ABSTRACT

In Heat Transfer or thermodynamic, we know the heat exchanger. Evaporator is one of the heat exchanger which is often used. One type of evaporator is shell and tube type. At present, some projectors of shell and tube type of evaporator has done to get the best projector result. Here, the writer is interested of that and try to create a software which will be the aid tool in shell and tube type of evaporator projecting. The software is made of Borland Delphi 7 Program Language.

The using of Delphi 7 Program Language is because of the capability of this program in database organizing, so that making easy for the writer to place the data which is needed in projector (such as refrigerant property table). Beside that, the other superiority is from the screen preview which is with the preview that based on microsoft windows, makes the software which is made will be understood easily and interesting. Using the software is started with the initial data’s loading which is needed (temperature, initial shell dimension, tube dimension), then continue with the calculation, in this case is the heat transfer analysis and the analysis of geometry shape of the evaporator. The last is the simulation from the project and calculation result which is done.

In this program, the calculation is done with the variation input of refrigerant (R134a, R12, R22), tube diameter (19 mm, 25 mm, 32 mm, 38 mm), a number of passes (1, 2, 4, 6, 8), and the tube layout (triangular, square) to get the overall heat transfer coefficient (Uo) of the evaporator for each load increase, Q (with m is variable with load increase), which are the inlet and outlet temperature of the shell and tube are kept constant. From the calculation which is gotten for each that variation is gotten the big value of U in refrigerant R134 for the variation of the refrigerant, 19 mm for the variation of the tube’s outside diameter, a number of passes is 8 for the variation of a number of passes, and triangular type for the variation of layout.

Keywords: Heat transfer, Heat Exchanger, Delphi 7, Properties, Geometry, Simulation