

SBS5498 Final Year Project 2 (Applied Research Project)

<http://ibse.hk/SBS5498/>

Suggested Topics from Supervisors (2018-2019)

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Title:	The potential of decentralised renewable energy generation for existing buildings
Description:	<p>A typical institution consumes electricity to power air conditioners, computers, audio/visual systems, laboratory equipment, office equipment, lifts, lighting systems and so on. According to the Energy Saving Plan for Hong Kong's Built Environment 2015-2025+ published by the Environment Bureau of the Hong Kong SAR Government in May 2015, the government aims to increase the composition of renewable energy to 40% by 2025. While buying electricity from remote wind farms and solar power stations, where electricity was generated in large scale by enormous arrays of solar panels and giant wind turbines, is the main approach to achieve the target, generating electricity from renewable sources on-site (e.g. installing solar PV panels and wide turbines) potentially contributes to meeting part of the renewable energy requirement. The potential of an existing building to capture solar and wind energy largely depends on the location and geometry of the building. This project is aimed to quantify and categorise electricity consumption of the THEi campus and the VTC Halls of Residence in Tsing Yi and estimate the potential impact of generating electricity on-site to the overall electricity consumption of the campus.</p>

Title:	Performance of PV solar panel arrays with tracking system in Hong Kong
Description:	<p>Photovoltaic (PV) solar panels are most efficient in electricity production when they are being exposed to direct solar radiation that is perpendicular to the panels' surfaces. The angle at which the sunlight reaches a fixed surface varies throughout the day and the year. Stationary PV panels that are held in fixed positions compromise electricity production when the sun passes the optimal angle (i.e. 90°). Single-axis and dual-axis tracking system were developed to automatically adjust the tilt angles of the panels according to the position of the sun, thereby maintaining the sunlight angle closest to the optimal angle as far as possible. While improving electricity production, panels with sun tracking systems are generally more expensive to install, operate and maintain. This project aims to study the daily and seasonal fluctuations in electricity productivity of the solar installed in Hong Kong and evaluate the benefits of installing such sun tracking systems in Hong Kong.</p>