

Safety & Environmental Report 2021

Data by Site

Notes on figures

- The Energy Consumption statistics are crude-oil equivalents of heavy oil, diesel oil, kerosene, gasoline, LP gas or etc.
- The recycling ratio represents the percentage of sold-off/recycled waste.
- Air emission data is measured at exhaust vents and water quality data at the final discharge outlet.
- For PRTR-targeted substances, Special Class 1 restricted substances (the amount usage of 0.5 ton or more per year) and Class 1 restricted substances (the amount usage of 1 ton or more per year) are stated in this report. Figures are rounded to one decimal place.
- All data was from FY2020. It was measured between April 1st, 2020 and March 31, 2021.

Notes on Standard Values

- The standard value for air emission is set to the strictest standard value referring to applicable laws, regulations and standards for the equipments. The observed values are the minimum/maximum among recorded values during the period.
- The standard values for air emission and water quality are the strictest values referring to the applicable laws, regulations and customer's agreements at each site.
- Column marked with an Em Dash ("-") indicates that they are not indispensable.

About Self-Control Standard

- It is the standard to control which defined by calculating value of processing ability from value of past performance. (self-control standard \leq legal standard)

TAIYO YUDEN CO., LTD. Takasaki Global Center

- Total energy consumption (Crude oil equivalent) : 313 kL/year
- Total waste generated : 57 tons/year (recycling rate: 100 %)
- Air emission : Measurement was not performed since no facility was subject to legal regulations.
- Water quality : Measurement was not performed since no facility was subject to legal regulations.
- PRTR restricted substances : Total usage amount is under notification obligation.
- Water source : Tone River
- Drain destination : Karasu River(Via Sewage)

TAIYO YUDEN CO., LTD. Haruna Plant

- Total energy consumption (Crude oil equivalent) : 8,649 kL/year
- Total waste generated : 264 tons/year (recycling rate: 100 %)
- Air emission : **Air Pollution Control Act and Prefectural Ordinances**

Equipment	Fuel	Emissions to Air	Emission Limit	Self-control Standard	Unit	Actual Max.
Firing furnace (Electricity)		Soot and dust	0.25	0.01	g/m ³ N	0.002
Generator (Diesel)	Heavy oil A	NOx	950	950	ppm	800
		SOx	8.0	8.0	K value	0.1
		Soot and dust	0.1	0.1	g/m ³ N	0.03

- Water quality : **Water Quality Pollution Control Act**

Item	Effluent Std.	Self-control Standard	Unit	Actual		
				Min.	Ave.	Max.
Hydrogen ion concentration	5.8~8.6	6.5~8.0	-	7.3	7.5	8.0
Biochemical oxygen demand	25	15	mg/L	<1	1.6	3.0
Suspended solids	50	20	mg/L	<1	1.3	5.0
N-hexane extract (mineral content)	5	2.0	mg/L	<1		
Copper content	3	0.1	mg/L	<0.01		
Zinc content	2	0.5	mg/L	<0.01	0.01	0.04
Soluble iron content	10	0.1	mg/L	<0.01		
Soluble manganese content	10	0.1	mg/L	<0.01	0.01	0.02
Chromium content	2	0.02	mg/L	<0.01	0.01	0.06
Nitrogen content	120	15	mg/L	4.7	5.6	7.5
Phosphorus content	16	0.1	mg/L	<0.05		

- PRTR restricted substances In tons/year

Chemical Substance Name	Total Emissions	Total Transfers	Total Recycles
Vanadium compound	0	0	0

- Water source : Spring Water
- Drain destination : Karasu River

TAIYO YUDEN CO., LTD. Nakanojo Plant

- Total energy consumption (Crude oil equivalent) : 4,133 kL/year
- Total waste generated : 316 tons/year (recycling rate: 100 %)
- Air emission : **Air Pollution Control Act and Prefectural Ordinances**

Equipment	Fuel	Emissions to Air	Emission Limit	Self-control Standard	Unit	Actual Max.
Drying furnace	Kerosene	NOx	230	35	ppm	18
		Soot and dust	0.2	0.005	g/m ³ N	<0.002
		Sox	8.0	0.1	K value	<0.02
Firing furnace (Electricity)		Soot and dust	0.25	0.06	g/m ³ N	0.02
Firing furnace	LP gas	NOx	180	35	ppm	38
		Soot and dust	0.25	0.005	g/m ³ N	<0.002

- Water quality : **Sawage Ordinance (Town of Nakanojo)**

Item	Effluent Std.	Self-control Standard	Unit	Actual		
				Min.	Ave.	Max.
Boron and its compounds	10	8.5	mg/L	0.01	0.03	0.05
Hydrogen ion concentration	5.0~9.0	5.0~8.1	-	7.2	7.6	8.1
Biochemical oxygen demand	600	124	mg/L	5.0	54	120
Suspended solids	600	31	mg/L	1.0	10	23
N-hexane extract (mineral content)	5	3.0	mg/L	1.0	2.0	3.0
N-hexane extract (animal/plant content)	30	3.0	mg/L			
Copper content	3	0.4	mg/L	0.01	0.02	0.05
Zinc content	2	0.7	mg/L	0.02	0.1	0.6
Soluble iron content	10	0.3	mg/L	<0.01		
Soluble manganese content	10	0.3	mg/L	<0.01		

- PRTR restricted substances

In tons/year

Chemical Substance Name	Total Emissions	Total Transfers	Total Recycles
Silver and its water-soluble compounds	0	0	0.08
Chromium and chromium(III) compounds	0	0	0.1
Nickel compound	0	0	15

- Water source : Spring Water
- Drain destination : Momose River(Via Sewage)

TAIYO YUDEN CO., LTD. Tamamura Plant

- Total energy consumption (Crude oil equivalent) : 27,293 kL/year
- Total waste generated : 2,229 tons/year (recycling rate: 100 %)
- Air emission : **Air Pollution Control Act**

Equipment	Fuel	Emissions to Air	Emission Limit	Self-control Standard	Unit	Actual Max.
Firing furnace (Electricity)		Soot and dust	0.25	0.16	g/m ³ N	0.05

- Water quality : **Water Quality Pollution Control Act and Agreement**

Item	Effluent Std.	Self-control Standard	Unit	Actual		
				Min.	Ave.	Max.
Lead and its compounds	0.1	0.01	mg/L	0.01		
Arsenic and its compounds	0.1	0.01	mg/L	0.01		
Fluorine and its compounds	8	0.3	mg/L	0.1		
Hydrogen ion concentration	5.8~8.6	6.9~8.0	-	7.5	7.6	7.8
Biochemical oxygen demand	25	13	mg/L	2.0	8.2	27 ^{*1}
Suspended solids	50	30	mg/L	1.0	1.7	3.0
N-hexane extract (mineral content)	5	1.0	mg/L	<1		
N-hexane extract (animal/plant content)	30	1.0	mg/L			
Copper content	3	0.03	mg/L	0.02		
Zinc content	2	0.5	mg/L	0.2		
Soluble iron content	10	0.1	mg/L	0.05		
Soluble manganese content	10	0.5	mg/L	0.04		
Chromium content	2	0.01	mg/L	0.01		
Coliform bacteria count	3,000	1,400	Num/cm ³	<30		
Nitrogen content	120	18	mg/L	0.9	7.2	18
Phosphorus content	16	5.0	mg/L	0.4	1.2	3.3

*1: The biochemical oxygen demand exceeds the legal standard because of the temporary change in the number of workers.

- PRTR restricted substances In tons/year

Chemical Substance Name	Total Emissions	Total Transfers	Total Recycles
Toluene	13	0	12
Nickel	0.03	0	24
Methylnaphthalene	0.09	0	0

- Water source : Tone River
- Drain destination : Karasu River

TAIYO YUDEN CO., LTD. Yawatabara Plant

- Total energy consumption (Crude oil equivalent) : 405 kL/year
- Total waste generated : 86 tons/year (recycling rate: 100 %)
- Air emission : Measurement was not performed since no facility was subject to legal regulations.
- Water quality: **Pollution Control Agreement**

Item	Effluent Std.	Self-control Standard	Unit	Actual		
				Min.	Ave.	Max.
Hydrogen ion concentration	5.8~8.6	6.4~8.3	-	7.5	7.7	8.0
Biochemical oxygen demand	25	14	mg/L	1.0	2.4	5.0
Suspended solids	50	12	mg/L	1.0	2.1	8.0
N-hexane extract (animal/plant content)	30	1.2	mg/L	1.0		
Coliform bacteria count	3,000	1,500	Num/cm ³	30	33	63
Nitrogen content	120	16	mg/L	1.1	5.6	19
Phosphorus content	16	2.7	mg/L	0.3	0.8	2.8

- PRTR restricted substances : Total usage amount is under notification obligation.
- Water source : Tone River
- Drain destination : Karasu River

TAIYO YUDEN CO., LTD. R&D Center

- Total energy consumption (Crude oil equivalent) : 1,610 kL/year
- Total waste generated : 51 tons/year (recycling rate: 100 %)
- Air emission : **Air Pollution Control Act**

Equipment	Fuel	Emissions to Air	Emission Limit	Self-control Standard	Unit	Actual Max.
Diesel engine	Heavy fuel oil	NOx	950	900	ppm	874
		SOx	8	2.7	K value	0.3
		Soot and dust	0.1	0.06	g/m ³ N	0.03

- Water quality : **Pollution Control Agreement**

Item	Effluent Std.	Self-control Standard	Unit	Actual		
				Min.	Ave.	Max.
Boron and its compounds	10	0.2	mg/L	0.1		
Fluorine and its compounds	8	0.2	mg/L	0.03		
Ammonia and its compounds, Nitrous and Nitric acid compound	100	60	mg/L	18		
Hydrogen ion concentration	5.8~8.6	6.0~8.4	-	7.2	7.4	7.6
Biochemical oxygen demand	25	18	mg/L	1.0	5.0	8.0
Suspended solids	50	30	mg/L	1.0	3.1	6.0
N-hexane extract (animal/plant content)	30	10	mg/L	1.0		
Phenolic content	1	0.3	mg/L	0.1		
Copper content	3	0.1	mg/L	0.01		
Zinc content	2	0.2	mg/L	0.02		
Soluble iron content	10	0.1	mg/L	0.07		
Soluble manganese content	10	0.1	mg/L	0.02		
Chromium content	2	0.1	mg/L	0.01		
Coliform bacteria count	3,000	500	Num/cm ³	30		
Nitrogen content	120	80	mg/L	19	31	58
Phosphorus content	16	12	mg/L	1.9	4.3	6.0

- PRTR restricted substances : Total usage amount is under notification obligation.
- Water source : Groundwater Wells
- Drain destination : Karasu River

TAIYO YUDEN CHEMICAL TECHNOLOGY CO., LTD.

- Total energy consumption (Crude oil equivalent) : 2,647 kL/year
- Total waste generated : 1,380 tons/year (recycling rate: 100 %)

<<Head Office / Main Plant>> -> Fujioka Plant in next page

- Air emission : Measurement was not performed since no facility was subject to legal regulations.
- Water quality : **Water Quality Pollution Control Act and Prefectural Ordinances**

Item	Effluent Std.	Self-control Standard	Unit	Actual		
				Min.	Ave.	Max.
Boron and its compounds	10	4.0	mg/L	0.03		
Fluorine and its compounds	8	4.0	mg/L	<0.1		
Ammonia (Sum of Ammonia, Nitric & Nitrous acid)	100	30	mg/L	25		
Hydrogen ion concentration	5.8~8.6	6.2~8.2	-	6.2	6.9	7.6
Biochemical oxygen demand	25	11	mg/L	3.0	8.8	22
Suspended solids	50	9.0	mg/L	3.0	10	20
N-hexane extract (animal/plant content)	5	4.0	mg/L	<1.0		
Phenolic content	1	0.5	mg/L	<0.1		
Copper content	3	0.1	mg/L	<0.01		
Zinc content	2	1.0	mg/L	0.4		
Soluble iron content	10	0.1	mg/L	0.02		
Soluble manganese content	10	3.0	mg/L	<0.01		
Coliform bacteria count	3,000	330	Num/cm ³	30	185	810
Nitrogen content	60	50	mg/L	21	40	59
Phosphorus content	8	6.0	mg/L	0.5	1.5	2.5
Formaldehyde	10	2.0	mg/L	<1.0		

■ PRTR restricted substances

In tons/year

Chemical Substance Name	Total Emissions	Total Transfers	Total Recycles
copper salt(water-soluble, except complex salts)	0.01	0.2	0.2
Nickel	0.2	0	11
Nickel compound	0.9	6.7	0
Boron compound	0.6	0.8	0

- Water source : Tone River
- Drain destination : Karasu River

<<Fujioka Plant>>

■ Air emission : Measurement was not performed since no facility was subject to legal regulations.

■ Water quality : **Water Quality Pollution Control Act and Agreement**

Item	Effluent Std.	Self-control Standard	Unit	Actual		
				Min.	Ave.	Max.
Boron and its compounds	10	1.0	mg/L	0.3	0.4	0.6
Fluorine and its compounds	8	6.0	mg/L	0.3	0.9	1.7
Ammonia (Sum of Ammonia, Nitric & Nitrous acid)	100	30	mg/L	4.6	6.4	8.2
Hydrogen ion concentration	5.8~8.6	6.2~8.3	-	6.9	7.4	7.7
Biochemical oxygen demand	25	7.0	mg/L	1.0	2.0	5.0
Suspended solids	50	6.0	mg/L	1.0	2.8	8.0
N-hexane extract (animal/plant content)	5	1.0	mg/L	<1.0		
Copper content	3	0.02	mg/L	<0.01		
Zinc content	2	0.05	mg/L	<0.01		
Soluble iron content	10	0.3	mg/L	0.2	0.3	0.5
Soluble manganese content	10	0.1	mg/L	<0.01		
Chromium content	2	0.1	mg/L	<0.01		
Coliform bacteria count	1,000	400	Num/cm ³	30	32	52
Nitrogen content	60	18	mg/L	3.4	5.9	8.5
Phosphorus content	8	2.0	mg/L	0.05	0.07	0.2
Formaldehyde	10	1.0	mg/L	<1.0		
Phenol	1	0.2	mg/L	<0.1		

■ PRTR restricted substances

In tons/year

Chemical Substance Name	Total Emissions	Total Transfers	Total Recycles
Ferric Chloride	0.03	23	0

■ Water source : Kanna River

■ Drain destination : Ayu River

TAIYO YUDEN TECHNO SOLUTIONS CO., LTD.

- Total energy consumption (Crude oil equivalent) : 947 kL/year
- Total waste generated : 60 tons/year (recycling rate: 100 %)
- Air emission : Measurement was not performed since no facility was subject to legal regulations.
- Water quality : Measurement was not performed since no facility was subject to legal regulations.

■ PRTR restricted substances In tons/year

Chemical Substance Name	Total Emissions	Total Transfers	Total Recycles
Methylenebis(4,1-phenylene) diisocyanate	0	0	0.2
Tritolyl phosphate	0	0	0.2

- Water source : Tone River
- Drain destination : Karasu River

FUKUSHIMA TAIYO YUDEN CO., LTD.

- Total energy consumption (Crude oil equivalent) : 4,197 kL/year
- Total waste generated : 367 tons/year (recycling rate: 100 %)
- Air emission : Measurement was not performed since the facility subjected to legal regulations was out of service.
- Water quality : **Pollution Control Agreement**

Item	Effluent Std.	Self-control Standard	Unit	Actual		
				Min.	Ave.	Max.
Boron and its compounds	10	1.5	mg/L	0.4	0.7	1.2
Fluorine and its compounds	8	0.05	mg/L	0.05	0.05	0.2
Hydrogen ion concentration	5.8~8.6	6.5~7.9	-	6.8	7.3	7.9
Biochemical oxygen demand	20	5.8	mg/L	1.0	1.5	3.5
Suspended solids	50	12	mg/L	1.0	1.4	4.6
N-hexane extract (mineral content)	1	0.5	mg/L	<0.5		
N-hexane extract (animal/plant content)	10	0.6	mg/L	<0.5		
Phenolic content	1	0.03	mg/L	<0.02		
Copper content	2	0.04	mg/L	0.01	0.03	0.05
Zinc content	2	0.8	mg/L	0.05	0.1	0.5
Soluble iron content	10	0.7	mg/L	0.05	0.2	0.3
Soluble manganese content	10	0.04	mg/L	0.01	0.02	0.03
Chromium content	2	0.05	mg/L	<0.05		
Coliform bacteria count	3,000	648	Num/cm ³	0	3.5	42
Nitrogen content	120	19	mg/L	1.4	7.0	18
Phosphorus content	16	2.8	mg/L	0.02	0.4	2.3

■ PRTR restricted substances In tons/year

Chemical Substance Name	Total Emissions	Total Transfers	Total Recycles
Silver and its water-soluble compounds	0	0.2	3.5
Boron compound	0	0.2	0

- Water source : Surigami River
- Drain destination : Abukuma River

NIIGATA TAIYO YUDEN CO., LTD.

- Total energy consumption (Crude oil equivalent) : 43,620 kL/year
- Total waste generated : 4,570 tons/year (recycling rate: 100 %)
- Air emission : **Air Pollution Control Act**

Equipment	Fuel	Emissions to Air	Emission Limit	Self-control Standard	Unit	Actual Max.
Firing furnace (Electricity)		Soot and dust	0.25	0.2	g/m ³ N	0.09

- Water quality : **Water Quality Pollution Control Act is not applicable to this site and measurement was performed voluntarily.**

Item	Effluent Std.	Self-control Standard	Unit	Actual		
				Min.	Ave.	Max.
Hydrogen ion concentration	5.8~8.6	6.0~8.4	-	7.0	7.5	8.0
Biochemical oxygen demand	160	12	mg/L	1.5	3.6	9.9
Suspended solids	200	20	mg/L	1.0	3.8	12
N-hexane extract (mineral content)	5	1.0	mg/L	<0.5		
N-hexane extract (animal/plant content)	30		mg/L			
Coliform bacteria count	3000	33	Num/cm ³	0	0.7	4.0
Nitrogen content	120	5.0	mg/L	0.9	2.5	4.9
Phosphorus content	16	1.3	mg/L	0.06	0.3	1.1
Lead and its compounds	0.1	0.01	mg/L	<0.01		
Arsenic and its compounds	0.1	0.01	mg/L	<0.01		
Copper content	3	0.2	mg/L	0.08	0.1	0.1
Zinc content	2	1.2	mg/L	0.1	0.6	1.0
Soluble iron content	10	0.4	mg/L	0.06	0.2	0.4
Soluble manganese content	10	0.05	mg/L	0.02	0.06	0.09
Chromium content	2	0.01	mg/L	<0.01		
Fluorine and its compounds	8	0.6	mg/L	<0.5		

- PRTR restricted substances In tons/year

Chemical Substance Name	Total Emissions	Total Transfers	Total Recycles
Toluene	19	0	20
Nickel	0	2.8	46
Nickel compound	0	0.2	2.5

- Water source : Kakizaki River
- Drain destination : Hokura River

TAIYO YUDEN ENERGY DEVICE CO., LTD.

- Total energy consumption (Crude oil equivalent) : 910 kL/year
- Total waste generated : 79 tons/year (recycling rate: 100 %)
- Air emission : Measurement was not performed since no facility was subject to legal regulations.
- Water quality : Measurement was not performed since no facility was subject to legal regulations.
- PRTR restricted substances : Total usage amount is under notification obligation.
- Water source : Hokkwa River
- Drain destination : Hokkwa River

WAKAYAMA TAIYO YUDEN CO., LTD.

- Total energy consumption (Crude oil equivalent) : 4,130 kL/year
- Total waste generated : 258 tons/year (recycling rate: 100 %)
- Air emission : Measurement was not performed since no facility was subject to legal regulations.
- Water quality : **Water Quality Pollution Control Act and**

Enforcement Ordinance of the Anti-pollution Regulation (Wakayama Prefecture)

Item	Effluent Std.	Self-control Standard	Unit	Actual		
				Min.	Ave.	Max.
Boron and its compounds	10	0.8	mg/L	0.1	0.3	0.9
Fluorine and its compounds	8	0.8	mg/L	0.8		
Ammonia	100	8.6	mg/L	0.1	2.5	7.8
Hydrogen ion concentration	5.8~8.6	6.5~7.9	-	6.5	7.2	8.6
Biochemical oxygen demand	160	14	mg/L	2.1	6.4	24
Chemical oxygen demand	160	30	mg/L	5.5	9.4	14
Suspended solids	200	55	mg/L	1.0	6.3	15
N-hexane extract (mineral content)	5	0.5	mg/L	0.5		
N-hexane extract (animal/plant content)	30	1.9	mg/L	0.6	1.0	1.7
Phenolic content	5	0.5	mg/L	0.5		
Copper content	3	0.3	mg/L	0.3		
Zinc content	2	1.7	mg/L	0.2	0.2	0.3
Soluble iron content	10	0.1	mg/L	0.1		
Soluble manganese content	10	0.1	mg/L	0.1		
Chromium content	2	0.2	mg/L	0.2		
Coliform bacteria count	3,000	2760	Num/cm ³	3.0	63	190
Nitrogen content	120	35	mg/L	0.5	9.3	22
Phosphorus content	16	0.2	mg/L	0.01	0.01	0.04
Nickel	3	0.1	mg/L	0.01	0.03	0.07

- PRTR restricted substances In tons/year

Chemical Substance Name	Total Emissions	Total Transfers	Total Recycles
Ferric Chloride	0	5.2	0
Silver and its water-soluble compounds	0	1.9	0
Toluene	2.4	6.3	0

- Water source : Kirime River
- Drain destination : Inami River

TAIYO YUDEN Mobile Technology Co., Ltd.

- Total energy consumption (Crude oil equivalent) : 16,330 kL/year
- Total waste generated : 272 tons/year (recycling rate: 100 %)

<<Head Office / Main Plant>>

■ Air emission : **Air Pollution Control Act**

Equipment	Fuel	Emissions to Air	Emission Limit	Self-control Standard	Unit	Actual Max.
Boiler	Town gas	NOx	45	42	ppm	24

■ Water quality : **Sewerage Act, Sewerage Regulations**

Item	Effluent Std.	Self-control Standard	Unit	Actual		
				Min.	Ave.	Max.
Boron and its compounds	10	2.0	mg/L	0.1	0.1	0.3
Fluorine and its compounds	8	5.5	mg/L	0.4	1.1	1.8
Hydrogen ion concentration	5.7~8.7	6.1~8.3	-	6.9	7.1	7.4
Biochemical oxygen demand	300	240	mg/L	18	65	130
Suspended solids	300	84	mg/L	15	37	58
Copper content	3	1.5	mg/L	0.05		
Nitrogen content	120	102	mg/L	8.1	17	37
Phosphorus content	16	6.0	mg/L	0.3	1.0	2.5

■ PRTR restricted substances

In tons/year

Chemical Substance Name	Total Emissions	Total Transfers	Total Recycles
Hydrogen fluoride and its water-soluble salts	0	1.5	0

- Water source : Tama River
- Drain destination : Tama River(Via sewage)

<<Tokorozawa Plant>>

- Air emission : Measurement was not performed since no facility was subject to legal regulations.
- Water quality : **Water Quality Pollution Control Act and Sewerage Act**

Item	Effluent Std.	Self-control Standard	Unit	Actual		
				Min.	Ave.	Max.
Hydrogen ion concentration	5.0~9.0	6.2~8.6	-	6.9	7.4	7.8
Biochemical oxygen demand	600	120	mg/L	1.0	1.5	2.2
Suspended solids	600	120	mg/L	1.4	3.7	7.4
N-hexane extract (mineral content)	5	1.0	mg/L	<0.2		
Nitrogen content	240	48	mg/L	1.6	2.0	2.4
Phosphorus content	32	6.4	mg/L	<0.1		

- PRTR restricted substances : Total usage amount is under notification obligation.
- Water source : Ara River
- Drain destination : Singashi River(Via Sewage)

Kankyo Assist Co., Ltd.

- Total energy consumption (Crude oil equivalent) : 30 kL/year
- Total waste generated : 2.8 ton/year (recycling rate: 100 %)
- Air emission : Measurement was not performed since no facility was subject to legal regulations.
- Water quality : Measurement was not performed since no facility was subject to legal regulations.
- PRTR restricted substances : Total usage amount is under notification obligation.
- Water source : Tone River
- Drain destination : Karasu River

ELNA CO., LTD.

- Total energy consumption (Crude oil equivalent) : 285 kL/year
- Total waste generated : 23 tons/year (recycling rate: 100 %)
- Air emission : Measurement was not performed since no facility was subject to legal regulations.
- Water quality : Measurement was not performed since no facility was subject to legal regulations.
- PRTR restricted substances : Total usage amount is under notification obligation.
- Water source : Hokkwa River
- Drain destination : Hokkwa River

ELNA TOHOKU CO., LTD.

- Total energy consumption (Crude oil equivalent) : 1,710 kL/year
- Total waste generated : 160 tons/year (recycling rate: 76.5 %)
- Air emission : Measurement was not performed since no facility was subject to legal regulations.
- Water quality : **Sewerage Regulations**

Item	Effluent Std.	Self-control Standard	Unit	Actual		
				Min.	Ave.	Max.
Hydrogen ion concentration	5.0~9.0	5.0~9.0	-	6.0	7.1	7.9
Biochemical oxygen demand	600	176	mg/L	4.1	28	77
Suspended solids	600	21	mg/L	1.0	1.4	3.0
N-hexane extract (mineral content)	5	1.0	mg/L	0.5		
N-hexane extract (animal/plant content)	30	7.3	mg/L	0.7	1.7	2.7
Iodine consumption	220	6.0	mg/L	1.1	8.2	18

- PRTR restricted substances : Total usage amount is under notification obligation.
- Water source : Asaseishikawa River
- Drain destination : Iwaki River(Via Sewage)

KOREA KYONG NAM TAIYO YUDEN CO., LTD.

- Total energy consumption (Crude oil equivalent) : 39,800 kL/year
- Total waste generated : 5,605 tons/year (recycling rate: 88.2 %)

<<Head Office / Main Plant>> -> Tongyeong Plant in next page

■ Air emission :

Equipment	Fuel	Emissions to Air	Emission Limit	Self-control Standard	Unit	Actual Max.
Scrubber		Soot and dust	30	5.9	g/m ³ N	3.4
		SOx	200	6.7	ppm	<1.0
		Ammonia	30	0.7	ppm	1.0
		Nickel	2	1.0	g/m ³ N	0.01
		Copper	4	0.2	g/m ³ N	0.01
		Total Hydrocarbon (THC)	200	55	ppm	13
RTO		Toluene	30	0.8	ppm	0.4
		Nickel	2	1.0	g/m ³ N	0.01
		Total Hydrocarbon (THC)	110	30	ppm	28
Drying furnace		Soot and dust	30	4.5	g/m ³ N	4.4
Bag filter		Soot and dust	30	4.5	g/m ³ N	3.9

■ Water quality :

Item	Effluent Std.	Self-control Standard	Unit	Actual		
				Min.	Ave.	Max.
Hydrogen ion concentration	5.8~8.6	6.0~8.0	-	6.7	7.5	8.5
Biochemical oxygen demand	300	34	mg/L	4.2	14	34
Chemical oxygen demand	300	20	mg/L	3.7	6.7	10
Suspended solids	300	25	mg/L	3.6	13	23
N-hexane extract (mineral content)	5	1.1	mg/L	<0.5		
N-hexane extract (animal/plant content)	30	1.1	mg/L	<0.5		
Copper content	3	1.0	mg/L	0.1	0.1	0.3
Fluorine and its compounds	15	2.0	mg/L	<0.15	0.4	1.5
Nitrogen content	60	34	mg/L	14	25	34
Phosphorus content	20	1.5	mg/L	0.2	0.4	1.3
Anionic surfactant	5	0.5	mg/L	<0.09	0.1	0.1
Nickel	3	2.7	mg/L	0.1	0.5	1.3
Chromium content	2	1.0	mg/L	0.08		
Zinc content	5	0.3	mg/L	0.3		
Phenol	3	1.5	mg/L	<0.005		
Soluble manganese content	10	0.2	mg/L	0.1		
Soluble iron content	10	0.5	mg/L	0.3		
Coliform bacteria count	3,000	100	Num/cm ³	<0		
Trichloroethylene	0.3	0.2	mg/L	<0.001		
Tetrachloroethylene	0.1	0.05	mg/L	<0.001		

- Water source : Jinjunamgang River
- Drain destination : Yonghyeon Sea

<<Tongyeong Plant>>

- Total energy consumption (Crude oil equivalent) : 249 kL/year
- Total waste generated : 5.5 tons/year (recycling rate: 0.0 %)
- Air emission : Measurement was not performed since no facility was subject to legal regulations.
- Water quality : Measurement was not performed since no facility was subject to legal regulations.
- Water source : Jinjunamgang River
- Drain destination : Tongyeong Sea

TAIYO YUDEN (GUANGDONG) CO., LTD.

- Total energy consumption (Crude oil equivalent) : 34,632 kL/year
- Total waste generated : 2,043 tons/year (recycling rate: 100 %)
- Air emission :

Equipment	Fuel	Emissions to Air	Emission Limit	Self-control Standard	Unit	Actual Max.
Boiler	Natural gas	Ringelmann smoke density	1	1	class	<1
		Sulfur dioxide	50	50	mg/m ³ N	34
		Total suspended particulates	20	30	mg/m ³ N	8.7
		NOx	150	150	mg/m ³ N	128
Generator	Kerosene	Ringelmann smoke density	1	1	class	<1
		Sulfur dioxide	550	338	mg/m ³ N	118
		Total suspended particulates	120	93	mg/m ³ N	<20
		NOx	240	240	mg/m ³ N	115
Cafeteria	Natural gas	Oily smoke	2	2	ppm	1.7
Scrubber	-	Hydrogen chloride	30	15	mg/m ³ N	0.2
		NOx	120	100	mg/m ³ N	0.7
RTO	Natural gas	Toluene	20	20	mg/m ³ N	1.5
		Methanol	190	190	mg/m ³ N	23
Firing furnace	-	Non-Methane Hydrocarbons	120	60	mg/m ³ N	1.8
		Particulate matter	120	120	mg/m ³ N	<20

- Water quality :
- Industrial wastewater

Item	Effluent Std.	Self-control Standard	Unit	Actual		
				Min.	Ave.	Max.
Ammonia and similar nitrogen compounds	15	6.0	mg/L	0.004	0.01	0.03
Hydrogen ion concentration	6.0~9.0	6.8~8.5	-	6.9	7.3	8.3
Chemical oxygen demand	80	50	mg/L	20	24	56
Suspended solids	30	15	mg/L	3.0	5.5	13
Zinc content	1	0.5	mg/L	0.05		
Nitrogen content	20	15	mg/L	6.2	7.9	14
Copper content	0.5	0.2	mg/L	0.01	0.03	0.08
Nickel	0.5	0.3	mg/L	0.01	0.04	0.09

Human sewage

Item	Effluent Std.	Self-control Standard	Unit	Actual		
				Min.	Ave.	Max.
Hydrogen ion concentration	6.0~9.0	6.0~9.0	-	7.3	7.4	7.6
Biochemical oxygen demand	300	300	mg/L	2.6	5.1	7.6
Chemical oxygen demand	500	500	mg/L	29	43	57
Suspended solids	400	400	mg/L	16	20	24
Animal/Vegetable oils	100	100	mg/L	0.2	0.2	0.3
Petroleum	20	20	mg/L	0.06	0.06	0.06

- Water source : Dong River
- Drain destination : Dong River

TAIYO YUDEN (PHILIPPINES), INC.

- Total energy consumption (Crude oil equivalent) : 17,240 kL/year
- Total waste generated : 1,458 tons/year (recycling rate: 90.4 %)
- Air emission :

Equipment	Fuel	Emissions to Air	Emission Limit	Self-control Standard	Unit	Actual Max.
Scrubber	-	Hydrogen sulfide	7	5.6	mg/m ³ N	<1
		Nitrogen dioxide	500	400	mg/m ³ N	17
		Sulfur dioxide	200	160	mg/m ³ N	<3
		Particulate matter	200	160	mg/m ³ N	11
		Nickel	20	16	mg/m ³ N	<0.006
		Ammonia	20	16	mg/m ³ N	<0.0008

- Water quality :

Item	Effluent Std.	Self-control Standard	Unit	Actual		
				Min.	Ave.	Max.
Hydrogen ion concentration	6.0~9.0	6.0~9.0	-	6.8	7.3	7.9
Biochemical oxygen demand	100	96	mg/L	4.0	17	48
Chemical oxygen demand	200	184	mg/L	20	49	100
Suspended solids	150	52	mg/L	3.0	9.7	35
Oil & Grease	10	5.2	mg/L	1.0	2.0	3.0
Silver	1	1.0	mg/L	<0.01		
Lead and its compounds	0.5	0.5	mg/L	<0.01		
Zinc content	10	0.7	mg/L	0.2		
Nickel	1	0.9	mg/L	0.05	0.1	0.3

- Water source : Groundwater Wells
- Drain destination : Mactan Channel Sea

TAIYO YUDEN (SARAWAK) SDN.BHD.

- Total energy consumption (Crude oil equivalent) : 39,873 kL/year
- Total waste generated : 5,850 tons/year (recycling rate: 80.3 %)
- Air emission :

Equipment	Fuel	Emissions to Air	Emission Limit	Self-control Standard	Unit	Actual Max.
Scrubber		Hydrogen chloride	0.03	0.0007	g/m ³ N	0.0004
		Sulfuric acid	0.005	0.04	g/m ³ N	0.008
Boiler	LP gas	Dust Particulate	0.05	0.01	g/m ³ N	0.01
		Dark Smoke	20	20	%	0
RTO	LP gas	Dust Particulate	0.05	0.02	mg/m ³ N	0.02
		Dark Smoke	20	20	%	0

- Water quality :

Industrial wastewater

Item	Effluent Std.	Self-control Standard	Unit	Actual		
				Min.	Ave.	Max.
Temperature	40	32	°C	27	29	30
Hydrogen ion concentration	5.5~9.0	6.6~9.0	-	7.6	8.0	8.4
Biochemical oxygen demand	50	10	mg/L	2.0	3.5	8.7
Chemical oxygen demand	200	160	mg/L	16	37	78
Suspended solids	100	13	mg/L	5.0	5.2	6.4
Zinc content	2	0.2	mg/L	0.02	0.03	0.08
Copper content	1	0.8	mg/L	0.1	0.2	0.7
Nickel	1	0.8	mg/L	0.1	0.4	0.99
Tin	1	0.8	mg/L	0.08	0.3	0.7
Soluble iron content	5	3.4	mg/L	0.5	1.5	3.2

Human sewage

Item	Effluent Std.	Self-control Standard	Unit	Actual		
				Min.	Ave.	Max.
Hydrogen ion concentration	5.5~9.0	7.1~8.9	-	7.2	8.0	8.4
Biochemical oxygen demand	50	11	mg/L	1.0	1.9	2.1
Chemical oxygen demand	200	23	mg/L	10	15	32
Suspended solids	100	5.0	mg/L	5.0		
Ammonia Nitrogen	50	3.1	mg/L	0.3	1.3	3.1
Oil & Grease	20	1.2	mg/L	1.0		

- Water source : Kitang River
- Drain destination : Sarawak River

TANIN ELNA CO., LTD.

- Total energy consumption (Crude oil equivalent) : 2,548 kL/year
- Total waste generated : 318 tons/year (recycling rate: 34.7 %)
- Air emission : Measurement was not performed since no facility was subject to legal regulations.
- Water quality :

Item	Effluent Std.	Self-control Standard	Unit	Actual		
				Min.	Ave.	Max.
Hydrogen ion concentration	5.5~9.0	6.0~8.0	-	7.0	7.3	7.8
Biochemical oxygen demand	20	18	mg/L	2.0	6.5	16
Chemical oxygen demand	120	108	mg/L	18	36	77
Suspended solids	50	45	mg/L	1.1	7.4	20
Nitrogen content	100	90	mg/L	0	3.3	7.4
Oil & Grease	5	4.5	mg/L	0.2	0.7	1.7

- Water source : Groundwater Wells
- Drain destination : Ping River

ELNA-SONIC SDN. BHD.

- Total energy consumption (Crude oil equivalent) : 3,716 kL/year
- Total waste generated : 193 tons/year (recycling rate: 100 %)
- Air emission :

Equipment	Fuel	Emissions to Air	Emission Limit	Self-control Standard	Unit	Actual Max.
Equipment exhaust	-	Particulate matter	150		g/m ³ N	20
		Particulate matter	150		g/m ³ N	16

- Water quality :
- Industrial wastewater

Item	Effluent Std.	Self-control Standard	Unit	Actual		
				Min.	Ave.	Max.
Hydrogen ion concentration	5.5~9.0	6.0~8.5	-	7.2	7.3	7.3
Biochemical oxygen demand	50	40	mg/L	9.0	14	17
Chemical oxygen demand	200	160	mg/L	40	60	72
Suspended solids	100	80	mg/L	4.0	5.1	6.0
Zinc content	2	1.6	mg/L	0.08	0.2	0.3
Copper content	1	0.8	mg/L	0.05	0.1	0.3
Nickel	1	0.8	mg/L	0.1		
Tin	1	0.8	mg/L	0.5		
Boron and its compounds	4	3.2	mg/L	0.1	0.2	0.3
Oil & Grease	10	8.0	mg/L	1.0		
Lead and its compounds	1	0.4	mg/L	0.1		
Soluble iron content	5	4.0	mg/L	0.1	0.2	0.4

Human sewage

Item	Effluent Std.	Self-control Standard	Unit	Actual		
				Min.	Ave.	Max.
Biochemical oxygen demand	100	80	mg/L	9.0	13	19
Chemical oxygen demand	300	240	mg/L	40	56	80
Suspended solids	120	96	mg/L	8.0	12	17
Ammoniacal nitrogen	80	64	mg/L	4.0	12	20

- Water source : Muda River
- Drain destination : Juru River