

CHAPTER V

CONCLUSION AND RECOMMENDATION

From the research that had been done conclude the results of calculations and analysis.

5.1 Conclusion

Based on the results on analysis impact of harmonic on power quality and losses at coal mill area SS 445 Indarung 5. PT Semen Padang. We got some conclusion :

1. Based the result on the incoming to SS 448 of the measurement range of THD_i were 6.88 % – 10.51 % and the calculation range of THD_i were 6.72 % - 10.36%. The THD_i didn't exceed the limit (12% standard limit) according to IEEE 519 – 2014 standard.
2. Based the result on the primary side of the measurement range of THD_i were 24 % – 27.68 % and the calculation range of THD_i were 23.72 % - 27.4 %. The THD_i didn't exceed the limit (8% standard limit) according to IEEE 519 – 2014 standard.
3. Based the result on the primary side of the measurement range of THD_i were 25.13 % – 28.59 % and the calculation range of THD_i were 24.9 % - 28.06. The THD_i does not exceed the limit (8% standard limit) according to IEEE 519 – 2014 standard.
4. The cases in phase R, phase S and phase T of secondary side TR2 on that moment had true power factor ranged 0.90 - 0.93.
5. Harmonic currents in the power transformer also affect the value of transformer losses. Based on the analysis results losses on incoming to SS 448 had 2,509.06 kW for copper losses, 994.65 kW for eddy current losses and 3.23 kW hysteresis losses. So the total losses on incoming to SS 448 was 3,506.94 kW.

6. Based on the analysis results losses on primary side TR2 had 1491.06 kW for copper losses, 542.11 kW for eddy current losses and 1.45 kW hysteresis losses. So the total losses on primary side TR2 was 2034.62 kW.
7. Based on the analysis results losses on secondary side TR2 had 1568.81 kW for copper losses, 539.20 kW for eddy current losses and 20.72 kW hysteresis losses. So the total losses on primary side TR2 was 2128.73 kW.
8. For handling harmonics distortion can be done by installing a filter.

5.2 Recommendation

From this research at the collage we provide some recommendation :

1. Using shunt active filters to reduce the THD_i to be under the standar limit at substation 448 coal mill area.
2. Increase the awareness of the people about the power quality.
3. From this research we know that the result could not be added because the measurement didn't get in the same time, we recommended to make another study at the substation to show THD in the 3 points at the same time and could show the losses, improve the other power quality of power system and and determine how much energy is lost in one year and show it in Rupiah.