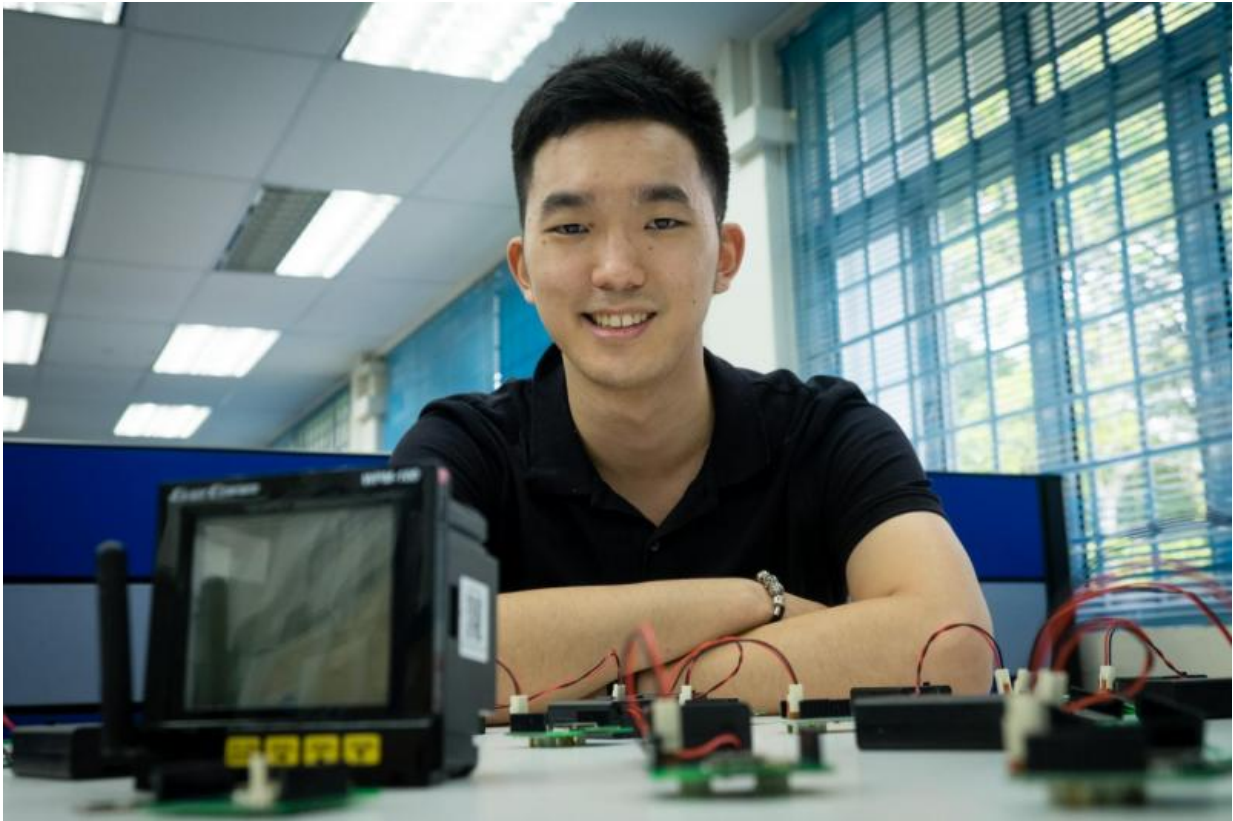# New technology could save millions in energy costs

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Ted Chen, 25, with various sensor devices used by his company to enable companies to save more on energy. Credit: NTU Singapore

A new technology from Nanyang Technological University, Singapore (NTU Singapore), could help companies and factories cut their energy

bills by as much as 10 per cent.

The new algorithm is able to analyse [energy consumption](#) by tapping on sensors in [computer chips](#) already found in equipment such as computers, servers, air conditioning systems and industrial machinery.

Such computer chips are needed for a host of functions such as to measure temperature, log data traffic and monitor the workload of computer processors.

By combining it with externally-placed sensors, such as those that monitor ambient temperature, the [new technology](#) can integrate and analyse all the operational data and recommend energy-saving solutions with almost no upfront cost.

This new algorithm which extract all such readily data and turn them into a treasure trove of information that can be studied and analysed is developed by Asst Prof Wen Yonggang from NTU's School of Computer Engineering.

It has been licensed by an NTU-incubated company, Evercomm Singapore.

Asst Prof Wen recently won the prestigious 2015 Datacenter Dynamics Award Asia Pacific. The "Oscars" of the data centre industry, these awards are often dominated by industry giants like Equinix, Huawei, NEC and Starhub.

Semi-conductor industry welcomes new technology

In a typical semi-conductor factory which produces computer chips and components for computers and mobile devices, the annual electricity bill could easily reach S$50 million and more.

Mr Ted Chen, co-founder and product architect of Evercomm Singapore, who worked with Asst Prof Wen to commercialise this technology, said: "With NTU's new analytic engine, such large semi-conductor factories and campuses could save up to S$1 million a year without a need to change much of their hardware, and instead, tune their operation and time their energy usage."

"The new algorithm allows us to use the most cost-effective way to find out where we can save energy, and our performance can be guaranteed by using real-time data."

Evercomm, a two-year-old company, already has a few semi-conductor manufacturers as their clients, of which one is a heavy electricity user in Singapore, GlobalFoundries, the second largest foundry in the world.

The latter's management team is committed to sustainable energy consumption by providing ample opportunities to adopt local innovations, as proven by being the first in the industry to engage Evercomm's energy analytic services.

In Taiwan, Evercomm is engaged by National Dong Hwa University and Chunghwa Telecom to deploy their energy analytic engine across the entire university campus.

"By combining the software algorithm with hardware sensors, we can find out exactly how much cooling a room needs, whether there is an oversupply of cooling and so adjust the air flow and temperature to achieve the best balance," said Mr Chen, an alumnus of NTU's School of Electrical and Electronic Engineering.

Even without deploying external sensors, Evercomm can achieve up to five per cent energy savings for companies, which are facing increased regulations worldwide on their energy usage and resulting carbon

footprint.

This will help Singapore companies meet the stringent regulations set by the Building and Construction Authority for its Green Mark Scheme, allowing them to reduce their carbon footprint and energy usage, added Mr Chen.

Next phase: Datacentre industry and the HDB heartlands

Evercomm is looking to expand its expertise into data centre industry. It has successful deployed a pilot test at the NTU Green Datacentre, saving five per cent of its monthly electricity bill.

In a datacentre consisting of hundreds of computer servers, over half of the energy costs are spent on cooling these servers through air-conditioning.

"Servers which are performing intensive computing will generate a lot of heat," added Prof Wen, an expert in cloud computing and green data centres. "If we know which of these servers are, we can spread out the computing load and so reduce the heat emitted by the servers, in turn reducing the energy needed to cool them."

Another large potential market is the HDB heartlands.

"Our next challenge is to look into how we can deploy our energy saving analytics for the heartlands - into HDB flats and housing estates - in partnership with international urbanisation consultant Surbana," said Mr Chen.

"We hope that our local innovation can help to reduce energy usage and

carbon emissions of companies in Singapore and overseas, help to mitigate climate change which is already happening as we speak."

Evercomm has been accredited by Singapore's Infocomm Development Authority of Singapore (IDA), under the Accreditation@IDA scheme. This scheme assess start-up companies in several criteria, such as if their product is innovative and if it has the capabilities and resources to support their business plans.

Evercomm is being incubated at NTUitive, NTU's commercialisation arm which aims to commercialise research coming out from the university.

Provided by Nanyang Technological University