

พิมพ์ต้นฉบับบทความวิทยานิพนธ์ภายในกรอบสี่เหลี่ยมนี้เพียงแผ่นเดียว

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KEY WORD: : COOLING LOAD SHARING/SHARE LOAD

KRUNG KULLACHART : SPACE UTILIZATION MANAGEMENT FOR COOLING LOAD SHARING : A CASE STUDY OF CHULALONGKORN UNIVERSITY BUILDINGS. THESIS ADVISOR : ASSIST. PROF. THANIT CHINDAVANIG, ASSO. PROF. SOONTORN BOONYATIKARN, Ph.D. 173 pp. ISBN 974-636-752-8

The objective of this research was to study cooling load in different rooms of buildings. It was expected that the information obtained could be utilized in space utilization management in order to reduce a total size and cooling load of air conditioner. The case study for this research was part of the buildings of Chulalongkorn University, the Faculty of Education Building and Chulalongkorn University Education Center Building.

The methodology of the research was conducted by investigating sample rooms in those buildings. The actual temperature from heat sources in the rooms of those buildings was measured and recorded for cooling load calculation of each room and for total cooling load calculation. The results analysed the comparative effect of the buildings in order to reduce the size of air conditioning system by using a central air conditioning system. The result showed that in the case of Chulalongkorn University Education Center Building the total size of the air conditioning system could be reduced more than the other one due to different space utilization and different periods when peak load occurs in each room. Through this process, a part of Chulalongkorn University Education Center Building was selected as a case study for the analysis of peak load in each room, including those using sharing cooling load by a central air conditioning system.

The research reveals that the actual total cooling load of the Chulalongkorn University Education Center Building studied is lower than the cooling load designed. (air conditioners are oversized in the rooms). From the study, sharing cooling load by a central air conditioning system can reduce the total size of the split type air conditioners by approximately 40% and since the coefficient of performance of a central air conditioning system is better than that of the split type system, the total energy consumption for the system can be reduced approximately 45%. Furthermore, correct space utilization management which avoids operating the system during peak load times, can also reduce energy consumption and peak load of the central system. The result of this research will be a guide line to retrofit a building with an appropriate cooling load sharing, which will reduce the total size of the air conditioning system and energy consumption.

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