

ABSTRACT

Conduction temperature distribution is one process that often occurs in everyday life. One of the numerical methods that can be used in the resolution of cases the temperature distribution is the finite element method. This method is able to solve problems with objects that have complex geometries, thus making this method is superior to other methods.

In this final project, the finite element method is applied to the case of one-dimensional heat conduction and two-dimensional steady-state conditions in aluminum using the C++. Aluminum is a metal that is often used as a coolant in the material objects that produce high heat because it can absorb and release heat pretty well. In addition, aluminum is a metal that resists corrosion, so this material is often used in everyday.

The results of this study is a two-dimensional simulation of heat conduction with a mesh generated using Matlab and enter the parameters and conditions specified limits, so that can know the temperature distribution in each point that has been divided into several elements across the surface of the aluminum.

Keywords: heat conduction, aluminum, finite element method, weak form, Galerkin method.