

CONS PRODUCTION BETWEEN SYSTEM SHADOWING AND NATURAL LIGHT ON ENERGY-EFFICIENT ARCHITECTURE

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Abstract— A work of architecture in the design process can not be separated from consideration of aspects of Design Guide (Design Guide Lines Aspect) , which covers the functional aspects, contextual aspects, performance aspects, technical aspects, cost aspects, and aesthetic aspects (image), which together interact, interelasi, and interdependence. Particularly in Indonesia, which is the tropics, is the contextual aspect didak consideration can be avoided, so that the building as a work of architecture able to efficiently utilize the potential of a tropical climate, on the other hand could also counteract the negative influence of the tropical climate. At this time, the energy crisis is the growing issues around the world, considering 40% of energy absorbed by the field of architecture.

Bright sky as a source of natural light, is a potential source of tropical should be used efficiently, while the sun should be in the amulet through the technique of shadowing system, because the negative effects of this radiation is a source of heat in the room. In an effort to save energy by using light and sunlight to counteract the facade design is very dependent on the orientation of the building face. In the design process, the response to the character of the building footprint will have an impact also on the orientation of the building face, which is an important consideration from fungsional aspects, performance, and aesthetics. Therefore, not all buildings have the opportunity to advance the building orientation to the path of the sun profitable circulation.

In a less favorable orientation (more inclined toward the east or west) facade exposed resulting radiation exposure to the sun, this radiation due to the amount of heat gain (heat gain) to enter the building through the openings (light hole) will be effective (significant), and to overcome required no small amount of energy. To avoid this element of deterrence is needed sun (sun shading devices) on the display of the building, especially to be able to overshadow the opening for the skylight.

The problem will arise when the consideration of the use of light appears as a natural lighting. This is because, the application of shadowing system of deterrence elements sunlight in architectural design will reduce the effective light-hole as a source of natural lighting. This contradiction is very interesting to find a solution, how far the efficiency of sunlight deterrent element, but at the same time able to keep the hole as the

effective light source in an optimal natural lighting. In this case also made possible the breakthrough technology that sun-stress element is once again able to replace the sky light as a source of natural light.

Existence of counter-productive systems and the use of light imagery in natural light in architectural design in the context of this is the insight that energy-efficient architecture is one of the typology-oriented architecture of global environmental conservation.

Keywords : system shadowing, natural light, energy efficient architecture

Pendahuluan

Indonesia yang merupakan negara yang terletak daid daerah tropis dengan iklim tropis basah, dapat dikatakan penggunaan energi BBM dan listrik lebih rendah dibanding negara di kawasan sub-tropis yang dapat mencapai 60 persen dari total konsumsi energi. Kondisi ini dikarenakan di negara sub-tropis pada musim dingin membutuhkan energi untuk pemanas ruang bagi semua lapisan masyarakat, sedangkan di Indonesia untuk mengatasi udara yang panas diatasi dengan penggunaan pendingin ruang (AC) yang hanya digunakan pada sejumlah kecil bangunan terutama di daerah perkotaan. Walaupun tindak antisipasi lebih lanjut, pada akhirnya akan memberikan kontribusi penurunan konsumsi energi secara nasional yang signifikan.

Bangunan merupakan penyaring faktor alamiah penyebab ketidaknyamanan, seperti hantaran panas akibat paparan radiasi matahari, dan dapat pula sebagai penangkap cahaya alami sebagai potensi tropis untuk penerangan siang hari. Penghematan energi melalui rancang bangun dimaksudkan pada upaya penghematan listrik, baik untuk pendingin udara (AC) maupun penerangan buatan di siang hari. Dengan arti kata lain, strategi perancangan akan mampu memodifikasi iklim luar yang tidak nyaman menjadi iklim ruang yang nyaman dengan konsumsi energi yang rendah. Para arsitek Barat sudah memulai langkah-langkah strategi perancangan bangunan hemat energi sejak terjadinya krisis energi dunia sekitar tahun 1973, ironinya di Indonesia belum terasa adanya ”greget” kalangan arsitek Indonesia secara konsisten menuju upaya bangunan hemat energi.