

## INTISARI

Konsumsi energi Indonesia meningkat kurang lebih 2,2 % tiap tahunnya (2000-2009) yang didominasi oleh listrik rumah tangga. Hal ini disebabkan oleh penggunaan alat pengkondisian udara seperti *Air Conditioner*. Menteri ESDM membuat peraturan pengaturan suhu ruangan dengan *air conditioning* pada suhu minimal 25°C. Akan tetapi 77% masyarakat masih mengatur suhu AC di bawah 25 °C. Oleh karena itu, dilakukan penelitian yang bertujuan untuk menganalisis pengaruh suhu dan kelembaban ruangan dengan *air conditioning* terhadap respon subyektif dan kenyamanan termal pada perempuan. Fokus penelitian ini adalah perempuan mengingat perempuan lebih sensitif terhadap penyimpangan suhu optimal dan sering mengungkapkan ketidakpuasan terhadap suhu sekitar, serta perbedaan jenis kelamin tidak membuat adanya perbedaan hasil analisis kenyamanan termal yang signifikan.

Penelitian ini dilakukan di laboratorium dengan 12 orang responden perempuan (21±0,79 tahun). Semua responden mengalami perlakuan sebanyak 3x3 perlakuan yang merupakan kombinasi antara suhu ruangan (22°C, 25°C dan 28°C) dan kelembaban ruangan (40%, 50% dan 70%) dalam sebuah ruangan yang diatur menggunakan sistem *air conditioning*. Selama eksperimen, responden menggunakan pakaian dengan tingkat insulasi 0,21 clo dan melakukan aktivitas duduk santai (1 Met). Variabel kenyamanan termal dianalisis berdasarkan pada variabel respon subyektif (*Thermal Comfort, Thermal Sensation, Thermal Preference, Humidity Sensation, dan Sick Building Syndrome*) dan variabel prediksi kenyamanan termal (*Predicted Mean Vote (PMV)* dan *Predicted Percentage of Dissatisfaction (PPD)*).

Hasil penelitian menunjukkan bahwa pada variabel PMV dan PPD faktor suhu memiliki pengaruh lebih besar dari kelembaban. Faktor suhu juga memiliki pengaruh lebih besar (rata-rata 154%) terhadap kelembaban pada variabel *Thermal Comfort, Preference, dan Sensation*. Akan tetapi pada variabel *Humidity Sensation* dan *Sick Building Syndrome*, faktor suhu dan kelembaban tidak memiliki pengaruh signifikan. Dari hasil penelitian ini, zona kenyamanan termal untuk perempuan tropis terletak pada kondisi 25,34°C - 67,95% RH dan 27,33°C -45,98% RH.

**Kata kunci:** Suhu udara, Kelembaban, *Air conditioning*, Respon subyektif, Kenyamanan termal, Perempuan.

## ABSTRACT

Indonesia's energy consumption increased by approximately 2.2% per year (2000-2009), which is dominated by household electricity. This is caused by the use of tools such as the air conditioning Air Conditioner. Mineral Resources Minister to make regulations setting room temperature with air conditioning at a minimum temperature of 25°C. However, 77% of people still regulate the temperature below 25° C air conditioning. Therefore, the research aimed to analyze the influence of temperature and humidity of the room with the air conditioning on subjective response and thermal comfort in women. The focus of this study were women given women more sensitive to temperature deviations optimal and often expressed dissatisfaction with the ambient temperature, as well as gender differences do not make any difference in the results of the analysis of significant thermal comfort.

This research was conducted in the laboratory with 12 female respondents (21±0,79 years). All respondents are being subjected to as much as 3x3 treatment is a combination of room temperature (22°C, 25°C and 28°C) and humidity (40%, 50% and 70%) in a room that is set using the air conditioning system. During the experiment, the respondents use clothing with insulation level of 0.21 clo sit back and do activities (1 Met). Thermal comfort variables were analyzed based on the subjective response variables (Thermal Comfort, Thermal Sensation, Thermal Preference, Humidity Sensation, and Sick Building Syndrome) and thermal comfort predictive variables (Predicted Mean Vote (PMV) and Predicted Percentage of Dissatisfaction (PPD)).

The results showed that the PMV and PPD variable temperature factors have a greater influence of moisture. Temperature factors also have a greater influence (average 154%) of the moisture in the variable Thermal Comfort, Preference, and Sensation. However, the variable Humidity Sensation and Sick Building Syndrome, temperature and humidity factor has no significant influence. From these results, the thermal comfort zone for tropical woman lies on condition 25.34°C-67.95% and 27.33°C-45.98% RH.

**Keyword:** Air Temperature, Relative Humidity, Air Conditioning, Subjective Responses, Thermal Comfort, Female.