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Test Bed
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Abstract

The purpose of this thesis is to acquire information needed for design of automotive radiators test bed. The test bed consist of open-circuit wind tunnel used as a simulator for wind flow against radiator and close-circuit hot water generator used as a simulator for hot water from engine. Design of the test bed is aimed at cost effective and simple, but meet the test standard.

A 3.95 meters long wind tunnel, comprised of fan system, air path duct and rectifying lattice, and test section. This tunnel was designed for accommodate maximum air flow rate of 3.87 kg/s. Hot water generator circuit consist of two hot water tanks, preheat tank, with maximum water flow rate capacity of 1.2 kg/s all over the temperature range of 30-120°C.

The test bed can be used for automotive radiator size up to 600x690 mm. with 51 m/s maximum wind speed at straight duct. The friction loss across in the tunnel is very low. Using inverter for controlling wind speed and water flow rate give a satisfactory result. Design of straight duct should be at least 3 times longer than the height of that section.