

Norma Baru Bandar Rendah Karbon

Innovation in Engineering for Sustainable Low Carbon Cities

Innovation in Engineering for Sustainable Low Carbon Cities

- It's a new normal yet we are not compromising on Energy
- Engineers already facing numerous challenges – we add more
- That's why they are called engineers – the movers, ever thinking
- Innovation doesn't happened over night, though sometimes it does.
- It's how engineers look at things and transform into workable.
- ...with innovation and sustainable.

Innovation

- A new way of thinking, sometimes blend with 100 years of technologies
- Design for present and future
- Work together with Architects, Town planners and governments.
- Selling the ideas beyond profit – win-win situation
- Creating values (Credits and Recognition)

Low Carbon City

Low carbon city is a sustainable urbanization approach that centers on curtailing the anthropogenic **carbon** footprint of **cities** by means of minimizing or abolishing the utilization of energy sourced from fossil fuels.

Narrow down – in a Nut Shell

- Renewable Energy
- Design of the facilities
- Transportation
- Energy Efficiencies

Infrastructures

Renewable Energy

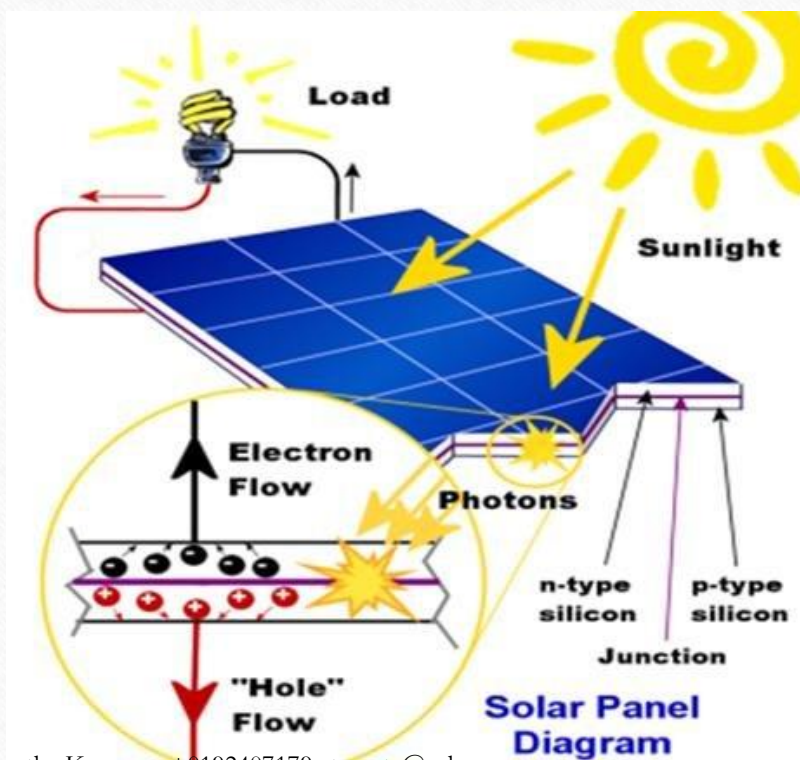
Solar Power

Wind Turbines

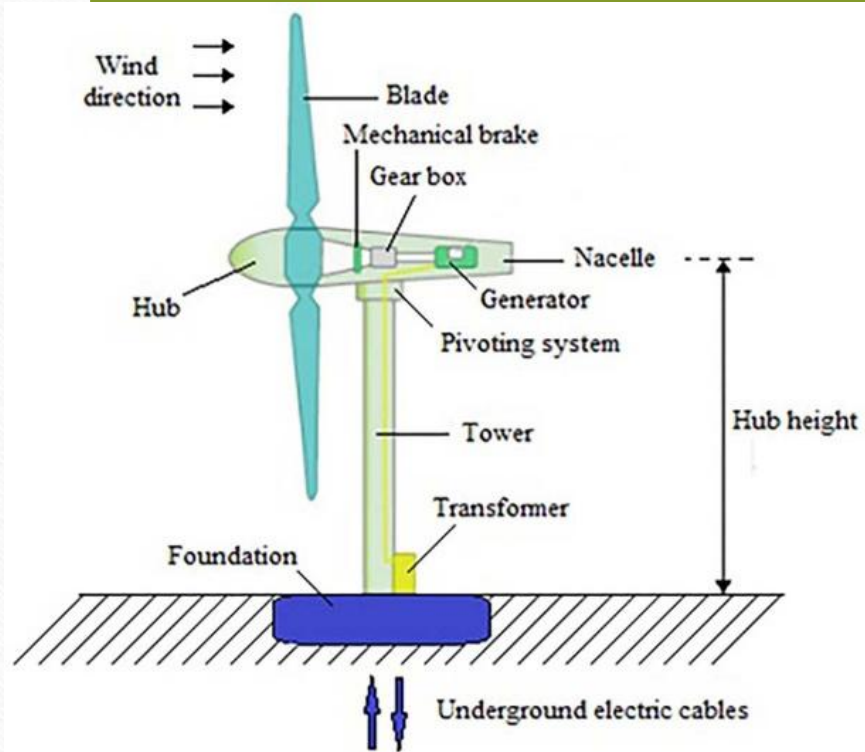
Geothermal

District Cooling

Solar Power

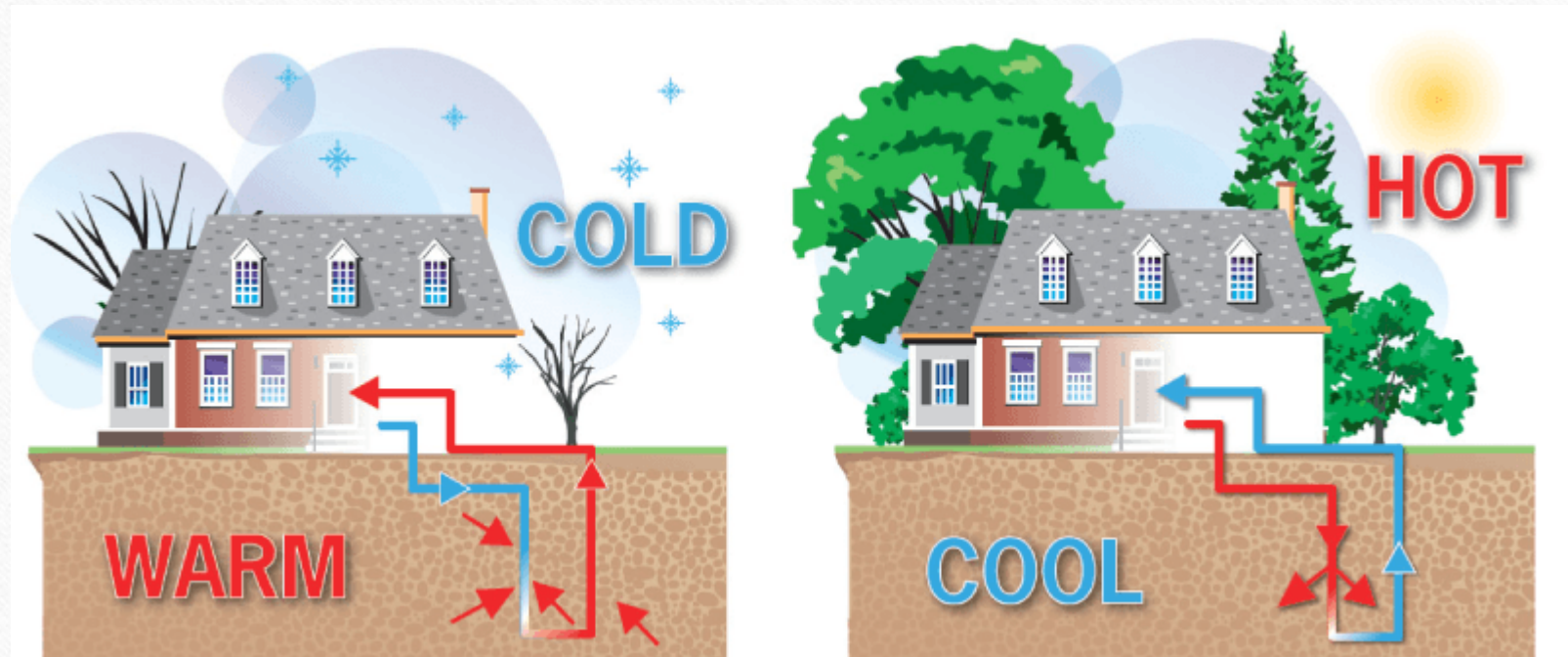


Wind Turbine



Geothermal

- Concept

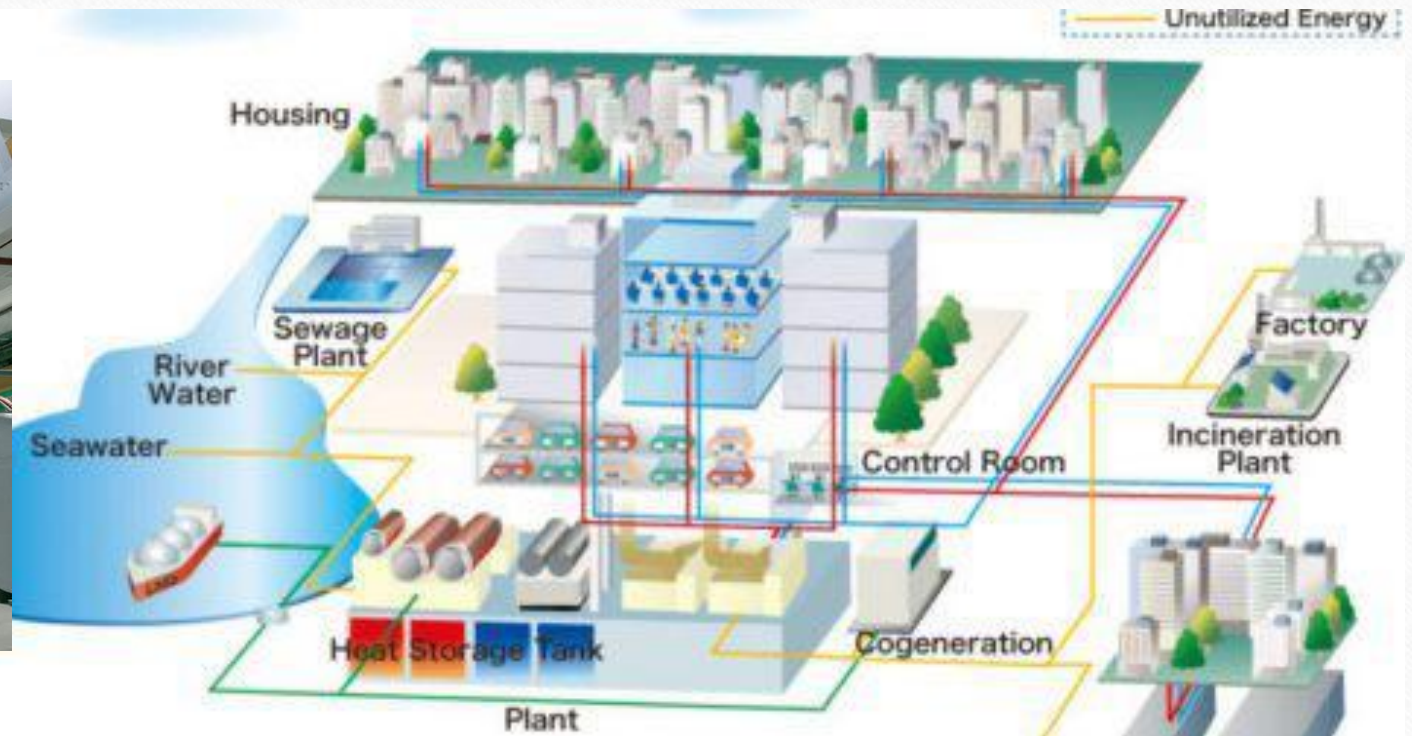


District Cooling (Co-generations)



District Cooling Plant

Ir Santha Kumaran +0192407179 stasanta@yahoo.com



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Facilities Design

- Concept

How a Sustainable Off-The-Grid House Would Look



Transportation



Energy Efficiencies



Ir Santha Kumaran +0192407179 stasanta@yahoo.com

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Average Enervee® Score



Televisions

- Most efficient **LED TVs**
- Most efficient **Plasma TVs**
- **Best selling** TVs

62

Average Enervee Score



Refrigerators

- **Most affordable** fridge models
- Energy-smart **french-door** refrigerators
- Efficient **side-by-side** fridges

68

Average Enervee® Score



Dryers

- **Most affordable** dryers to own
- Energy-smart, **small** clothes dryers
- Energy efficient **high-capacity** dryers

67

Average Enervee® Score



Washers

- Lowest **Water Usage** Washers
- Energy Efficient **Front-Load** Washers
- **Most affordable** washers

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Bigger Picture

- Smart city – comprises many trades but emphasizing on Iot (Internet of things).
- TOD – Transport Oriented Development
- **Low carbon city** - is a sustainable urbanization approach that centers on curtailing the anthropogenic **carbon** footprint of **cities** by means of minimizing or abolishing the utilization of energy sourced from fossil fuels

Three indicators of Climate change

- Temperatures are rising, snow and rainfall patterns are shifting, and more extreme **climate** events – like heavy rainstorms and record high temperatures – are already happening. Jan 10, 2020

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- energy consumption find the keys - RE, district cooling, EE
- Cycle not encouraged? But can plant the awareness among youngsters, proper parking
- Public transport use students and lecturers to study not someone from Denmark.
- Reduce the car usage, electric bus or hydrogen, how to make car electric more attractive

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Thank
You