ABSTRAK

Beberapa instrumen GC-MS yang dimiliki laboratorium uji kimia produk tekstil divisi softline organic memiliki masalah yang berbeda-beda, salah satunya adalah GC-MS 03. GC-MS 03 diketahui mengalami *changeover* mesin dengan frekuensi penggantian sebanyak satu hari sekali, sehingga diperlukan analisis untuk mengetahui efektifitas instrumen dan faktor yang mempengaruhinya. Metode yang digunakan dalam penelitian ini adalah *Overall Equipment Effectiveness* (OEE), *Six Big Losses*, dan *Failure Mode and Effect Analysis* (FMEA). Perhitungan OEE dapat menunjukkan tingkat *Availability Ratio*, *Quality Rate*, dan *Performance efficiency* pada instrumen. *Six Big Losses* dan FMEA digunakan untuk menganalisis faktor-faktor yang mempengaruhi efektifitas instrumen. Hasil penelitian menunjukkan nilai OEE yang didapat sebesar 92.09% dengan nilai *availability ratio* sebesar 92.09%, *quality rate* dan *performance efficiency* 100%. Nilai OEE tersebut sudah memenuhi kriteria *world class standard* yaitu sebesar 85%. Berdasarkan analisa *Six Big Losses* yang dilakukan, diketahui bahwa *setup and adjustment* (79%) dan *equipment failure losses* (21%) merupakan faktor yang mempengaruhi nilai efektifitas. Berdasarkan analisis FMEA yang dilakukan, didapatkan nilai RPN tertinggi sebesar 200 yang disebabkan karena tidak adanya SOP dalam memasang atau mengganti kolom GC-MS. Usulan perbaikan yang dapat diberikan antara lain perlunya pembuatan SOP pemasangan atau penggantian kolom GC-MS serta sosialisasi SOP terhadap seluruh personel.

Kata Kunci : Efektifitas, GC-MS, OEE, *Six Big Losses*, FMEA

ABSTRACT

Several GC-MS instruments at organic softline division in chemical laboratory testing of textile product have several problems, one of which is GC-MS 03. GC-MS 03 is known to experience machine changeover with a frequency of replacement once a day, so analysis is needed to determine the effectiveness of the instrument. and the factors that influence it. The methods used in this research are Overall Equipment Effectiveness (OEE), Six Big Losses, and Failure Mode and Effect Analysis (FMEA). OEE calculations can show the level of Availability Ratio, Quality Rate, and Performance efficiency of the instrument. Six Big Losses and FMEA are used to analyze the factors that affect the effectiveness of the instrument. The results showed that the OEE value obtained was 92.09% with the availability ratio value of 92.09%, quality rate and performance efficiency of 100%. The OEE value has met the world class standard criteria, which is 85%. Based on the analysis of Six Big Losses, it is known that setup and adjustment (79%) and equipment failure losses (21%) are factors that affect the value of effectiveness. Based on the FMEA analysis, the highest RPN value was 200, which was caused by the absence of SOP for installing or replacing the GC-MS column. Suggestions for improvement that can be given include the need for making SOP for installing or replacing GC-MS columns and socializing SOP to all personnel.

Keywords: Effectiveness, GC-MS, OEE, Six Big Losses, FMEA