



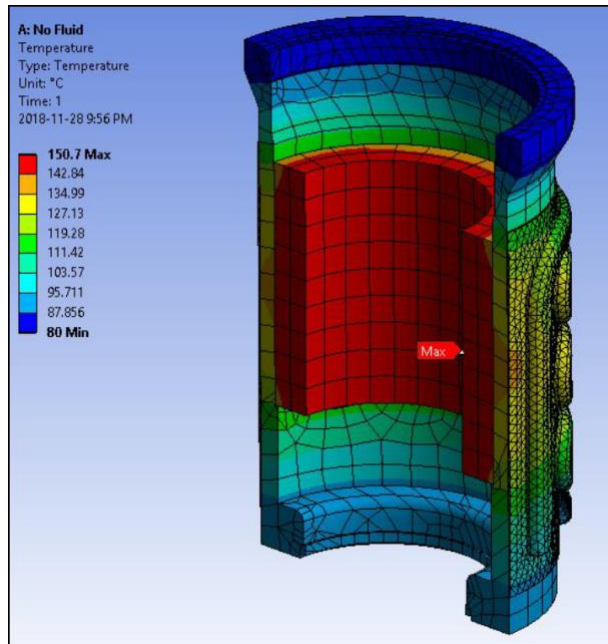
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Title : Analysis of Thermal Behaviour of Submerged Electric Pump Motors

Background Information:

Hevvy-Toyo Pumps is a Coquitlam based equipment manufacturer that provides industrial centrifugal pumps to some of the toughest applications in North and South America. A large part of being a market leader in our field is our passion for innovation and our investment in new ideas and new talent. One way we continue to find room to innovate is by applying old techniques in new ways.

This project will cover the application of an old motor design technique to a new product line. Combining these elements and analyzing the results with computer simulation we hope will lead to a product better suited to our customer's needs.



Main Objectives:

This project will focus on the simulation and analysis of the thermal behaviour of sealed submersible electric motor when used in a submersible centrifugal pump. First, you will analyze the thermal characteristics of one of our submersible motors in its standard dry configuration and a common oil-filled configuration. Second, you will use the models you have developed to evaluate the effect of each option on the sustained and momentary overload capacities of the motor. Finally you will use the findings from the previous steps to propose improvements on one or either configuration and perform the same analysis steps to evaluate your proposal against the standard ones.

In order to develop an accurate model of the thermal characteristics of the motor, you must be able to integrate both the mechanical and electrical heat sources into your models and understand how both of these types of sources change over various loading conditions of the motor.

Main Deliverables:

- Simulations of heat transfer characteristics, including steady state temperatures of motor components, for dry and oil-filled option of one of our induction motors.
- Simulations of the steady state temperatures when the electric motor is subjected to varying degrees of overload.
- Propose improvements to the thermal characteristics within design restriction
- Evaluate proposed design improvements

Important points to mention:

Ansys is the preferred simulation tool for this project. Hevvy-Toyo Pumps has staff members proficient in the use of Ansys that can assist students with it's use.

Should any prototyping be necessary, resources are available to assist students with providing materials and services.