AN ARCHITECTURE GUIDE
to the UN 17 Sustainable Development Goals

CONTENT

Paramit – factory in the forest

Photos: Lin Ho

Challenge

The building sector is considered the biggest single contributor to world energy consumption and greenhouse gas emissions. On the level of the individual building, design can have a crucial impact on the energy performance, and more broadly the ecological footprint of the building.

Contribution

The Paramit Factory in Penang Science Park, Malaysia, is a 11,600m² factory and warehouse space, and a 1,450m² office block providing engineering, manufacturing and post-manufacturing services to medical device and instrument companies.

The factory is designed as an energy efficient and climatically responsive building, measuring energy saving reductions of 45% compared to their previous factory close by. The cardinal sustainable design principles are energy efficiency, water efficiency, daylighting and Biophilia, which is the hypothesis that humans have a fundamental need to connect with nature. Energy efficiency is achieved through a merge of passive design and complex automatic systems. E.g. a canopy louver roof provides effective solar protection during the hottest part of the day, while North-facing skylights with an internal deflector panel provide soft natural daylight throughout the day supplemented with daylight responsive energy efficient ceiling-suspended LED lights. Also trees and vegetation are planted strategically to avoid direct solar heat gain. The plants add to the equation by lowering temperature through shade and evapotranspiration, and the green environment helps improving air quality by transforming CO_2 to oxygen during daytime. Water plays a key role in the design as well as vegetation to alleviate the flooding risk from the tropical rainstorms.

Origin/team

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Photo: Lin Ho