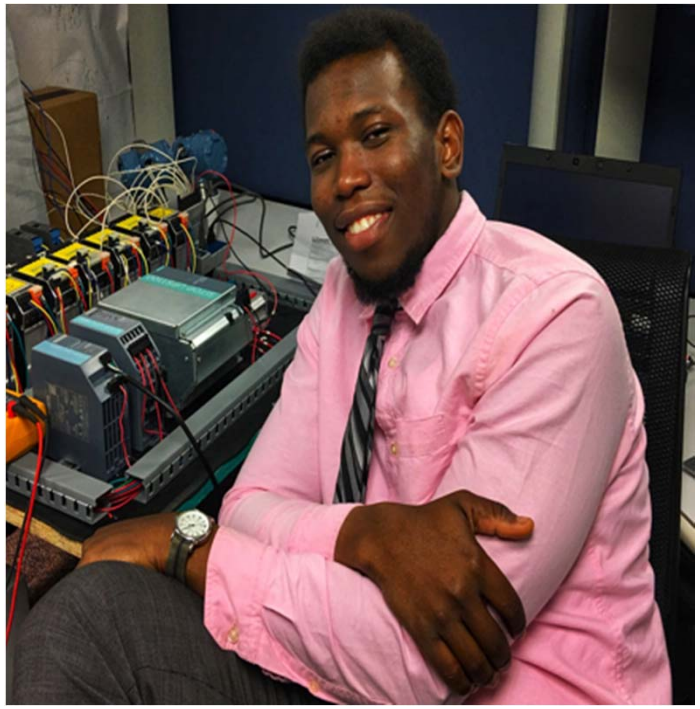
Experimental evaluation of a Pulsating Heat Pipe for single gas and Mixtures



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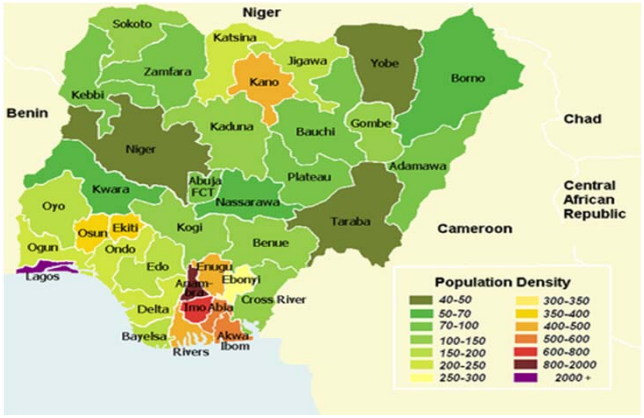
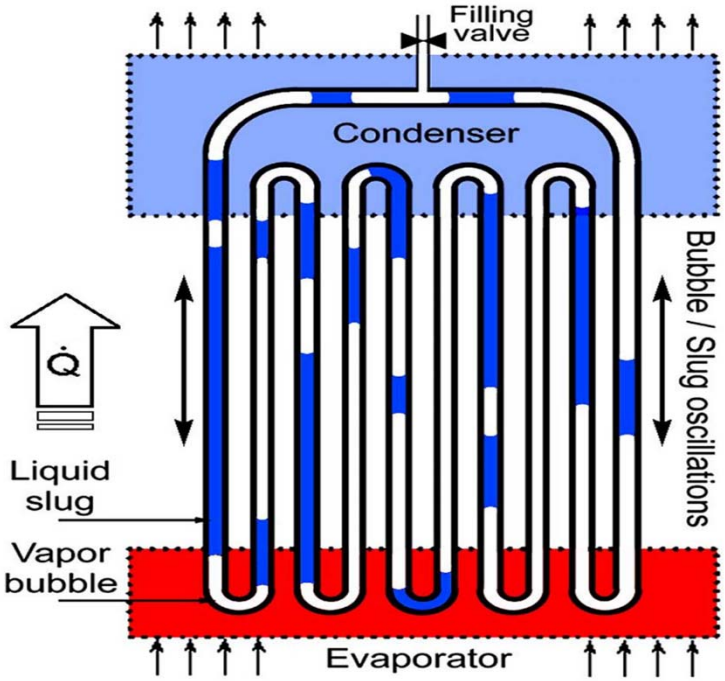


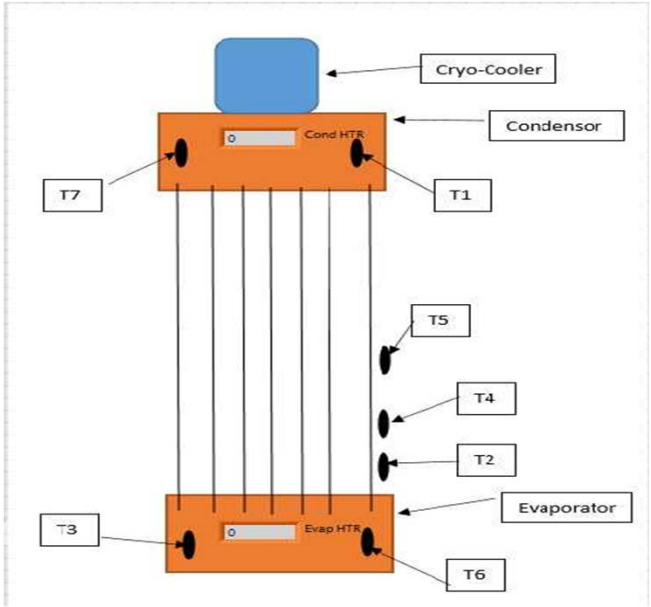
BACKGROUND

A pulsating heat pipe(PHP) is a device much like a convectional heat pipe but with the absence of the wick component. The heat pipe relies on pressure differential between vapor plugs and liquid slugs aided by capillary action of the tube turns. This causes different kinds of motion, the most notably being oscillatory-translation motion



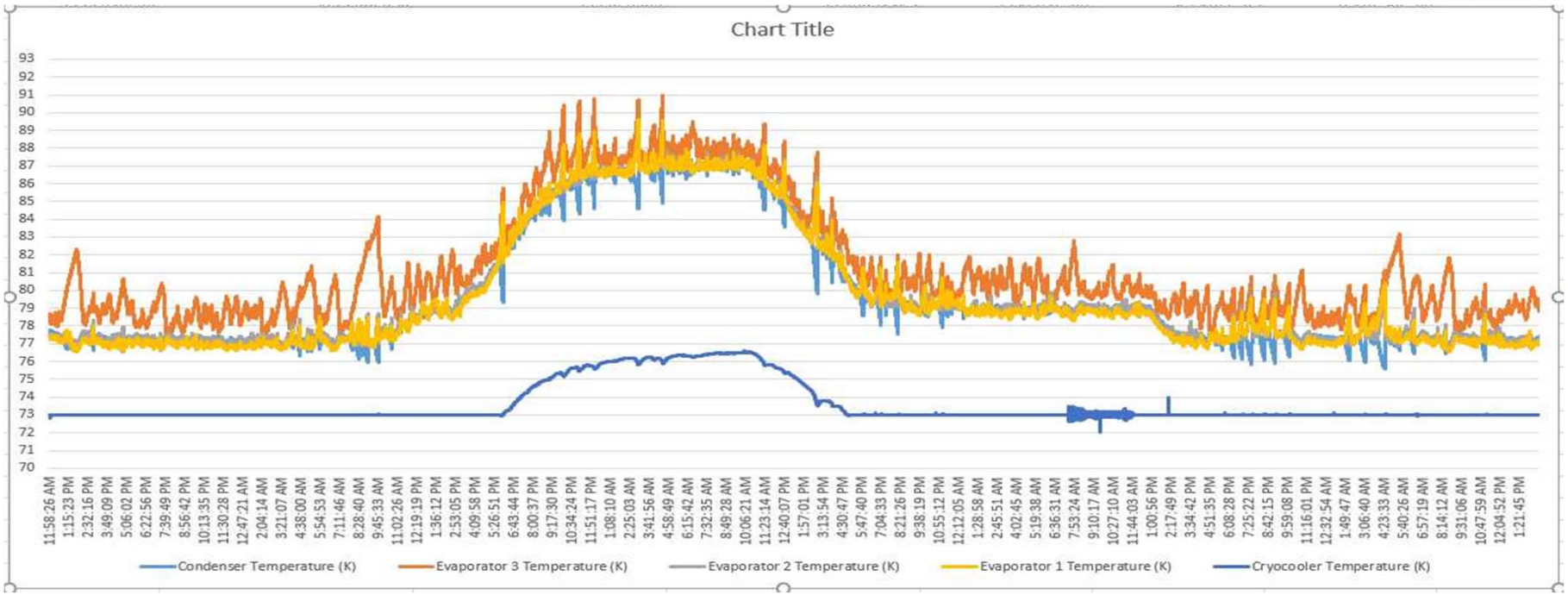
PROJECT OVERVIEW AND GOALS

- Evaluate the effect of number of capillary tube turns on PHP performance and quantify bubble acceleration
- Evaluate data for two working fluids and compare their performance
- Investigate the behavior and performance of mixtures in a PHP



Schematic of the PHP

PRELIMINARY RESULTS



- Small approach temperature between condenser and evaporator results in high effective conductivities, making PHPs an area of interest
- Initial fluid fill ratio has been shown to be an important factor in characterizing a PHP