

## Abstrak

Kinerja *cooling tower* yang sangat bergantung dengan kondisi udara lingkungan dari *cooling tower*, Menjadikan nominal dari efektivitas, laju energi yang bekerja dan temperatur air keluar dari *cooling tower* sangat bervariasi. Temperatur air output dari *cooling tower* yang berpengaruh terhadap *appearance product molding injection* menjadikan efektivitas pendinginan dan laju perpindahan energi aktual dari *cooling tower* harus diketahui. Belum adanya data aktual efektivitas pendinginan, besarnya laju perpindahan energi dan sebaran temperatur air keluar pada sebaran waktu (pagi, siang dan sore) dari *wet cooling tower* tipe *induced draft*, di perusahaan tersebut menjadikan user kesulitan untuk menilai apakah sistem dari *cooling tower* tersebut sudah berjalan baik atau belum. Pada penelitian ini *cooling tower* yang diteliti adalah jenis *wet cooling tower* dengan tipe *induced draft*, Data kondisi udara dan temperatur air diambil langsung dengan sampling waktu 3 hari pada pukul 08:00, 13:00 dan 17:00 pada setiap harinya. Data yang sudah diambil kemudian digunakan untuk melakukan perhitungan nominal efektivitas pendinginan dan laju perpindahan energi. Dari penelitian yang telah dilakukan didapatkan hasil bahwa, rata-rata efektivitas pendinginan terbaik dari *cooling tower* adalah pada hari ke-3 pukul 13:00 sebesar 71 %, terendah pada hari ke-1 pukul 17:00 sebesar 43%, dan rata-rata efektivitas pendinginan 52%. Besarnya laju aliran energi yang dilepaskan ke udara dari *cooling tower*, tertinggi pada hari ke-2 pukul 13:00 206,27 kJ/s, terendah pada hari ke-3 pukul 08:00 76,17 kJ/s dan rata-rata laju aliran energi adalah 126,65 kJ/s.

Kata kunci : *Wet Cooling Tower, Induced Draft*, efektivitas pendinginan

## **ANALYSIS OF COOLING EFFECTIVENESS AND COOLING FLOW OF COOLING TOWER FLOW INDUCED DRAFT TYPE FOR MOLD COOLING SYSTEM AT INJECTION PLASTIC PROCESS**

### ***Abstract***

*Cooling tower performance is very dependent on the environmental air conditions of the cooling tower, this condition make the nominal of effectiveness, the rate of energy that works and the temperature of water coming out of the cooling tower varies greatly. The temperature of the output water from the cooling tower that affects the product injection molding appereance makes the cooling effectiveness and the actual energy transfer rate of the cooling tower must be known. At this time effectiveness of cooling, the magnitude of the rate of energy transfer and the distribution of water temperature out at the time distribution (morning, afternoon and evening) of the wet cooling tower type induced draft not yet avaliable, in the company makes it difficult for users to judge whether the system of the cooling tower is running good or not. In this study the cooling tower was studied wet cooling tower type with the induced draft type. Data on air condition and water temperature were taken directly by sampling for 3 days at 08:00, 13:00 and 17:00 on each day. The data that has been taken is then used to calculate the nominal effectiveness of the cooling and the rate of energy transfer. From the research that has been done, the results show that, the highest effectiveness cooling value of cooling tower is on the 3rd day at 13:00 by 71%, the lowest on the first day at 17:00 is 43%, and the average 52% cooling effectiveness. the highest of the flow rate energy released into the air from the cooling tower on the 2nd day at 13:00 206.27 kJ / s, the lowest on the 3rd day at 08:00 76.17 kJ / s and the average rate energy flow is 126.65 kJ / s.*

*Keywords : Wet Cooling Tower, Induced Draft, Cooling efectifity*