PT SEMEN PADANG

Installation of Interconnection between the Compressors of Kiln and Cement Mill to Maximize Compressor Loads and Efficiency

SUMMARY OF THE OPTION

PT Semen Padang produces 5,240,000 tons of cement per year, which comes from five plants of which one is not functional any more. The GERIAP project focused on Indarung IV. An interconnection was made between the kiln compressor room and compressor at cement mill room to make better use of the compressor capacity in the kiln compressor room, and thereby eliminating the use of additional compressors. Investment costs were US$ 1099, annual savings were US$ 14480 and the payback period was about 1 month. Electricity savings are 254,523 kWh/year and GHG emission reductions are 184 tCO2 per year.

KEYWORDS

Cement, Indonesia, Compressors & Compressed Air System, Kiln, Cement Mill

OBSERVATIONS

Indarung IV has two compressor systems as shown below and they are operated separately. The Main Compressor house located at Kiln Department consists of four compressors where two units run and two other units are kept standby. The second system is located at the cement mill (one compressor).

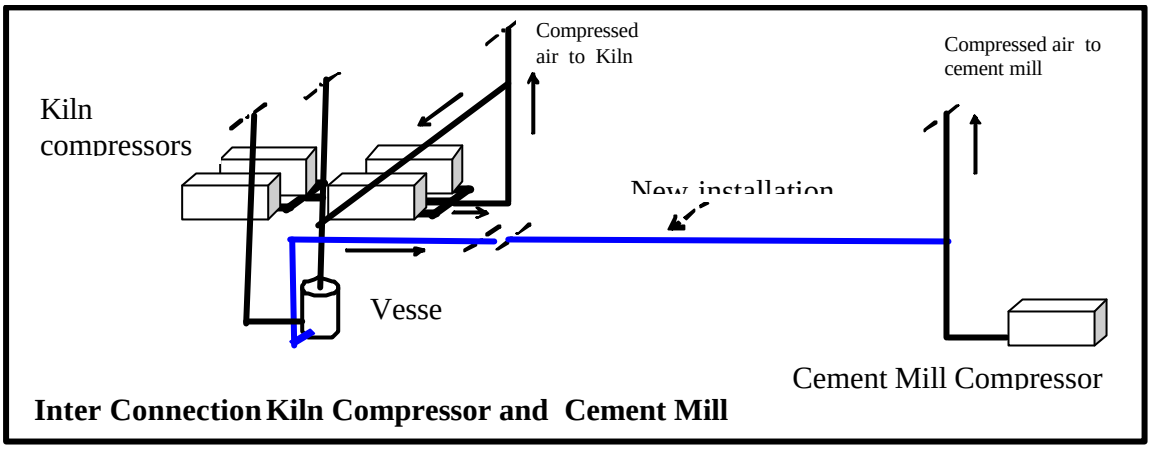
Table: Compressor data

Area	Kiln				Cement Mill
Nomenclature	J3K32	J3K33	J3K34	J3K35	
Merk	Atlas Copco	Atlas Copco	Kaeser	Atlas Copco	Atlas Copco
Type	GA 250	GA 250	FS 440	GA 250	GA 90
Power	250 kW	334 hp	250 kW	257 kW	90 kW
Working Pressure (bar)	6.5	6.5	6.5	6.5	6.5
Max. Pressure (bar)	7.5	7.5	7.5	7.5	7.5
Capacity (m3/min)	43.7	43.7	43.7	43.7	16.6

The audit team observed that all the air compressors at Indarung IV are less than 75% loaded. The existing compressors run on a load/unload control system and therefore the percentage of loaded hours should be maximized to increase generation efficiency. From the result obtained, the calculated total air pressure that is un-used flow in the kiln compressor can be used to supply pressure air in cement mill.

OPTIONS

Based on the observation results and calculations as mentioned above, an interconnection was installed between the kiln compressor room and compressor at cement mill room. Investment cost were needed to connect the kiln compressor and cement kiln, which consisted of Pipe, Elbow, Valve, Fitting, and Outsourcing services. After the interconnection was made the cement compressor mill is on standby and the compressed air need of the cement mill is supplied from the kiln compressor room. Both compressors in kiln room are running at loads of 95%.



Inter Connection Kiln Compressor and Cement Mill

RESULTS

Financial benefits

- Investment: Rp 9,895,300,-(US$ 1,099*)
- Annual cost saving: Rp 130,320,898 (US$ 14,480*)
- Payback period: 1 month

Environmental benefits

- Energy saving: 254,523 kWh/year (= 2,247,221 kWh/year - 1,992,697 kWh/year)
- % energy saving from total energy consumption: = 254,524 kWh/year / 2,247,222 kWh/year x 100%= 11.3 %
- Annual GHG emission reduction: 184.28 tons CO_2/year (conversion factor**)

(*)US $ 1 = Rp 9,000

(**) www.uneptie.org/energy/tools/ghgin

FOR MORE INFORMATION

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