Researchers invent smart window that tints and powers itself
17 December 2014, by Lester Kok

How it works

Nanyang Technological University (NTU) scientists have developed a smart window which can darken or brighten without the need for an external power source.

This unique self-tinting window requires zero electricity to operate and is also a rechargeable battery. The window's stored energy can be used for other purposes, such as to light up low-powered electronics like a light emitting diode (LED).

Currently, the window solutions in the market are either using permanent tinting which cannot brighten at night or are windows that can change its light transmission properties only with an external power source.

The NTU smart window however can be turned into a cool blue tint in bright daylight, cutting light penetration by about half, and then reverts back to clear glass at night or as required.

This breakthrough research led by NTU Professor Sun Xiaowei, was published recently in Nature Communications.
Such an innovative technology can adjust the amount of sunlight coming into buildings in the day, which promises significant savings on cooling and lighting costs.

"Our technology is very attractive as a zero-sum consumption smart window. Buildings owners and even common households can reap energy savings right from the outset and over the long term. Developers who are looking at constructing environmentally-friendly green buildings will find our technology attractive for their building plans," said Prof Sun.

Prof Sun is an electrical engineering expert whose other innovations include various solar technologies, glass-free 3D technologies, next-generation lightings and displays.