Perkiraan kebutuhan energi dengan metode analisis aliran material dan energi pada industri baja = Energy demands estimation using material and energy flow analysis method in the steel industry

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Abstrak

[Industri baja merupakan industri padat energi yang memerlukan energi dalam jumlah yang sangat besar dalam proses produksi baja. Dari sisi intensitas energi, industri baja di Indonesia memiliki intensitas energi yang lebih besar dibandingkan industri sejenis di kawasan Asia, hal ini berarti konsumsi energi untuk menghasilkan satu ton produk baja di Indonesia lebih besar dibandingkan produk impor. Mengacu pada biaya energi, dengan konsumsi energi yang lebih tinggi dari negara lain di Asia, dapat menyebabkan produk baja Indonesia kurang kompetitif di pasar Asia.

Pemerintah melalui Kementerian Perindustrian telah menetapkan target produksi baja dalam negeri untuk memenuhi kebutuhan baja nasional dan meminimalisir ketergantungan terhadap produk impor. Hal ini perlu diikuti dengan perencanaan kebutuhan energi dan upaya untuk menurunkan biaya energi agar produk baja Indonesia lebih kompetitif di pasar Asia dan dapat memenuhi kebutuhan baja nasional secara optimal.

Penelitian ini bertujuan untuk memperkirakan jumlah energi yang diperlukan dalam bauran energi yang optimal dan menemukan cara menurunkan intensitas energi oleh industri baja dalam negeri untuk memenuhi kebutuhan baja nasional.

Dari hasil penelitian diperoleh bahwa pada tahun 2020 diperkirakan industri baja dalam negeri memerlukan energi sebesar 57,75 juta MSCF gas alam; 14,91 TWh listrik dan 1,49 milyar liter bahan bakar diesel untuk menghasilkan produk baja sesuai target Restra Kementerian Perindustrian yaitu sebesar 5 juta ton besi sponge, 20 juta ton baja kasar dan 20 juta ton baja akhir. Terdapat potensi efisiensi energi pada tahun 2020 diperkirakan sebesar 29,80 juta GJ atau setara dengan 8,28 TWh. Potensi ini dapat direalisasikan dengan menerapkan teknologi hemat energi antara lain adalah teknologi zero reformer DRI pada pembuatan besi sponge, yang dapat menurunkan intensitas energi sebesar 3,77 GJ/ton besi sponge atau dapat menurunkan biaya energi sebesar Rp. 200.068,00 per ton besi sponge.
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The steel industry is an energy intensive industry that requires energy in very large quantities in the steel production process. In terms of energy intensity, the steel industry in Indonesia have greater energy intensity than similar industries in the Asian region, this means that the energy consumption to produce one ton of steel products in Indonesia is higher than imported products. Referring to the cost of energy, the energy consumption is higher than other countries in Asia, may cause Indonesian steel products less competitive in the Asian market.

The Government through the Ministry of Industry has set a target of domestic steel production to fulfill national steel demand and minimize dependence on imported products. It is necessary be followed by the

energy demand planning and efforts to reduce the cost of energy that Indonesian steel products more competitive in the Asian market and can fulfill national steel demand optimally.

This study aims to estimate the amount of energy required in the optimal energy mix and find a way of reducing energy intensity in the domestic steel industry to fulfill the national steel demand.

The result showed that in 2020 the domestic steel industry is estimated to require an energy of 57.75 million mscf natural gas; 14.91 TWh of electricity and 1.49 billion liters of diesel fuel to produce steel products as targeted the Ministry of Industry of 5 million tonnes of sponge iron, 20 million tons of crude steel and 20 million tons of finished steel product. There is the potential for energy efficiency in 2020 was estimated at 29.80 million GJ, equivalent to 8.28 TWh. This potential can be realized by implementing energy-saving technologies include zero reformer DRI technology in the manufacture of sponge iron, which can reduce the energy intensity of 3.77 GJ / tonne of sponge iron or can reduce energy costs by Rp. 200,068.00 per tonne of sponge iron.;The steel industry is an energy intensive industry that requires energy in very large quantities in the steel production process. In terms of energy intensity, the steel industry in Indonesia have greater energy intensity than similar industries in the Asian region, this means that the energy consumption to produce one ton of steel products in Indonesia is higher than imported products. Referring to the cost of energy, the energy consumption is higher than other countries in Asia, may cause Indonesian steel products less competitive in the Asian market.

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