# MARINE KEEL COOLER OPTIMIZATION TOOL

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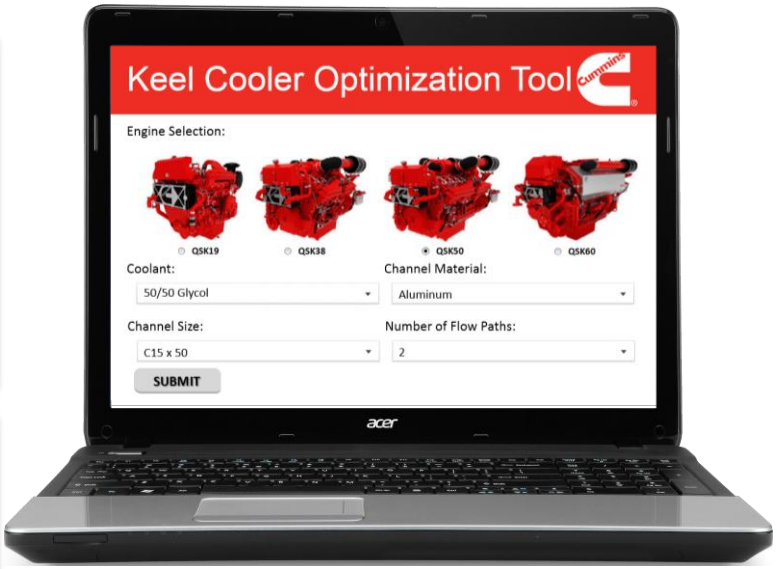
***Aim: To design a more versatile marine keel cooler sizing/validation tool which is more intuitive and provides improved feedback***

## Introduction

Cummins Marine is in need of an updated tool which would provide the Marine Application Engineers accurate feedback when validating the cooling capacity of a keel cooler.

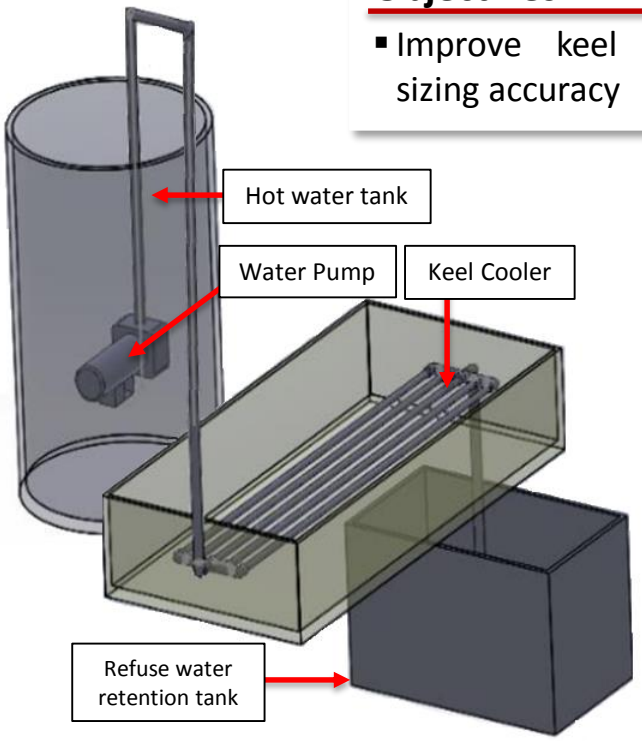
The team is tasked to make a new tool which will enable the user to validate a wider variety of manufactured keel coolers, as well as providing a keel cooler design suggestion to satisfy cooling requirements.




*Newly designed HTML/CSS Interface for tool*

## Objectives

- Improve keel cooling sizing accuracy
- More diverse validation test parameters




*Design plan for the keel cooler testing apparatus*

## Hardware Design

The testing apparatus will provide the team a means to validate the predictive engineering in the software by simulating the worst case operating scenario for a vessel at wide open throttle while stationary.

## Software Design

There are two operating modes:

***Design:*** Outputs a keel cooler design with choice of material selection.

***Validation:*** Outputs PASS/FAIL on current cooling system. If design 'FAIL' user will be brought to 'Design' mode.

## Future Work

***Hardware***

- Fabricate keel cooler testing apparatus
- Build holding tank for keel cooler

***Software***

- Work on the back end of the program