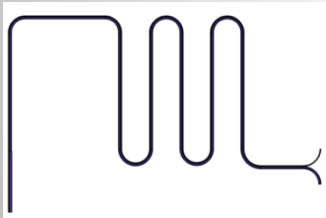


Project Title: Design, Construction and Testing of a Heat Exchanger for a Refrigeration Cycle

This project aimed to respond to the urgent need for effective heat exchangers in the energy industry, with the goal of increasing the efficiency of heat exchangers used in evaporation cycles. The primary issue addressed was the inefficiency of existing heat exchangers, leading to energy wastage and a decrease in overall system performance.

The project included the use of different types of pipes and channels in heat exchanger designs, focusing on improving fluid flow and heat transfer properties. It began by examining material specifications provided by Arçelik and studying the three-dimensional data of a sample exchanger. Subsequently, we worked on a program to use this exchanger structure in a two-dimensional simulation and provide detailed analysis. During this process, optimization work with code and algorithms was initiated using iterative principles to determine the most efficient heat exchanger configuration. The optimization process aimed to find the desired optimal speed and maximize heat transfer efficiency while minimizing energy consumption, taking into account factors such as flow patterns, material properties, and thermal conductivity.



COMSOL 2D Implementation

As a result of the project's main findings, comprehensive optimization work and two-dimensional simulations were conducted, yielding numerous outcomes. Although an optimal result could not be achieved due to time constraints and resource limitations, the work done during this process and the new data obtained left the door open for the project's future. The findings pave the way for the development of high-performance heat exchangers in the future and the attainment of the most optimal outcome.

Eşanjör Analiz Arayüzü	
Kılcal Çap (mm):	0.60
Kılcal Uzunluk (mm):	2500
Alüminyum Çap (mm):	0.8
Alüminyum Uzunluk (mm):	1500
Bakır Çap (mm):	0.6
Bakır Uzunluk (mm):	300
Et Kalınlığı (mm):	0.3
Debi (L/s):	2
Basınç (Pa):	100000
Sıcaklık (°C):	25

Hesapla

Sistemdeki iyileşme oranı: %-3.23
Kılcal Çap iyileşme oranı: %-3.23
Lütfen Kılcal Çap değerini arttırmayı deneyin.

GUI Program Interface Results

Group Members:

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