

# SAE Formula 1 Capstone Project

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## Abstract

Our group is tasked to optimize the cooling system for a 2007 Yamaha R6 engine on a Formula SAE race car. This specific engine comes from a 2007 Yamaha YZFR6W(C) motorcycle running at a maximum of 2,000 RPM at idle. Our group is required to test, validate, adjust, and verify the cooling system of the car. In order to do this, the team is going to optimize the radiator, fan and design other components required for the best performance for the car. Rather than using the stock radiator, the team will be purchasing a custom radiator from a supplier. This is because the engine will be running at a much higher angular speed than the stock motorcycle. Higher angular speed requires a larger radiator and a higher quality fan with more cooling capabilities. To be able to custom order our radiator, the team apply heat exchanger design and heat transfer to determine the overall heat transfer coefficient (U value), surface area of the radiator, finned tube materials, flow rates and specific heats of both water and the air. After those components are designed, the radiator mounts, the thermostat cover and the air ducting will be designed and manufactured at the machine shop of the college.