ABSTRAK

Saat ini mesin pendingin sangat berperan dalam kehidupan masyarakat. Mesin pendingin dipergunakan untuk mendinginkan minuman seperti *soft drink*, minuman kaleng, dan minuman berenergi tanpa membekukan cairan di dalam kemasannya, akan tetapi dapat juga sebagai pengawet dan pendingin makanan. Tujuan penelitian ini adalah: (a) membuat mesin pendingin dengan siklus kompresi uap, (b) mengetahui kalor yang dihisap evaporator persatuan massa refrigerant, (c) mengetahui kalor yang dilepas kondensor persatuan massa refrigerant, (d) mengetahui kerja yang dilakukan kompresor persatuan massa refrigerant, (e) mengetahui koefisien prestasi actual, (f) mengetahui koefisien prestasi ideal, (g) mengetahui efisiensi mesin pendingin.

Mesin pendingin yang diteliti menggunakan sistem kompresi uap yang dirangkai dengan komponen yang didapat dari pasaran. Pendinginan pada mesin pendingin ini dilakukan dengan cara kontak langsung dengan evaporator. Adapun variasi penelitian yang digunakan adalah jumlah air yang merendam sebagian dari kondensor sebagai simulasi tampungan air pada mesin pendingin. Penelitian pertama menggunakan beban 1 liter air tanpa menggunakan rendaman air dan diuji selama 5 jam. Penelitian kedua menggunakan 1 liter air dan $\frac{1}{2}$ liter rendaman air pada sebagian kondensor.

Dari rendaman pada sebagian pipa kondensor dan tanpa rendaman diperoleh hasil berupa kerja kompresor (W_{in}), panas yang diserap evaporator (Q_{in}), panas yang dilepas kondensor (Q_{out}), COP_{ideal}, COP_{aktual}, dan efisiensi. Variasi perendaman menghasilkan perbedaan COP dan efisiensi antara variasi tanpa rendaman air dan ½ rendaman air.

Kata Kunci: Mesin pendingin, siklus kompresi uap, COP, dan efisiensi.

ABSTRACT

In this time, cooling machine is important in social life. Cooling machine is used to cool drinks such as soft drink and energy drink without freezing the liquid in its packaging but it can also be used as preservative and refrigerant food. The aims of this research were to find out: (a) the production of cooling machine with the cy-cle of steam compressor, (b) the heat which was absorbed by evaporator of the union of refrigerant mass, (c) the heat which was released by condenser of the un-ion of refrigerant mass, (d) the work which was done by compressor of the union of refrigerant mass, (e) the coefficient of the actual perfomance, (f) the coeffi-cient of the ideal performance, (g) the efficiency of the cooling machine.

Machine cooling subjects use the compression steam which have developed with components obtained from the market .Cooling on a the coolant is done by means of direct contact with the evaporators .As for variation research used is the quantity of water soaking some of a condenser as simulation water reservoir on a cooling .First experimental use burden 1 liter of water without the use of marinade water and tested for five hours .Research second use 1 liter of water and a half liters of marinade water in some a condenser .

From the reservation in some of pipes condenser and without reservation, it was found the results of the work of compressor (Win), the heat which is absorbed by evaporator (Qin), the heat of which is released by condenser (Qout), COPideal, COPactual. The variation of reservation produced the differentiation of COP and efficiency between the variations without water reservation and ½ water reservations

Key words: Cooler machine, the cycle of steam compression, COP, and efficien- cy.