

ABSTRACT

Hot Skin Pass Mill is a production line that used for the finishing process of Hot Rolled Coil products. Hot Skin Pass Mill functions to reduce defects in the form of wavy products, whice is corrugated surface strips. The working principle of the Hot Skin Pass Mill line machine is that the strip is given tension on the entry side max. 10.000 kgf and exit side max 16.000 kgf. The strip between the entry and exit sides is rolling using Push Up Hydraulic Cylinder by pressed with a pair of work roll given max rolling force. 13.000 kN.

In this research, observations were made on the effectiveness of the heat exchanger in the Hydraulic Center Positioning Control (CPC) system on the entry line of Hot Skin Pass Mill PT. Krakatau Steel (Persero) Tbk when the lubricating oil is normal temperature and high temperature, using the LMTD (Logarithmic Mean Temperature Difference) and NTU (Number of Transfer Units) methods.

The results of this research found the results of the overall heat transfer coefficient (U) in the normal conditions is $0.177 \text{ kW} / \text{m}^2 \text{ }^{\circ}\text{C}$ and at high temperatures which is $0.062 \text{ kW} / \text{m}^2 \text{ }^{\circ}\text{C}$. While the effectiveness of the heat exchanger when the normal temperature is 34.5% and when the high temperature is 21,93 %. The decrease in heat exchanger performance occurs with the usage time of the heat exchanger caused by many factors, such as fouling factor.

Key words: *Hot Skin Pass Mill, heat exchanger, fouling factor*

INTISARI

Hot Skin Pass Mill merupakan suatu *line* produksi yang digunakan untuk proses *finishing* produk *Hot Rolled Coil*. *Hot Skin Pass Mill* berfungsi untuk mengurangi *defect* pada produk berupa *wavy* yaitu *surface strip* yang bergelombang. Prinsip kerja *line* mesin *Hot Skin Pass Mill* yaitu *strip* diberikan *tension* pada sisi *entry* maks. 10.000 kgf dan sisi *exit* maks. 16.000 kgf. *Strip* diantara sisi *entry* dan *exit* dirolling menggunakan *Push Up Hydraulic Cylinder* dengan ditekan dengan sepasang *work roll* yang diberikan *rolling force* maks. 13.000 kN.

Pada penelitian ini, dilakukan pengamatan terhadap efektivitas *heat exchanger* pada sistem *hydraulic Center Positioning Control* (CPC) pada sisi *entry line Hot Skin Pass Mill* PT. Krakatau Steel (Persero) Tbk ketika temperatur minyak pelumas kondisi normal dan temperatur tinggi, menggunakan metode LMTD (*Logarithmic Mean Temperature Difference*) dan NTU (*Number Of Transfer Units*).

Hasil dari penelitian ini didapatkan hasil nilai koefisien perpindahan kalor menyeluruh (U) pada kondisi normal yaitu 0,177 kW/m²°C dan pada saat temperatur tinggi yaitu 0,062 kW/m²°C. Sedangkan efektivitas *heat exchanger* ketika temperatur normal yaitu 34,5 % dan pada saat temperatur tinggi 21,93 %. Penurunan performa *heat exchanger* terjadi seiring dengan waktu pemakaian dari *heat exchanger* yang diakibatkan oleh banyak faktor, antara lain *fouling factor*.