixed in minutes.

Of course, there is a lot more than meets the eye in such a high-powered plan.

It involves integrating the power plants – both owned by TNB and those that are private – the solar farms, the rooftop solar power producers and the humble housing units that may soon all be producing their own electricity.

That electricity has to be harnessed and stored to be distributed when needed.

What's more, customers can form micro grids – say within a large housing estate – or even disconnect from the main grid entirely and self-supply their own electricity.

The dominance of such rooftop photovoltaic systems and improvements in battery storage means the traditional electricity supply chain is changing.

To face the challenges of this future, TNB has its distribution automation system which is designed for a better customer experience, faster reconnection (remember that man on the button in Bangsar?), less outage and energy cost reduction.

The energy saving comes with the other important part of the grid – smart meters that are now being installed in all homes around the country.

A total of 1.8 million smart meters are expected to be installed by the end of this year, with a target of 9.1 million such meters to all customers by 2027.

As of May 2021, 1.2 million smart meters have been installed in Peninsular Malaysia alone.

With smart meters, users can monitor on their phones just how much electricity they use.

They can then control the usage to keep their bills low or learn to use the right electrical items at the right time.

Up to 2025, TNB will invest approximately RM5bil per annum to modernise the grid.

This will allow the company to cope with greater penetration of renewables into the grid and management of energy decentralisation, create open platforms for energy solutions to emerge, and be resilient against cybersecurity and the impact of climate change.