SAVING MONEY ON LIGHTING

Lights ‘follow’ you around

The use of sensors to control LED lights in a direct current grid network can mean savings of up to 45 per cent over conventional lighting.

1. As a person walks into a dark room, sensor detects the person and turns on the LED light A.
2. As she continues walking forward, light A turns off and light B turns on.

LOW VOLTAGE DIRECT CURRENT (LVDC) GRID NETWORK

Fuel cells or solar panels supply direct current to a main controller of the LED lighting of the room.

Wireless sensors then turn on, dim, brighten or turn off lighting of the room as needed, thus saving energy.

WIRELESS SENSORS

These strategically placed wireless sensors communicate with one another to control the LED lighting of the room based on a number of factors. They include the position of a person, the number of people, and the level of carbon dioxide and humidity. In future, they could harvest their own power through vibrations.

Why use direct current?

- More devices like LED are native users of DC power. They are easier to build and smaller in size.
- Cheaper low voltage wiring and device protection and greatly simplified.

The prototype controls individual LED panels on the ceiling, using wireless motion sensors.

The test done at NTU proved that compared to fluorescent light tubes, the LED panels saved energy up to 30 per cent while the smart grid saves an additional 15 per cent. That’s a total of 45 per cent savings.

“This project comes at a crucial time when the world is looking for viable and impactful solutions to cut down greenhouse gas emissions and reduce consumption drastically,” said Professor Subodh Mhaisalkar, executive director of ERI@N.

In the near future, the collaborators hope to deliver real-world lighting applications that can be used in a commercial capacity.

THESE days, electricity doesn’t come cheap. With rising oil prices, we can be sure it’s not getting cheaper sooner.

But some researchers think otherwise. They believe they have the solution to reduce almost half the energy used in lighting your home, compared to conventional fluorescent lighting.

A smart grid prototype is scheduled to be further test-bedded next January at JTC’s CleanTech One building, at the new CleanTech Park.

Called the Low Voltage Direct Current (LVDC) grid network, the experimental grid and Philips’ direct current LED lightings will be set up by the Energy Research Institute (ERI@N) of the Nanyang Technological University (NTU).

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