Integrasi Pemeliharaan (Maintenance) 4.0 dan Keberlanjutan (Sustainability) dengan Studi Kasus pada Sektor Pertambangan di Indonesia = Integration of Maintenance 4.0 and Sustainability with a Case Study in the Mining Sector in Indonesia

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Abstrak

Tren produksi batu bara di Indonesia meningkat sejak tahun 2020. Peningkatan produksi batu bara ini juga berdampak pada pembelian alat berat baru. Namun, tingginya permintaan masih belum bisa dipenuhi oleh produsen alat berat yang tergabung dalam Himpunan Industri Alat Berat Indonesia (HINABI). Pelaku pertambangan memilih untuk memperpanjang masa pakai alat berat sehingga diperlukan pemanfaatan aset semaksimal mungkin, salah satunya melalui pemanfaatan teknologi yang ada. Penelitian ini bertujuan untuk membuat kerangka maintenance 4.0 yang terintegrasi dengan sustainability pada industri pertambangan. Maintenance 4.0 yang efektif menawarkan manfaat pada masalah sustainability. Identifikasi kematangan maintenance merupakan langkah awal yang harus dilakukan. Indikator sustainability pada maintenance alat berat di tambang kemudiaan ditetapkan. Untuk menilai dampak sustainability secara utuh, maka Overall Sustainability Scores (OSS) dikembangkan. Berdasarkan OSS, pelaku pertambangan bisa mengarahkan penyempurnaan kematangan maintenance di tingkat tertinggi yang sejalan dengan indikator sustainability yang harus diperbaiki.

.....The trend of coal production in Indonesia has increased since 2020. The increase in coal production has also had an impact on the purchase of new heavy equipment. However, the high demand has yet to be met by heavy equipment manufacturers who are members of the Indonesian Heavy Equipment Industry Association (HINABI). Mining actors choose to extend the service life of heavy equipment so that it is necessary to utilize assets as much as possible, one of which is through the use of existing technology. This study aims to create a maintenance 4.0 framework that is integrated with sustainability in the mining industry. Effective Maintenance 4.0 offers benefits on sustainability issues. Identification of maintenance maturity is the first step that must be done. Sustainability indicators on heavy equipment maintenance at the mine are then determined. To assess the impact of sustainability as a whole, Overall Sustainability Scores (OSS) were developed. Based on OSS, mining players can direct the improvement of maintenance maturity at the highest level which is in line with sustainability indicators that must be improved.