

Siam Kubota Metal Technology (SKMT)

4.Environmental performance data (Jan. 2019 to Dec. 2019)

Used amount of energy	Crude oil equivalent KL	12,749
Used amount of water	thousand m ³	55

CO₂ emission*	tons CO ₂ e	23,947
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*CO₂ emissions from energy sources.

Air Pollutant measurement results										
Main smoke and soot generation facilities		Electric Furnaces								
		DC Melting			DC Molding, Finishing			WS Core making		
	Unit	Control content	Control value	Maximum measured	Control content	Control value	Maximum measured	Control content	Control value	Maximum measured
SOx	ppm	Concentration control	500	<0.1	Concentration control	500	<0.1	Concentration control	60	<0.1
NOx	ppm	Concentration control	180	<1.0	Concentration control	180	<1.0	Concentration control	180	<1.0
Particulate	mg/m ³	Concentration control	5	1.1	Concentration control	5	1.2	Concentration control	2	1.8

Amount of discharge water	thousand m ³	No water discharge out of factory	
Amount of pollutant in discharge water	COD	kg	-
	Nitrogen	kg	-
	Phosphorus	kg	-

Water pollutant measurement results				
		unit	Control value	Maximum measured
Public water areas	pH	-	-	-
	BOD	mg/L	-	-
	COD	mg/L	-	-
	Nitrogen	mg/L	-	-
	Phosphorus	mg/L	-	-
	Hexavalent chromium	mg/L	-	-
	Lead	mg/L	-	-
	COD, total emission control	kg/day	-	-
	Nitrogen, total emission control	kg/day	-	-
	Phosphorus, total emission control	kg/day	-	-
Water after treatment *	pH	-	5.5 ~ 9.0	7.7, 8.1
	BOD	mg/L	≤ 20	17
	COD	mg/L	≤ 120	109
	SS	mg/L	≤ 50	33
	Temperature	°C	≤ 40	34
	Oil & Grease	mg/L	≤ 5	≤2
	Nitrogen	mg/L	≤ 100	61

*No external water discharge

Waste discharge	tons	14,025
Recycling ratio	%	93.8%

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5.Environmental Topics

> REDUCE ENERGY - DUST COLLECTOR FURNACE (Motor IE3)

(1) Theme & Goal

Enter overview of the theme, set goals, and other necessary information.
 [Items] medium- and long-term point of view relevance to the Medium-term Environmental Conservation Targets
 Difficulty Level (The targeted theme and goals are challenging.)

Melting process used high energy consumption about 62.55% of all energy. In melting process have main machine Furnace, Dust collector, cooling tower. We have energy reduction project of Y-2019. We have a plan to improvement dust collector that second used energy of melting.

Before : used motor standard (IE1) of fan motor dust collector operation dust collector machine. We have to change and increase efficiency (IE3) for reduction energy dust collector furnace.

(2) Implement Plan

Enter overview of the implementation plan and creative ideas used to implement the theme.
 [Items] Steps and schedule to achieve goals Attraction and analysis of problems
 New technologies and innovative ideas

Energy Medium Term Plan Y2015 - Y2019

Action	2015	2016	2017	2018	2019
1. Construction ISO Mt. Substation					Completed
2. Revise energy conservation policies					
- Reduce Contents Mt. of machine					
- Add burner for Dust Collector					
- Change control wiring to LED					
- Switch Renewable Energy (Solar Cell)					
- Reduce temperature of machine					
Check energy saving point					
- Use high efficiency motor - Equipment					
- Reduce load of electric equipment - motor, air compressor, hybrid system					

(3) Status of improvement

Enter details about the status of the improvement.
 [Items] Details of improvement valuation of improvement effect Press of improvement

Considering the operation cost under long term period, the best idea is to adopt the high efficiency motors.
 - The point is just not to consider the initial cost of motor but overall cost including long term operation.
 The advantage of IE3 motor is very effective for electricity consumption reduction comparing to the standard motor. Hitachi IE3 motor loss is reduced 30~40% and we are able to get almost 5% energy saving if the motor is replaced from IE1 to IE3 thus save "energy cost".

Item	Energy Saving Project Y 2019	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	Investor system - dust collector	Contact to supplier	Discussion concept	Quotation	Order	Installation	Test and check						
2	Yokohama Electric Blower for gas burner of Core machine - fix												
3	Improve electric blower for ladle cooling												
4	Motor high efficiency (IE3)	Contact to supplier	Discussion concept	Quotation	Order	Installation	Test and check						

(4) Results

Please provide details about the outcome of the activity. (As quantitative as possible)
 [Items] Reduction of Environmental Risks Reduction of Environmental Burdens Reduction of CO2 Emissions
 Ecological Conservation Awareness Raising

Month	ton-metal	Y-2019	Y-2018	Diff	kWh	Cost Electric	THB
Jan	4,823.0	16.09	24.55	8.46	40,821.31	3.65	149,997.78
Feb	2,264.7	18.40	24.35	5.95	25,375.49	3.65	92,620.52
Mar	4,936.8	17.20	24.15	6.94	34,242.14	3.65	124,983.82
Apr	4,400.9	15.16	19.27	4.11	18,069.94	3.65	65,955.30
May	3,481.5	19.22	22.57	3.35	11,649.42	3.65	42,520.40
Jun	2,416.9	23.20	17.57	5.63	13,606.03	3.65	49,662.02
Jul	3,330.6	21.27	17.92	3.35	11,157.19	3.65	40,723.74
Aug	4,382.2	14.56	17.77	3.21	14,049.86	3.65	51,281.98
Sep	4,816.5	15.80	19.18	3.38	16,269.33	3.65	59,382.69
Oct	4,906.7	15.72	17.79	2.06	10,122.93	3.65	36,948.68
Nov	2,818.0	22.99	19.15	3.84	10,825.16	3.65	39,511.83
Dec	3,111.2	17.59	19.16	1.57	4,897.22	3.65	17,874.84
Total	47,688.9	17.57	19.95	2.37	113,096.40	3.65	412,801.86

kWh Saving (kWh)	113,096.00
Energy Saving (Bath)	412,801.00
Reduce CO2 (t-co2)	59.00

> REDUCE WASTE

In 2019, SKMT which generate a large amount of waste, achieved a reduction of approximately 12,670 tons in the amount of discharged waste through conversion of casting sand to valuable resources. The activity was introduced on KUBOTA REPORT2020.

Measures to Reduce Waste

The Kubota Group has established its Medium-Term Environmental Conservation Targets 2020 (p.36) and is working on the reduction of waste discharge from its business sites and the improvement of the recycling ratio. The Group has been promoting various measures, such as the thorough separation of waste according to the type and disposal method of waste, the introduction of returnable packaging materials, and shared waste recycling between sites. The Group is also committed to the reduction of hazardous waste through ensuring thorough monitoring and management thereof.

In RY2019, cast iron production sites, which generate a large amount of waste, achieved a reduction of approximately 12,000 tons in the amount of discharged waste through conversion of casting sand to valuable resources. Machinery production sites continued working to reduce the amount of sludge generated in the painting booth as well as volumes of waste oil and oil-containing wastewater. Meanwhile, as measures to reduce disposable plastics, we introduced initiatives at certain worksites to withdraw the use of disposable tableware in the employee cafeteria and reduce the issue of plastic carrier bags in on-site stores.

As a result of the efforts toward achieving the Medium-Term Environmental Conservation Targets 2020 for waste reduction, global production sites achieved a reduction of 15,800 tons of waste in RY2019 compared with the case where countermeasures were not implemented from the base year (RY2014). The economic effects of these measures reached 52 million yen compared to RY2014. Waste discharge per unit of production in RY2019 improved by 21.4% compared to RY2014. The recycling ratio was 99.7% at production sites in Japan and 91.8% at production sites overseas, both achieving the targets of the Medium-Term Environmental Conservation Targets 2020.

Moreover, production sites in Japan have raised the utilization rate of electronic manifests to 96.3%, enabling real-time assessment of the reduction effects. We will continue to promote the reduction of waste through promoting sharing of good reduction practices and visualization of waste by utilizing electronic manifests.



Conversion of waste casting sand to valuable resources led to a major reduction in the amount of waste discharged.
 SIAM KUBOTA Metal Technology Co., Ltd.
 (Thailand)

Siam Kubota Metal Technology (SKMT)

> Tree planting activities around the site on June, 2019



> Waste collect around the site on June, 2019 (World Environment Day)



> Release fish to the river with the EIA Committee and community at DON KHEE LEK canal on Jun 27, 2019



> Planting trees at Don khee lek canal with the EIA Committee and community on Jun 27, 2019



> Planting trees and improving plant protection (Tree planting and make fence around the tree for input leaf.) at BAN MOUNGPRONG SUB DISTRICT HEALTH PROMOTION HOSPITAL on Jun 27,2019



> Planting trees for a beautiful road on Sep 13,2019(Organize by 304 Industrial Park II)

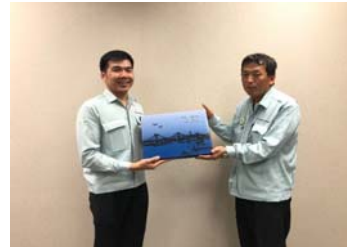
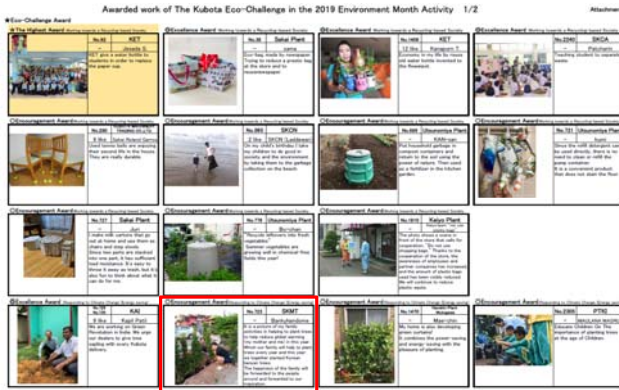


Siam Kubota Metal Technology (SKMT)

- > Participated KUBOTA Environmental Award and KUBOTA Eco-Challenge
- >> KUBOTA Environmental Award



- >> KUBOTA Eco-Challenge



Encouragement award

Theme : Responding to climate change (Energy saving)

- > Environmental awareness education to school students participated 1 schools near by SKMT on Jun 27, 2019



- > EIA Committee Meeting at SKMT



EIA Committee Meeting at SKMT (2 times/Yr.)