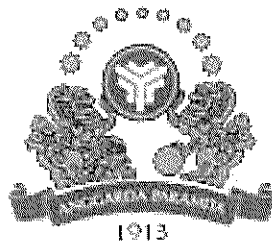


Energy Audit Final Report

September - 2014



PT HM SAMPOERNA Tbk.

PT. HM SAMPOERNA Tbk.
Sukorejo, Indonesia

Address for Communication
Schneider Electric
Energy & Sustainability Services (ESS)
Global Solutions, Demand Operations

Description	Unit	Value
	USD/kWh	0.091
Estimated annual monetary saving	USD	28,652
	Million IDR	332
Estimated Investment	USD	15,000
	Million IDR	174
Payback	Months	6

5.2 Chiller & AHU

5.2.1 Stop chilled water recirculation in stand by chiller of SPP office and PD

Background

Two air cooler reciprocating chiller is installed for SPP office air conditioning and two number air cooled screw chiller is installed for PD air conditioning. One chiller is running and one is standby mode on both areas.

Findings

Chilled water inlet and outlet valve of standby chiller is always open so that chilled water always flows in standby chiller along with operating chiller which is increases the chilled water supply temperature as well as chilled water pump power and its results more water flow handle by pump.

Recommendation

Stop chilled water inlet valve of standby chiller and installed VSD with chilled water pump to maintain same pump head and half of present pump flow.

Benefits:

The cost benefit analysis is given below:

Table 6. Cost benefit analysis for stop recirculation water in stand by chiller

Description	Units	SPP Office Chilled Water Pump	PD Chilled Water Pump
Present pump flow	m ³ /Hr	101	81
Present pump power	kW	13.6	10.95
Working suction pressure for pumps	kg/cm ²	0.07	0.75
Working discharge pressure for pumps	kg/cm ²	2.2	2.6
Water flow required for single chiller	m ³ /Hr	45	40
Power consumption after VSD installation	kW	8.16	6.57
Power saving	kW	5.44	4.38

Description	Machine Code No.	Actual power , kW
Dust Collector No. 8	DUST-0011	9.3
Dust Collector No. 9	DUST-0012	8.7
Dust Collector No. 10	DUST-0013	18.6
Dust Collector No. 11	DUST-0014	15.3
Dust Collector No. 12	DUST-0015	24.5
Dust Collector No. 13	DUST-0016	36.9
Dust Collector No. 14	DUST-0093	19.5
PP-1		
Dust Collector No. 4	DUST-0007	6.6
Dust Collector No. 5	DUST-0008	8.3
Dust Collector No. 6	DUST-0009	10.5
Dust Collector No. 8	DUST-0011	9.3
Dust Collector No. 9	DUST-0012	8.7
Dust Collector No. 10	DUST-0013	18.6
Dust Collector No. 11	DUST-0014	15.3
Dust Collector No. 12	DUST-0015	24.5
Dust Collector No. 13	DUST-0016	36.9
Dust Collector No. 14	DUST-0093	19.5
Total power consumption		332.0
Proposed system		
Estimated energy savings by flat-belt drives	%	4%
Annual operating hours per year	hr/yr	7,920
Energy cost	IDR/kWh	1,057
Annual energy savings	kWh	105,177
Annual monetary savings	million IDR/year	111
	USD/year	9,584
Estimated investment	USD	21,000
Payback period	Months	26

5.6 Lighting

5.6.1 Provide motion sensor in SPP – 2 ware house

Background

In SPP-2 finished goods ware house is illuminated with 107 double fitting fluorescent tube light, out of which 62 lights are switch on for lighting and other lights are switched off.

Findings

Lights are switch on inside the ware house irrespective of usages inside the ware house.

Recommendation

Provide an ultra sonic motion sensors to operate these lights. It will switch off the lights automatically when the place is idle and switch on when any work in progress inside the ware house.

Benefits

The cost benefit analysis is as follows:

Table 24. *The cost benefit analysis of provide motion sensor in SPP – 2 ware house*

Description	Units	Value
Fluorescent tube light on at SPP-2 finish goods ware house	no's	124
Power consumption by each light	watt	32
Total power consumption by lamps	kW	3.968
Expected power saving	%	40%
	kW	1.59
Annual operating hour	Hrs	8,160
Expected annual energy saving	kWh	12,952
Energy cost	IDR/kWh	1,057
	USD/kWh	0.0911
Estimated annual monetary saving	USD	1,180
	Million IDR	13
Estimated investment	USD	1,500
	Million IDR	17
Payback	Months	15

5.6.2 Provide motion sensor in SKM – 2 ware house.

Background

SKM – 2 ware house is illuminated with 24 numbers of 200 Watt induction lamp. There are no production activity in SKM-2 area and only the place is used as ware house.

Findings

Lights are always switched on irrespective of work inside the SKM – 2 area.