ABSTRAK

Kadar Emisi Gas buang pada PLTU FTP 1 tahun 2009 di Pulau jawa rata rata masih tinggi sehingga tidak sesuai dengan PERMEN tahun 2019 tentang baku mutu emisi gas buang industri dan efek gas rumah kaca yang ada di Indonesia dengan kandungan maksimal NOx dan SO2 sebesar 550 mg/Nm3. Kadar gas emisi buang juga harus ditekan sesuai dengan adanya kesepakatan Paris *agreement* tahun 2021 tentang penurunan nilai ambang batas carbon yang dihasilkan oleh pembangkit listrik berbahan bakar batu bara. Tujuan dari penelitian ini adalah untuk dapat menghitung dan mengevaluasi total campuran 5% sawdust yang dibakar di Boiler PLTU Indramayu untuk mendapatkan hasil emisi gas buang sesuai baku mutu lingkungan Hidup menggunakan alat ukur *CEMS* dalam batasan parameter normal untuk dioperasikan. Metode pengujian dilakukan dengan cara eksperimental di Boiler tipe *pulverized coal boiler* di PLTU Indramayu campuran 5% sawdust dengan merujuk dari hasil uji bakar campuran sawdust 5% pada uji lab dan modeling PLTU Indramayu. Adapun bahan bakar batu bara dan *sawdust* dicampur di *coal yard* kemudian ditransfer ke *bunker* untuk di bakar pada Boiler dengan cara *direct co-firing*. Hasil Pengujian *co-firing* dengan persentase campuran sawdust 5% di lakukan pada PLTU Indramayu 3x330 MW unit 2 terpantau aman untuk peralatan yang beroperasi. Besarnya emisi gas buang baik SO2 maupun NOx pada pengujian Co-firing 5% sawdust di PLTU Indramayu sendiri Emisi SO2 turun dari 120,84 mg/Nm3 menjadi 106,3 mg/Nm^3, Emisi NOx turun dari 365,41 mg/Nm3 menjadi 360,46 mg/Nm^3 memenuhi batas baku mutu emisi KLHK (550 mg/Nm^3). Setelah itu dilakukan Analisis uji plant 3 x 330 MW sebesar 5% campuran sawdust monitoring menggunakan alat *CEMS Online* sampai bulan Juli 2022 rata rata nilainya masih di bawah 550 mg/Nm3.

Kata Kunci: *Co-firing*, Boiler *Pulverizer Coal*, *Sawdust*, Emisi gas buang

ANALYSIS EMISSION GAS LEVELS CO-FIRING IN BOILER PLTU INDRAMAYU USING MAXIMUM 5% SAWDUST MIXTURE

ABSTRACT

The level of exhaust gas emissions at PLTU FTP 1 in 2009 on the island of Java is still high on average so it is not in accordance with the 2019 PERMEN regarding the quality standards of industrial exhaust emissions and greenhouse gas effects in Indonesia with a maximum content of NOx and SO2 of 550 mg/day. Nm3. The level of exhaust emissions must also be reduced in accordance with the Paris agreement in 2021 regarding the reduction of the carbon threshold value produced by coal-fired power plants. The purpose of this study is to be able to calculate and evaluate the total mixture of 5% sawdust burned in the PLTU Indramayu Boiler to obtain exhaust gas emission results according to environmental quality standards using a CEMS measuring instrument within normal parameters for operation. The test method was carried out experimentally in a pulverized coal boiler type boiler at PLTU Indramayu with a mixture of 5% sawdust by referring to the results of the 5% sawdust combustion test in the lab test and modeling of PLTU Indramayu. The coal fuel and sawdust are mixed in the coal yard and then transferred to the bunker to be burned in the boiler by direct co-firing. The results of the co-firing test with a percentage of 5% sawdust mixture carried out at PLTU Indramayu 3x330 MW unit 2 was observed to be safe for operating equipment. The amount of exhaust gas emissions both SO2 and NOx in the Co-firing 5% sawdust test at PLTU Indramayu itself SO2 emissions decreased from 120.84 mg/Nm3 to 106.3 mg/Nm³, NOx emissions decreased from 365.41 mg/Nm3 to 360 ,46 mg/Nm³ meets the KLHK emission quality standard limit (550 mg/Nm³). After that, a 3 x 330 MW plant test analysis of 5% sawdust monitoring mixture was carried out using the CEMS Online tool until July 2022 the average value was still below 550 mg/Nm3.

Keywords: *Co-firing, Boiler Pulverizer Coal, Sawdust, Exhaust emission*