

**ABSTRAK****PENENTUAN KOEFISIEN VISKOSITAS MINYAK GORENG DENGAN  
MENGANALISIS REDAMAN GETARAN SISTEM PEGAS MASSA DALAM MINYAK  
GORENG MENGGUNAKAN METODE ANALISIS  
VIDEO PADA *SOFTWARE TRACKER***

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Minyak goreng adalah suatu kebutuhan pokok masyarakat Indonesia. Ada masyarakat yang menggunakan minyak goreng hanya sekali pakai, dan ada yang pakai berkali-kali. Untuk itu dilakukan penelitian untuk menentukan nilai koefisien viskositas minyak goreng, melalui peristiwa osilasi teredam pada sistem pegas massa dalam minyak goreng. Penelitian bertujuan untuk mengetahui pengaruh jumlah proses goreng dan diameter wadah yang digunakan terhadap hasil perhitungan koefisien viskositas dengan persamaan Hukum Stokes. Peristiwa redaman diamati pada bola yang tergantung pada pegas yang berosilasi dalam minyak goreng dengan variasi jumlah proses goreng dan variasi diameter wadah. Proses osilasi teredam direkam dengan kamera *smartphone* yang hasilnya dianalisis menggunakan *Software Tracker*. Koefisien viskositas minyak meningkat seiring peningkatan jumlah proses goreng. Urutan koefisien viskositas dari kecil ke besar dengan diameter 0,085 m adalah: tanpa goreng ( $0,2399 \pm 0,0014$ ) kg/ms, goreng 1 kali ( $0,2410 \pm 0,0032$ ) kg/ms, goreng 2 kali ( $0,2501 \pm 0,0073$ ) kg/ms, goreng 3 kali ( $0,2580 \pm 0,0129$ ) kg/ms, dan goreng 4 kali ( $0,2581 \pm 0,0132$ ) kg/ms. Untuk diameter 0,065 m adalah: tanpa goreng ( $0,2617 \pm 0,0025$ ) kg/ms, goreng 1 kali ( $0,2651 \pm 0,0065$ ) kg/ms, goreng 2 kali ( $0,2692 \pm 0,0064$ ) kg/ms, goreng 3 kali ( $0,2733 \pm 0,0003$ ) kg/ms, dan goreng 4 kali ( $0,2841 \pm 0,0147$ ) kg/ms. Untuk diameter 0,05 m adalah: tanpa goreng ( $0,3756 \pm 0,0805$ ) kg/ms, goreng 1 kali ( $0,3770 \pm 0,0791$ ) kg/ms, goreng 2 kali ( $0,3797 \pm 0,0781$ ) kg/ms, goreng 3 kali ( $0,3842 \pm 0,0789$ ) kg/ms, dan goreng 4 kali ( $0,3932 \pm 0,0773$ ) kg/ms. Koefisien viskositas berbanding terbalik dengan ukuran diameter wadah yang digunakan. Nilai koefisien viskositas kecil ke besar adalah: 0,085 m, 0,065 m, 0,05 m.

Kata kunci: osilasi teredam, *tracker*, *smartphone*, viskositas, analisis video

**ABSTRACT****DETERMINING FRYING OIL'S VISCOSITY COEFFICIENT BY ANALYZING THE DAMPED OSCILLATION OF SPRING MASS SYSTEM IN FRYING OIL USING THROUGH VIDEO ANALYSIS BY USING TRACKER SOFTWARE**

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*Frying oil is a basic requirement of the Indonesian people. There are people who use frying oil only once, and some people use it several times. For this reason, a study was conducted to determine the viscosity coefficient of frying oil, through a damped oscillation in a mass spring system in frying oil. The study aimed to determine the effect of the number of frying and diameter of the container used on the results of the calculation of the viscosity coefficient by using Stokes' Law. Damping events are observed on ball that hung on springs that oscillates in frying oil with variations in the number of frying and the diameter of the container. The damping oscillation process was recorded with a smartphone camera whose results were analyzed using the Tracker Software. The oil viscosity coefficient increases with the increase in the number of frying. The order of the viscosity coefficient from small to large with a diameter of 0.085 m is: without frying ( $0.2399 \pm 0.0014$ ) kg / ms, fried once ( $0.2410 \pm 0.0032$ ) kg / ms, fried 2 times ( $0.2501 \pm 0.0073$ ) kg / ms, fried 3 times ( $0.2580 \pm 0.0129$ ) kg / ms, and fried 4 times ( $0.2581 \pm 0.0132$ ) kg / ms. For diameters of 0.065 m are: without frying ( $0.2617 \pm 0.0025$ ) kg / ms, fried once ( $0.2651 \pm 0.0065$ ) kg / ms, fried 2 times ( $0.2692 \pm 0.0064$ ) kg / ms, fried 3 times ( $0.2733 \pm 0.0003$ ) kg / ms, and fried 4 times ( $0.2841 \pm 0.0147$ ) kg / ms. For a diameter of 0.05 m is: without frying ( $0.3756 \pm 0.0805$ ) kg / ms, fried once ( $0.3770 \pm 0.0791$ ) kg / ms, fried 2 times ( $0.3797 \pm 0.0781$ ) kg / ms, fried 3 times ( $0.3842 \pm 0.0789$ ) kg/ms, and fried 4 times ( $0.3932 \pm 0.0773$ ) kg / ms. The viscosity coefficient is inversely proportional to the size of the diameter of the container used. The order of the viscosity coefficient from small to large are: 0,085 m, 0,065 m, 0,05 m.*

*Keywords: damped oscillation, tracker, smartphone, viscosity, video analysis*