

**ANALISIS EFEKTIVITAS MESIN PENGELASAN MENGGUNAKAN
METODE *OVERALL EQUIPMENT EFFECTIVENESS* (OEE) PADA VAI 4
PLANT PT BAKRIE PIPE INDUSTRIES**

Yafi Wali Hanifa

ABSTRAK

Penelitian tugas akhir ini dilakukan pada PT Bakrie Pipe Industries yang merupakan perusahaan manufaktur penghasil pipa baja dan telah menerapkan pemeliharaan preventif. Terkait dengan penerapan pemeliharaan tersebut, ternyata ditemui adanya frekuensi kerusakan (*breakdown*) yang cukup tinggi pada mesin *high frequency welding* di antara mesin-mesin produksi lainnya. Pada penelitian ini digunakan metode *Overall Equipment Effectiveness* (OEE) untuk mengevaluasi efektivitas mesin tersebut dengan menghitung *availability ratio*, *performance ratio*, dan *quality ratio*-nya. Dari hasil perhitungan didapat Nilai OEE mesin *high frequency welding* 67%, yaitu masih dibawah standar *world class* OEE sebesar 85%. Faktor yang mempengaruhi rendahnya nilai OEE tersebut adalah akibat rendahnya nilai *performance ratio* sebesar 79% serta *reduced speed losses* yaitu 18%. Selanjutnya untuk mengetahui akar penyebab permasalahan tersebut dilakukan analisis *critical downtime* dengan menggunakan diagram pareto serta diagram sebab dan akibat. Berdasarkan hasil semua analisis di atas ditemukan *welding trip*, *impeder problem*, dan *base nose problem* sebagai *critical downtime*. Disimpulkan penyebab ketiga masalah di atas, faktor utamanya adalah belum diadakannya pelatihan terkait penanganan mesin. Pada penelitian ini juga disarankan penerapan *autonomous maintenance* disamping pelatihan terjadwal terhadap operator yang terkait.

Kata kunci: Pemeliharaan, OEE, Enam kerugian utama, Diagram Pareto, Diagram Sebab dan Akibat.

**ANALYSIS OF WELDING MACHINE EFFECTIVITY USING OVERALL
EQUIPMENT EFFECTIVENESS (OEE) METHOD IN VAI 4 PLANT PT
BAKRIE PIPE INDUSTRIES**

Yafi Wali Hanifa

ABSTRACT

This final year project was conducted at PT Bakrie Pipe Industries, a manufacturer of welded steel pipe, where in its operation the company already implementing the preventive maintenance. Associated with the maintenance application, it was found that the frequency of breakdown in such welding operation using High Frequency Welding (HFW) is significantly high compared to the other production machines during operation. In this research the Overall Equipment Effectiveness (OEE) is used to evaluate the effectiveness of the observed machine by means of using availability ratio, performance ratio, and its quality ratio. The result show that OEE value of the observed machine is around 67%, which is far below 85% of the world class OEE standard. Factors that affecting low OEE value is found due to lower performance ratio around 79% as well as reduced speed losses around 18%. Furthermore to determine the root cause of these problems, analysis of critical downtime using pareto chart and cause and effect diagram was also performed. Based on the above analysis, it is found that welding trip, impeder problem, and base nose problem are causes of critical downtime. It is concluded that the third cause of the above problems related to the handling machine, where the training of managing this problems has never been conducted. In this project, it is also recommended that the implementation of autonomous maintenance in addition to the scheduled training is necessary to the operators.

Keywords: Maintenance, OEE, Six Big Losses, Pareto Chart, Cause and Effect Diagram