

ABSTRAK

Seiring dengan jumlah transportasi yang beredar di Indonesia dan peningkatan kebutuhan BBM di Indonesia dengan rata-rata sebesar 4,7% per tahun, menuntut perusahaan pengolahan minyak untuk dapat memenuhi kebutuhan BBM. Selain itu, saat ini Indonesia merupakan negara net importir BBM.

Kegagalan fungsi suatu komponen di perusahaan pengolahan minyak akan berdampak pada jalannya proses produksi. Kegagalan tersebut perlu dianalisis akar penyebabnya sehingga manajemen perawatan dapat secara efektif menanggulangi permasalahan yang sama di masa depan. Penelitian ini bertujuan untuk mengidentifikasi komponen kritis, ditinjau dari frekuensi dan dampak kegagalan pada biaya, dan menganalisis akar penyebab kegagalan pada komponen-komponen kritis.

Tahapan penelitian dimulai dengan menentukan komponen kritis dengan metode analisis pareto dan *Failure Mode and Effect Analysis (FMEA)*. Hasil analisis tersebut didapatkan bahwa terdapat lima komponen kritis, yaitu *mechanical seal, bearing, soot blower, cooler*, dan adanya *excessive vibration*. Lima komponen kritis tersebut kemudian dijadikan objek penelitian. Untuk menganalisis akar penyebab kegagalan pada komponen-komponen kritis tersebut, digunakan metode *fishbone diagram (cause-and-effect diagram)* dan *why-why analysis*.

Dari hasil penelitian, didapatkan lima komponen kritis, yaitu *mechanical seal, bearing, cooler, soot blower*, dan *excessive vibration*. Kegagalan pada komponen mayoritas diakibatkan oleh umur dari komponen. Komponen *bearing* sering kali diganti akibat komponen yang bekerja sama dengan *bearing* diganti. Pada komponen *cooler*, kegagalan diakibatkan oleh kotoran masuk ke sistem dan sifat korosif fluida. Komponen *soot blower* bekerja kurang optimal karena air terbawa masuk oleh udara. *Excessive vibration* terjadi karena *imbalance, misalignment*, dan *mechanical looseness*.

Kata kunci: Analisis Penyebab Kegagalan, Komponen Kritis, Analisis Pareto, *Failure Mode and Effect Analysis, Fishbone Diagram, Why-Why Analysis*

ABSTRACT

This research is about studying one of the biggest oils and gas company in Indonesia. Massive growth of the amount of private transportation in Indonesia makes the use of its energy grows about 4.7% a year, demanding the company to be able to meet the energy supply. Furthermore, today Indonesia is net importer country of that kind of energy. Failure that occurs to a component can lead to disturbance of the production system, which cause the system cannot work optimally. Those failure of components must be analyzed to prevent the same failure in the future. This research has purpose to identify critical components of the production system investigated from its frequency and cost, and analyze the root cause.

The steps of this research start by identifying the critical components using pareto analysis and *Failure Mode and Effect Analysis (FMEA)*. There are five critical components found by those two components, which are mechanical seal, bearing, soot blower, cooler, and excessive vibration. Those five critical components are then becoming this research's object. Root causes are analyzed and identified by using fishbone diagram combined with why-why analysis.

The finding of this research is the age of the components becomes majority of the root cause. Bearing is replaced due to other component's replacement, such as seal replacement. Cooler is failed because the dirt able to enter the cooling system and corrosive fluid. Soot blower is not working well because the air entered the system brings water. The excessive vibration happens because of imbalance component, misalignment of components, and mechanical looseness.

Keywords: Root Cause Analysis, Critical Component, Pareto Analysis, Failure Mode and Effect Analysis, Fishbone Diagram, Why-Why Analysis