

ABSTRAK

Dani Maula Sattar. Studi Modifikasi *Automatic Drain System* dan *Wiring Air Compressor XAS88* Untuk Meningkatkan *Mean Time Between Failure (MTBF)* di PT Adaro Indonesia. Dibimbing oleh Ir. Tasdik Darmana, S.T., M.T

Kesiapan alat di area pertambangan dapat diukur dari nilai *Mean Time Between Failure (MTBF)* dan *Physical Availability (PA)*. *Lube Truck* contohnya, MTBF dan PA yang tidak tercapai sebab rusaknya komponen pompa dan motor *attachment* karena adanya air hasil kondensasi pada *air compressor* yang tidak dibuang. Kemudian pada *electrical system* di mana *starting motor* kerap rusak sebab tidak ada pengaman menyebabkan *coil* tersuplai arus terus menerus dan terbakar. Sehingga *improvement* dilakukan dengan cara menambahkan *automatic water drain system* menggunakan PLC untuk menghindari air yang menumpuk, serta modifikasi *wiring air compressor* dengan penambahan *safety relay* untuk *starting motor*. Hasilnya kadar air pada regulator berkurang dari sebelumnya pada menit ke-5 sebanyak 80 mL sampai menit ke-60 yaitu 655 mL. Setelah adanya *automatic drain system* kadar air menit ke-5 7.5 mL dan menit ke 60 hanya 23 mL. Sedangkan untuk modifikasi *wiring* berdampak baik dengan *breakdown wiring intermittent* dan *short* sudah berkurang serta *starting motor* broken sudah dikendalikan. Alhasil MTBF yang didapat dalam waktu 3 bulan setelah *improvement* tercapai 153, 183, dan 217 jam. Sedangkan PA juga tercapai 96%, 97%, dan 98%. Ini berarti *improvement* yang dilakukan mencapai target yang diinginkan dan berdampak baik bagi performa unit.

Kata kunci: *Lube Truk*, MTBF & PA, PLC, *Wiring*

ABSTRACT

Dani Maula Sattar. *Study on Modification of Automatic Drain System and Wiring of XAS88 Air Compressor to Improve Mean Time Between Failures (MTBF) at PT Adaro Indonesia*. Supervised by Ir. Tasdik Darmana, S.T., M.T.

The readiness of equipment in the mining area can be measured by the Mean Time Between Failure (MTBF) and Physical Availability (PA) values. For example, for the Lube Truck, the MTBF and PA were not achieved due to the damage of the pump and attachment motor components caused by water from condensation in the air compressor that was not drained. Then, in the electrical system, the starting motor often gets damaged because there is no protection, causing the coil to receive continuous current and burn out. Therefore, improvements were made by adding an automatic water drain system to prevent water accumulation, as well as modifying the air compressor wiring by adding a safety relay for the starting motor. As a result, the moisture content in the regulator decreased from 80 mL at the 5th minute to 655 mL at the 60th minute. After implementing the automatic drain system, the moisture content was 7.5 mL at the 5th minute and only 23 mL at the 60th minute. Meanwhile, wiring modifications had a positive impact, reducing intermittent and short wiring breakdowns, and controlling motor starting failures. As a result, the MTBF achieved within 3 months after the improvement was 153, 183, and 217 hours. Meanwhile, PA also reached 96%, 97%, and 98%. This means that the improvements made achieved the desired targets and had a positive impact on unit performance.

Keywords: *Truck Lube*, MTBF & PA, PLC, *Wiring*