PENGARUH VARIASI TEMPERATUR KERJA KATUP EKSPANSI TERHADAP *COEFFICIENT OF PERFORMANCE* MESIN PENGKONDISIAN UDARA JENIS *PROTOTYPE MINI WATER CHILLER*

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ABSTRAK

Penelitian ini bertujuan untuk mengetahui pengaruh variasi temperatur kerja katup ekspansi terhadap *coefficient of performance* dari mesin pengkondisian udara jenis *prototype mini water chiller*. Metode yang digunakan dalam penelitian ini adalah metode eksperimen. Metode eksperimen adalah penelitian yang dilakukan untuk mengetahui akibat yang ditimbulkan dari suatu perlakuan yang diberikan secara sengaja oleh peneliti. Dalam penelitian ini menggunakan uji analisis anova satu jalur. Proses pengujian dan pengambilan data dilakukan di Laboraturium Teknik Refrigerasi Program Studi Pendidikan Teknik Mesin Undiksha. Pengambilan data dilakukan sebanyak 20 kali pengulangan pada setiap pengujian dengan capaian suhu ruangan sebesar 16^0C. Setelah dilakukannya pengujian ternyata ditemukan adanya pengaruh variasi temperatur kerja katup ekspansi terhadap nilai *coefficient of performance* dari mesin pengkondisian udara jenis *prototype mini water chiller*. Jika dibandingkan dengan unit standar atau sebelum dilakukan variasi temperatur kerja katup ekspansi (A0), maka pada variasi A1 rata-rata peningkatan nilai *coefficient of performance* yaitu 6,49 atau sebesar 13%, pada variasi A2 rata-rata peningkatan nilai *coefficient of performance* yaitu 14,59 atau sebesar 26%, pada variasi A3 rata-rata peningkatan nilai *coefficient of performance* yaitu 24,14 atau sebesar 36%, pada variasi A4 rata-rata peningkatan nilai *coefficient of performance* yaitu 34,94 atau sebesar 45%, pada variasi A5 rata-rata peningkatan nilai *coefficient of performance* yaitu 45,78 atau sebesar 52%.

Kata- kunci : *Coefficient Of Performance, prototype mini water chiller*.

THE EFFECT OF VALUE WORKING TEMPERATURE VARIATION ON THE COEFFICIENT OF PERFORMANCE MINI PROTOTYPE TYPE OF AIR CONDITIONING MACHINES WATER CHILLER

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ABSTRACT

This study aims to determine the effect of expansion valve working temperature variations on the coefficient of performance of the prototype mini water chiller air conditioning machine. The method used in this research is the experimental method. The experimental method is research that is carried out to determine the consequences of a treatment that is deliberately given by the researcher. In this study using one-way ANOVA analysis test. The process of testing and data collection was carried out at the Refrigeration Engineering Laboratory of the Mechanical Engineering Education Study Program, Undiksha. Data was collected as many as 20 repetitions for each test with a room temperature of 16^0C. After testing, it was found that the effect of the expansion valve working temperature variation on the coefficient of performance of the air conditioning prototype mini water chiller. When compared with standard units or before the expansion valve working temperature variation (A0) is carried out, then in the A1 variation the average increase in the coefficient of performance value is 6.49 or 13%, in the A2 variation the average increase in the coefficient of performance is 14.59 or 26%, in the A3 variation the average increase in the coefficient of performance value is 24.14 or 36%, on the A4 variation the average increase in the coefficient of performance is 34.94 or 45%, for the variation A5, the average increase in the coefficient of performance value is 45.78 or 52%.

Keywords: Coefficient of Performance, mini water chiller prototype.