

ABSTRAK

**ANALISA PROSES PENDINGINAN
PADA BEBERAPA BEJANA DENGAN BAHAN BERBEDA
MENGUNAKAN SOFTWARE LOGGERPRO**

Siska Natalia

Universitas Sanata Dharma

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Telah dilakukan penelitian mengenai proses pendinginan pada bejana yang yang berisi air sebanyak 100 ml. Selama proses pendinginan, suhu air dan suhu lingkungan dimonitor menggunakan sensor suhu yang telah dihubungkan dengan komputer melalui *interface* LabPro. Nilai suhu air dan suhu lingkungan dicatat secara kontinyu menggunakan *software* LoggerPro. Grafik beda suhu (ΔT) terhadap waktu (t) difit menggunakan persamaan hukum pendinginan Newton dan persamaan proses pendinginan yang melibatkan perpindahan panas secara radiasi. Hasil penelitian menunjukkan bahwa persamaan proses pendinginan yang melibatkan perpindahan panas secara radiasi baik digunakan pada beda suhu yang tinggi yakni $\Delta T > 50^{\circ}\text{C}$. Penelitian ini juga menunjukkan bahwa bahan bejana berpengaruh selama proses pendinginan. Bejana yang digunakan dalam penelitian ini adalah bejana berbahan kaca, kaleng, dan plastik. Hasil penelitian menunjukkan bahwa bahan bejana mempengaruhi proses pendinginan secara berurutan dari cepat ke lambat yaitu kaleng, kaca, dan plastik.

Kata kunci : proses pendinginan, hukum pendinginan Newton, radiasi

ABSTRACT

THE COOLING PROCESS ANALYSIS ON VESSELS WITH DIFFERENT MATERIAL USING A LOGGERPRO SOFTWARE

Siska Natalia

Sanata Dharma University

2015

A research about cooling process in vessels with volume of water 100 ml has been done. During those cooling process, the water and environment temperature are monitored using a temperature sensor that are connected to the computer through a LabPro interface. The results of water and environment temperature are recorded continuously on a LoggerPro software. Temperature difference graphic (ΔT) towards time (t) fitted applying Newton cooling law equation and cooling process equation that involve the heat transfer of radiation. The research shows that the cooling process equation involves the heat transfer of radiation is good to apply in a high temperature difference, it is $\Delta T > 50^\circ \text{C}$. This research also shows that the material of vessels influence throughout the cooling process. Vessels used in this research are made of glass, can, and plastic. It is resulted that the material of vessels used influenced the cooling process in sequence from fast speed to slow; they are can, glass, and plastic material.

Keywords : the cooling process, Newton's law of cooling, radiation