ABSTRAK

Penggunaan mesin pendingin untuk mengkondisikan jenasah sangat besar peranannya dalam dunia medis, ini berkaitan dengan umur pembusukan pada jaringan tubuh manusia yang dapat diperlambat. Mesin pendingin ini juga sangat penting di masa sekarang dan masa yang akan datang, kegunaannya untuk mengkondisikan jenasah yang belum teridentifikasi.Tujuan penelitian tentang mesin pendingin jenasah ini adalah: (a) Merakit mesin pengkondisian jenasah. (b) Mengetahui karakteristik mesin pengkondisian jenasah yang telah dibuat meliputi: besar kalor persatuan massa refrigeran yang di serap evaporator (Q_{in}), besar kalor persatuan massa refrigeran yang di lepas kondensor (Q_{out}), besar kerja yang di lakukan kompresor persatuan massa refrigeran (W_{in}), COP $_{ideal}$ (*Coefficient of Performance*), COP $_{aktual}$ (*Coefficient of Performance*) dan Efisiensi mesin pengkondisian jenasah.

Mesin yang diteliti merupakan mesin pendingin jenasah yang menggunakan variasi kipas lima dan enam pendingin kondensor. Yang dilakukan di lab Universitas Sanata Dharma, komponen utama siklus kompresi uap meliputi: kompresor, kondensor, evaporator, filter, dan pipa kapiler. Refrigeran yang digunakan R134a. Daya kompresor sebesar 1/5 HP, ukuran komponen utama yang lain menyesuaikan dengan besar daya kompresor. Variasi penelitian dengan menggunakan lima dan enam kipas pendingin kondensor, penelitian ini dilakukan selama empat minggu untuk memberikan hasil yang baik.

Hasil penelitian memberikan kesimpulan. (a) mesin pendingin jenasah dapat bekerja dengan baik, (b) Karakteristik yang di dapat pada mesin pendingin jenasah pada penelitian ini sebagai berikut: Pada variasi lima kipas pendingin kondensor tanpa beban menit ke 120, menghasilkan nilai *Coefficient of Performance* (aktual) sebesar = 2,29, pada variasi enam kipas menghasilkan nilai *Coefficient of Performance* (aktual) sebesar = 3,31. Pada variasi lima kipas pendingin kondensor dengan beban 20 kg air menit ke 360 menghasilkan nilai *Coefficient of Performance* (aktual) sebesar = 2,98, pada variasi enam kipas menghasilkan nilai *Coefficient of Performance* (aktual) sebesar = 3,03. Pada variasi lima kipas pendingin kondensor tanpa beban menit ke 120, menghasilkan *Coefficient of Performance* (ideal) sebesar = 3,77, pada variasi enam kipas menghasilkan *Coefficient of Performance* (ideal) sebesar = 3,88. Pada variasi lima kipas pendingin kondensor dengan beban 20 kg air menit ke 360 menghasilkan *Coefficient of Performance* (ideal) sebesar = 3,82, pada variasi enam kipas menghasilkan *Coefficient of Performance* (ideal) sebesar = 3,86. Pada variasi lima kipas pendingin kondensor tanpa beban menit ke 120, menghasilkan efisiensi sebesar = 79,2 %, pada variasi enam kipas menghasilkan efisiensi sebesar = 85,4 %. Pada variasi lima kipas pendingin kondensor dengan beban 20 kg air menit ke 360 menghasilkan efisiensi sebesar = 78 %, pada variasi enam kipas menghasilkan efisiensi sebesar = 79,8 %.

Kata kunci: Mesin pendingin jenasah, Siklus kompresi uap

ABSTRACT

The use of cooling machine for conditioning the body has a very big role in the medical world, this is related to the age of decay of the corpse which can be slowed . Cooling machine is also very important in the present and future, one of its usefulness is for conditioning an unidentified bodies.The research objective of this mortuary refrigerator are: (a) Assembling a mortuary refrigerator. (b) Knowing the characteristics of the mortuary refrigerator that have been assembled include: the heat which was absorbed by evaporator for each refrigerant mass (Q_{in}) , the heat which was transfered to the environment by condensor for each refrigerant mass (Q_{out}) , the work of the compressor for each mass of refrigerant (W_{in}) , the ideal Coefficient of Performance (COP_{ideal}) of the mortuary refrigerator, the Actual Coefficient of Performance (COP_{actual}) of mortuary refrigerator and the efficiency of the mortuary refrigerator.

The mortuary refrigerator is using vapor compression cycle. This mortuary refrigerator is a cooling machine using a variation of five and six condensor cooling fan. The main component of vapor compression cycle are: compressor, condenser, evaporator, filter, and the capillary pipe. R134a refrigerant is used in this mortuary refrigerator. The Compressor power is 1/5 HP, and the other main component size adjusts to the power of the compressor. The study was conducted over four weeks to give good results.

The results of the study provide a conclusion. (a) The mortuary refrigerator works very well, (b) Characteristics of the mortuary refrigerator in this study resulted in the following data: In a variation of five condenser cooling fan without cooling load at minute 120, resulting a Coefficient of Performance (actual) of = 2,29, as for the variation of the six fans resulting a Coefficient of Performance (actual) of = 3,31. In a variation of five condenser cooling fan with a load of 20 kg of water at minute 360 resulting a Coefficient of Performance (actual) at = 2,98, as for the variation of the six fans resulting a Coefficient of Performance (actual) of = 3,03. In a variation of five condenser cooling fan without cooling load at minute 120 , resulting a Coefficient of Performance (ideal) of = 3,77, as for the variation of the six fans resulting a Coefficient of Performance (ideal) of = 3,88. In a variation of five condenser cooling fan with a load of 20 kg of water at minute 360 resulting a Coefficient of Performance (ideal) at = 3,82, as for the variation of the six fans resulting a Coefficient of Performance (ideal) of = 3,86. In a variation of five condenser cooling fan without cooling load at minute 120, the mortuary refrigerator resulting an efficiency of 79,2%, in the other hand the mortuary refrigerator resulting a efficiency of 85,4% on a variety of six fan. In a variation of five condenser cooling fan with a load of 20 kg of water at minute 360, the mortuary refrigerator resulting an efficiency of = 78 %, in the other hand the mortuary refrigerator resulting an efficiency of = 79,8 % on a variety of six fan.

Keyword: Mortuary refrigerator, Vapor compression cycle