

COMMITMENT TO REDUCING WATER IN PRODUCTION

1. General overview of commitment to protect water resources

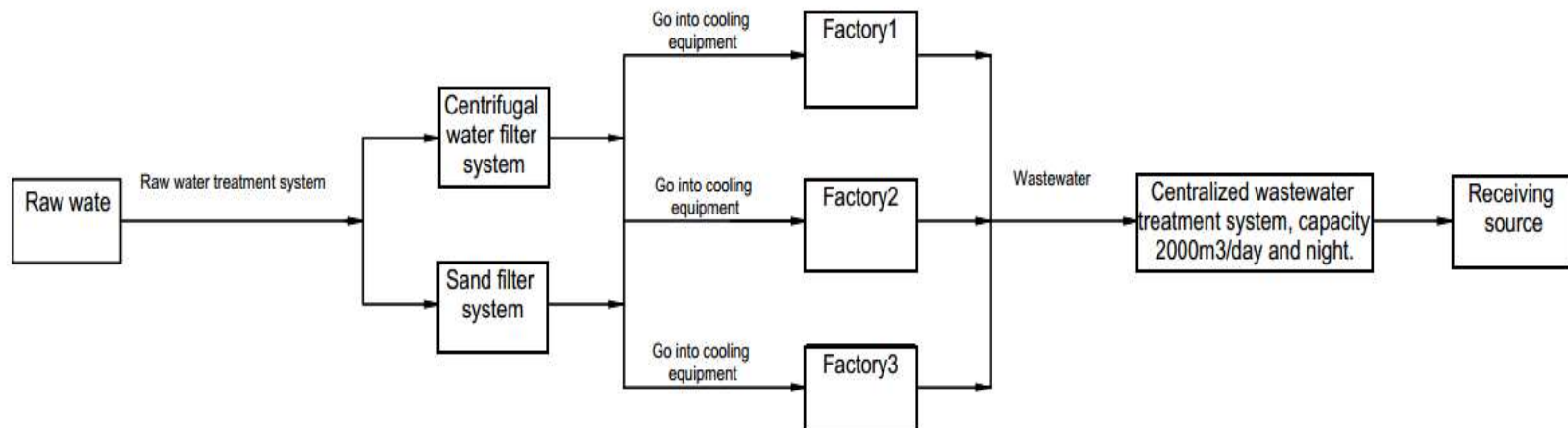
Water is a precious resource that determines the existence of humans as well as the life of living things on Earth. In addition, water is also an indispensable factor in industrial production, the importance of water is clearly shown in maintaining the performance and quality of products, the use of cooling water also affects the life of machinery and equipment. **Water is not only necessary for production activities but also has a direct impact on the productivity and sustainability of the industry.**

Understanding that the management of water resources in our workplace is very important for sustainable development, **we are committed to minimizing the risk of water shortage for both our facilities and the surrounding community through optimal resource management and expanded recycling.** In addition, we closely monitor and manage the quality of wastewater to reduce the environmental impact on areas near our steel mills

2. Water resources management, water resource usage diagram of Nghi Son Iron and Steel Plant

Given the importance of water in industrial production, water resource protection, efficient water management and strict wastewater treatment are essential to minimize negative impacts on the environment and ensure clean water for future generations. Therefore, we are actively developing and implementing strategies to reduce water consumption and maximize the use of existing water resources.

Water usage process of Nghi Son Iron and Steel Plant



3. Measures to protect water resources and reduce water shortage in production

3.1 Measures to cope with floods, natural disasters and droughts

To minimize the risk of water resource shortages due to natural disasters and floods, damage to irrigation works, lakes and dams. We have established a cooperation framework with state agencies, local authorities and Song Chu unit (the unit managing Dong Chua lake, the lake providing the main production water source for Nghi Son Steel Rolling Mill) to develop plans and response options, proactively respond to and prevent floods, storms and natural disasters. Ensure the safety of Dong Chua lake project.

To minimize the risk of water shortage due to drought, we have coordinated with Song Chu unit and local authorities to closely monitor the water level at Dong Chua lake during the drought season, to have a suitable water usage plan. Constructing an additional water supply pipeline from Yen My lake to Dong Chua lake with a capacity of 60,000m³/day and night, to provide additional water to Dong Chua lake when the lake is dry.

3.2 Strategy to reduce water use in the production process.

3.2.1 Recycling industrial wastewater and surface rainwater from Yen Hoa River (Khe Ai Lake) to serve production

To reduce the amount of surface water and groundwater taken from exploited water sources, we are pursuing activities to ensure alternative water sources. From 2024, we have applied for a license to exploit the surface water of Yen Hoa River (abbreviated as Khe Ai Lake). The water source of Yen Hoa River is industrial wastewater and rainwater, which we collect for recycling, treatment and reuse for production. **This project is a stable source of about 2,400m³ of recycled water per day, which we use as industrial water.**

3.2.2 Recycle industrial wastewater from our factory, to continue using for watering roads, spraying water to suppress dust in slag dumps, material dumps

Integrated steel plants inherently require a lot of water. However, to maximize water recycling, we collect and treat used water, such as our factory's wastewater, after being collected and treated in a centralized wastewater treatment tank with a capacity of 2,000m³/day and night, meeting the water standards of the Ministry of Natural Resources and Environment, we will reuse this water for dust suppression in workshops, material yards, slag dumps, and watering internal roads of the factory. **These efforts will allow our company to recycle about 25% of the total water exploited by 2024, helping to minimize the risk of water shortages in local communities.**

3.2.3 Invest in advanced European equipment for water treatment systems, to effectively monitor water usage.

Our factory's water treatment systems are all circulating water systems, designed with modern European technology, with online water quality monitoring sensors placed on the pipeline. The conditions for water replenishment and bottom discharge are all performed automatically according to the online measuring device mounted on the pipeline. **This helps to operate and manage water resources easily and effectively, without wasting water during production operations.**

3.2.4 Organize propaganda for officers, employees and workers to use water resources effectively and economically.

Water resource protection is an important concept in modern society, especially in the context of increasingly serious environmental pollution. Water is a precious and essential resource for human existence and development. Water resource protection is not only the responsibility of the government and environmental organizations, but also the responsibility of everyone. Therefore, we have organized many propaganda and guidance classes for workers to realize the importance of water resource protection, thereby raising awareness of effective water use for each individual. **Each individual can contribute to water resource protection by saving water, not discharging waste and safely disposing of waste.**

3.3 Water data for production from 2021-2025.

TABLE OF RAW WATER VOLUME USED FOR PRODUCTION PRODUCTS FOR VAS FACTORY FROM 2021-2025									
No.	Moth/Year	NATURAL RAW WATER		RECYCLED WATER	TOTAL WATER VOLUME (m3)	TOTAL OUTPUT VOLUME (tons)	WATER CONSUMPTION		
		DONG CHUA WATER (SÔNG CHU) (m3/month)	GROUNDWATER (BORN WELL) (m3/month)	INDUSTRIAL WASTEWATER, RAINWATER OF YEN HOA RIVER (m3/month)			NATURAL RAW WATER CONSUMPTION (m3/ton)	RECYCLED WATER CONSUMPTION (m3/ton)	TOTAL WATER CONSUMPTION FOR THE WHOLE FACTORY (m3/ton)
Total		617.017	141.612	0	758.629	1.872.855	0,41	0,00	0,41
1	1-2021	42.002	11.973	0	53.975	143.219	0,38	0,00	0,38
2	2-2021	45.185	5.712	0	50.897	99.492	0,51	0,00	0,51
3	3-2021	55.951	10.112	0	66.063	192.811	0,34	0,00	0,34
4	4-2021	67.458	10.462	0	77.920	197.744	0,39	0,00	0,39
5	5-2021	62.537	11.986	0	74.523	213.798	0,35	0,00	0,35
6	6-2021	68.728	12.856	0	81.584	183.582	0,44	0,00	0,44
7	7-2021	56.902	13.253	0	70.155	132.751	0,53	0,00	0,53
8	8-2021	66.094	13.799	0	79.893	144.338	0,55	0,00	0,55
9	9-2021	45.689	13.583	0	59.272	149.378	0,40	0,00	0,40

10	10-2021	52.542	12.573	0	65.115	154.071	0,42	0,00	0,42
11	11-2021	17.594	12.831	0	30.425	140.552	0,22	0,00	0,22
12	12-2021	36.335	12.472	0	48.807	121.117	0,40	0,00	0,40
Total		685.306	105.572	0	790.878	1.824.359	0,43	0,00	0,43
13	1-2022	51.703	12.481	0	64.184	164.081	0,39	0,00	0,39
14	2-2022	57.521	7.542	0	65.063	130.824	0,50	0,00	0,50
15	3-2022	73.546	9.670	0	83.216	217.194	0,38	0,00	0,38
16	4-2022	80.020	8.435	0	88.455	234.911	0,38	0,00	0,38
17	5-2022	66.788	9.112	0	75.900	203.450	0,37	0,00	0,37
18	6-2022	64.927	8.022	0	72.949	140.353	0,52	0,00	0,52
19	7-2022	62.899	8.326	0	71.225	101.568	0,70	0,00	0,70
20	8-2022	51.235	7.624	0	58.859	98.815	0,60	0,00	0,60
21	9-2022	47.593	8.274	0	55.867	148.510	0,38	0,00	0,38
22	10-2022	43.912	8.870	0	52.782	120.388	0,44	0,00	0,44
23	11-2022	37.126	9.121	0	46.247	95.578	0,48	0,00	0,48
24	12-2022	48.036	8.095	0	56.131	168.688	0,33	0,00	0,33
Total		533.143	108.613	45.949	687.705	1.808.719	0,38	0,03	0,38
25	1-2023	33.198	6.426	0	39.624	83.745	0,47	0,00	0,47
26	2-2023	50.352	7.746	0	58.098	199.349	0,29	0,00	0,29
27	3-2023	46.972	9.498	0	56.470	196.453	0,29	0,00	0,29
28	4-2023	36.347	9.758	0	46.105	137.934	0,33	0,00	0,33

29	5-2023	45.111	9.614	0	54.725	154.378	0,35	0,00	0,35
30	6-2023	49.298	9.656	0	58.954	158.236	0,37	0,00	0,37
31	7-2023	80.873	9.716	0	90.589	176.666	0,51	0,00	0,51
32	8-2023	47.696	9.013	0	56.709	96.185	0,59	0,00	0,59
33	9-2023	32.999	9.141	0	42.140	93.380	0,45	0,00	0,45
34	10-2023	30.889	9.376	19.594	59.859	152.921	0,26	0,13	0,39
35	11-2023	34.683	9.313	14.824	58.820	155.394	0,28	0,10	0,38
36	12-2023	44.725	9.356	11.531	65.612	204.079	0,27	0,06	0,32
Total		271.405	165.487	430.060	866.952	2.229.151	0,20	0,19	0,39
37	1-2024	33.901	9.285	20.979	64.165	201.530	0,21	0,10	0,32
38	2-2024	26.616	9.782	15.013	51.411	121.881	0,30	0,12	0,42
39	3-2024	21.500	15.500	27.500	64.500	192.478	0,19	0,14	0,34
40	4-2024	23.100	15.500	29.600	68.200	193.205	0,20	0,15	0,35
41	5-2024	23.600	10.000	39.300	72.900	215.470	0,16	0,18	0,34
42	6-2024	20.200	19.500	40.500	80.200	202.560	0,20	0,20	0,40
43	7-2024	22.884	12.600	39.600	75.084	189.034	0,19	0,21	0,40
44	8-2024	24.030	9.784	38.571	72.385	149.279	0,23	0,26	0,48
45	9-2024	32.530	16.742	27.430	76.702	167.872	0,29	0,16	0,46
46	10-2024	15.462	16.474	41.272	73.208	205.839	0,16	0,20	0,36
47	11-2024	14.827	15.116	55.275	85.218	186.107	0,16	0,30	0,46
48	12-2024	12.755	15.204	55.020	82.979	203.898	0,14	0,27	0,41

Total		114.789	45.591	88.771	249.151	662.338	0,24	0,13	0,38
49	1-2025	42.885	15.470	21.699	80.054	204.695	0,29	0,11	0,39
50	2-2025	42.258	14.395	27.746	84.399	218.650	0,26	0,13	0,39
51	3-2025	29.646	15.726	39.326	84.698	238.993	0,19	0,16	0,35

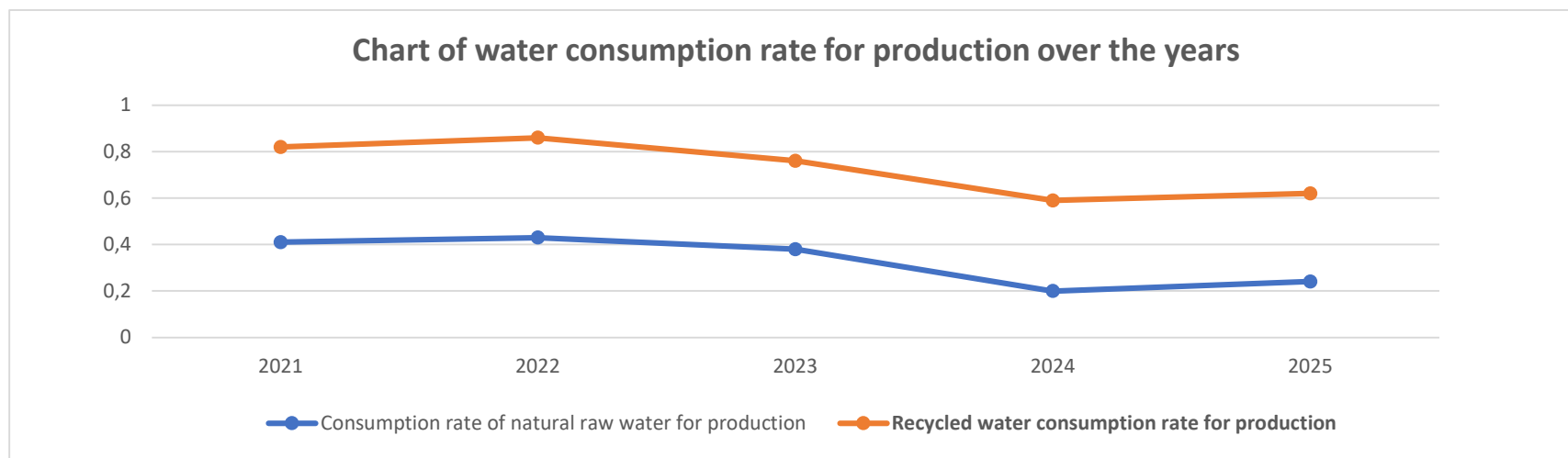
Evaluate:

❖ Total volume of water used in 2021, 2022, 2023, 2024, 2025 with consumption rates of 0.41m³/ton of product, 0.43m³/ton of product, 0.38m³/ton of product, 0.39m³/ton of product, 0.38m³/ton of product, respectively. **Thus, with the water reduction measures as presented above, the water usage rate from 2023-2025 has decreased by 9.5% compared to 2021-2022.**

❖ In 2021-2023, VAS factory used natural raw water for production, including: Dong Chua lake water + well water. In 2024-2025, VAS factory invested in a wastewater treatment system to recycle and reuse industrial wastewater and rainwater from Yen Hoa river. The results achieved are:

- Consumption of natural raw water for production (Dong Chua lake water + well water) in 2021 - 2023 is 0.41m³/ton of product, 0.43m³/ton of product, 0.38/ton of product, respectively. **In 2024-2025, recycled water is put into use, the consumption rate of natural raw water is 0.20m³/ton of product and 0.24m³/ton of product, respectively, down 52% and 40% compared to 2021.**
- The remaining volume of water used is recycled water (from Yen Hoa River), **with water consumption in 2024 and 2025 being 0.19m³/ton and 0.13m³/ton. Accounting for 50% of the total volume of water used for production.**

Water consumption rate chart over the years:



4. WASTE TREATMENT SYSTEM

At Nghi Son Iron and Steel plant, during the equipment cooling process, used water from each production line is collected through water pipes to a centralized water treatment tank with a capacity of 2000m³/day and night. In an effort to minimize the environmental impact on coastal areas near our facilities, we have established strict management standards for the discharge concentration of major pollutants, the final discharge water must meet QCVN 40:2011/BTNMT column B as prescribed by the Ministry of Natural Resources and Environment:

No.	Parameter	Unit	QCVN 52:2013/ BTNMT, cột B, Kq=0,9 (allowable range)	QCVN 40:2011/ BTNMT, cột B, Kq=0,9
1.	Temperature	°C	40	-
2.	pH	-	5,5 - 9	-
3.	BOD5 (20°C)	mg/l	45	-
4.	COD	mg/l	135	-
5.	TSS	mg/l	90	-
6.	Total mineral oil and grease	mg/l	9	-
7.	Total phenol	mg/l	0,45	-
8.	Total Xianua	mg/l	0,45	-
9.	Total Nito	mg/l	54	-
10.	Mercury	mg/l	0,09	-
11.	Cadimi	mg/l	0,09	-
12.	Crom (VI)	mg/l	0,45	-

At Nghi Son Iron and Steel plant, we manage and monitor the final outlet water quality continuously, 24 hours a day, through real-time monitoring systems to ensure minimal impact on the environment.

Diagram of centralized wastewater treatment system, capacity 2000m³/day and night.

