

## Development of Laboratory Sustainability Initiative in Singapore

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*“If research labs account for two-thirds of a campus’s carbon footprint, it doesn’t take an Einstein to target them for energy savings.”—Environmental Protection Online*

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It has been identified that laboratories and other high tech facilities such as cleanrooms and hospitals consume 5 to 10 times the amount of energy when compared to office buildings because they are very unique in operation and energy demand. As Singapore moves towards a knowledge-based economy with substantial investment in R&D, more such energy-intensive hi-tech facilities are under development. Therefore it is critical to address the unique energy efficiency challenges for these facilities which are vastly different than typical office buildings. Part of this challenge is being addressed internationally through the formation of laboratory energy efficiency organizations such as Labs21, I<sup>2</sup>SL, S-Lab, Sustainable Labs Canada and Egnaton.



Besides these organizations, there are other initiatives taken by universities and research institutions worldwide to establish their own “Smart Labs” programs to work on specific projects at their building sites. For example, High Performance buildings for High Tech Industries at LBL is a research department that works on very specific projects investigating energy efficiency for data centres, clean rooms, laboratories, hospitals, etc. Also, campus laboratory energy efficiency programs include UC Irvine’s Smart Labs Program, UCLA Laboratory Energy Efficiency Program and Cornell Energy Efficient and Safe Labs.

To put Singapore on the world map of sustainable laboratory development as well as to gather stakeholders to discuss topics specifically for laboratory sustainability in the tropical climate, the Sustainable Energy Association of Singapore (SEAS) has partnered with Energy Research Institute @ NTU (ERI@N) to champion this initiative with the support from the National Environment Agency (NEA). The Sustainable Laboratories Group (S2Labs) held its first meeting on 28<sup>th</sup> May 2014 with active participation from government agencies, research institutes, and industry practitioners.

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Due to their unique requirement for health, safety and resource consumption, laboratories and high-tech facilities fall under a grey area between commercial buildings and industrial buildings. These facilities must interrelate at the highest level of building performance. Hence being a “sustainable laboratory” means not only cutting down the humongous energy consumption and reducing carbon footprint but also ensuring the comfort and safety in these high-tech facilities. As such, the challenges presented to the professionals in the building sector in terms of design, construction, operation and use are bigger than conventional buildings types.

With this in mind, the primary vision for S2Labs is to promote sustainable and energy efficient laboratories and high tech facilities without compromising safety and comfort. Apart from that, the group is to provide a platform for various stakeholders to exchange knowledge and build collaboration opportunities for best practices in laboratory design, engineering, construction, operation & maintenance and utilization.



It is also in this vein that the Sustainable Laboratories Conference will be organised at the Asia Clean Energy Summit (ACES) 2014, part of the Singapore International Energy Week (SIEW) 2014. Through the presentations and hands-on workshop, the conference will not only provide platform for stakeholders within the industry to discuss the pressing issues specific to tropical climate but it will be an opportunity to discover exciting collaboration opportunities in the field of sustainable, high-technology and low-energy laboratories in Singapore and beyond.

- *With contributions from the Energy Research Institute of Singapore (ERI@N)*

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