

ABSTRAK

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Judul Laporan Akhir : Rancang Bangun *Cooling System Trainer* Sebagai
Media Pembelajaran Sistem Pendingin (Proses
Perawatan)

(2026: xiii + 64 Halaman, 16 Gambar, 16 Tabel + 7 Lampiran)

Cooling system trainer merupakan media pembelajaran yang digunakan untuk mempelajari prinsip kerja sistem pendingin, sirkulasi fluida, dan perpindahan panas. Sebagai alat praktikum yang digunakan secara berulang, cooling system trainer memerlukan perawatan yang terencana agar seluruh komponen dapat berfungsi dengan baik dan memiliki umur pakai yang panjang. Kurangnya perawatan dapat menyebabkan terjadinya penyumbatan aliran coolant, kebocoran sistem, penurunan kinerja komponen, hingga kerusakan yang mengganggu proses pembelajaran. Laporan akhir ini bertujuan untuk menyusun prosedur perawatan cooling system trainer, mengidentifikasi potensi kerusakan yang sering terjadi pada setiap komponen, serta menentukan tindakan pencegahan yang sesuai untuk menjaga keandalan alat. Metode yang digunakan meliputi studi literatur, observasi langsung terhadap kondisi alat, identifikasi komponen sistem pendingin, serta analisis kebutuhan perawatan berdasarkan fungsi dan karakteristik masing-masing komponen. Hasil yang diperoleh menunjukkan bahwa komponen yang memerlukan perhatian khusus meliputi radiator, water pump, water heater, water jacket, cooling fan thermostat, reservoir tank, selang, motor dinamo dan panel kontrol. Prosedur perawatan yang disusun mencakup pemeriksaan visual, pembersihan komponen, pemeriksaan coolant, pemeriksaan sistem kelistrikan, inspeksi pompa dan motor penggerak, serta pengujian operasional secara berkala. Penerapan perawatan preventif secara terjadwal dapat menjaga kinerja sistem pendingin, mencegah kerusakan komponen, memperpanjang umur pakai alat, serta mendukung kelancaran kegiatan praktikum secara optimal.

Kata Kunci: cooling system trainer, sistem pendingin, perawatan, coolant, media pembelajaran

ABSTRACT

Cooling System Trainer Design as a Learning Media For Cooling Systems (Maintenance Process)

(2026: xii + 62 pp. + 16 Figures + 16 Tables + 7 Attachments)

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A cooling system trainer is an educational tool used to study the operating principles of cooling systems, fluid circulation, and heat transfer. As a piece of practical training equipment subject to repeated use, the trainer requires planned maintenance to ensure all components function correctly and achieve a long service life. A lack of maintenance can lead to issues such as coolant flow blockages, system leaks, component performance degradation, and even equipment failure that disrupts the learning process. This final report aims to establish maintenance procedures for the cooling system trainer, identify common potential component failures, and determine appropriate preventive measures to maintain equipment reliability. The methodology employed includes a literature review, direct observation of the equipment's condition, identification of cooling system components, and an analysis of maintenance requirements based on the function and characteristics of each component. The results indicate that components requiring special attention include the radiator, water pump, water heater, water jacket, cooling fan, thermostat, reservoir tank, hoses, electric motor, and control panel. The developed maintenance procedures encompass visual inspections, component cleaning, coolant checks, electrical system checks, inspections of the pump and drive motor, and periodic operational testing. Implementing scheduled preventive maintenance can sustain cooling system performance, prevent component failure, extend the equipment's service life, and optimally support the smooth conduct of practical training activities.

Keywords : *cooling system trainer, cooling system, maintenance, coolant, learning media*