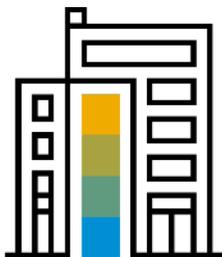




SAP Best Run Awards for SEA 2021:
Hoa Phat SAC & BW: Enable The Smart Learning Factory





Company Information

Hoa Phat Dung Quat Steel Joint Stock Company

Headquarter Dung Quat Economic Zone, Binh Dong Commune, Binh Son District, Quang Ngai Province

Industry Manufacturing: construction steel, high quality rolled steel and hot rolled coil

Website <https://www.hoaphat.com.vn/en>

Hoa Phat Group is a multidisciplinary business group, in which steel and related products such as coke coal and iron ore is the main business and account for 80% of the revenue of the Group.

With nearly-20-year experience, Hoa Phat's construction steel production activities are concentrated on Hung Yen, Hai Duong and Quang Ngai provinces. **The Hoa Phat Dung Quat Steel Integrated Complex** is operated by Hoa Phat Dung Quat Joint Stock Company, which was established in February 2017, a charter capital of VND 30,000 billion. **This is a vital strategic project, the completed Complex will reinforce the leading steel manufacturer position in Southeast Asia of Hoa Phat Group.**

Hoa Phat Dung Quat Iron and Steel Integrated Complex has a total investment of VND 52,000 billion, designed with a capacity of 4 million tons per year, the main products are construction steel, high quality rolled steel and hot rolled coil. This is an advanced, modern and environmentally friendly technology, producing coke coal by stamping dry coke, completely recovering heat and exhaust gas, making full use of by-products to generate electricity for production. The entire source of produced water is also circulated, not disposed into the environment.

Hoa Phat Group currently occupies the largest market share in the country with the proportion of over 25%. With the capacity of 8 million tons of crude steel per year, Hoa Phat is the **largest steel producer** in the Southeast Asia and **No. 1 market share in Vietnam** for construction steel, steel pipes and Australian beef.

Currently, Hoa Phat Group is in the Top 10 largest private enterprises in Vietnam, Top 10 profit enterprises, Top 5 listed companies with the largest charter capital in Vietnam stock market. HPG's market capitalization reaches USD11 billion, among the top 15 largest steel companies by market capitalization.

Hoa Phat SAC & BW: Enable Smart Learning Factory



Hoa Phat Dung Quat Steel JSC.

The Small & Mighty (*Emerging Frontier Market Award*)

Customers that are driving **excellent business results**. Not only that, these organisations also show the **potential to scale up** their operations towards other parts of ASEAN and wider Asia.

“Quote”

“The Smart Digital Transformation project is an important project in developing Hoa Phat Dung Quat’s strategy, which will have the participation of HPDQ’s Board of Directors, heads of all departments, and Digital Transformation Department of Hoa Phat Group”

-Mr Mai Van Ha, Hoa Phat Dung Quat CEO-

Challenge

As a largest steel maker in VN, Hoa Phat Group and Hoa Phat Dung Quat Steel Integrated Complex (HPDQ) in particular, which accounts for the largest production output of the group, requires real-time visibility and control over cost, inventory, available to promise inventory, line utilization, etc. to meet customers’ demand and committed quality. Prior to implementing SAC and SAP BW, it was a struggle for all LOBs to pull operational data, report KPIs to BOD quickly for strategic decision as well as integrate management systems SAP and Non SAP system. As data was recorded in multiple systems, log books, and excel sheets from many different departments, it was time-consuming, ineffective to collect, compare, and generate real-time reports not to mention inaccuracy along the process.

Solution

SAP Analytics Cloud (SAC) & SAP Business Warehouse

Outcome

SAP Analytics Cloud helps HPDQ generate data modelling and track KPIs across operations effectively by significant reducing time to prepare and number of reports for each department. More importantly, it helps improve on-time delivery and service quality as the tool reports real time inventory level for customer order promising and provide information to act quickly for on time delivery. SAC project has a long-term objective of forming Big Data and data mining with advanced technology applications such as artificial intelligence (AI), Machine Learning to analyse, forecast, recommend, make operating and management activities smarter, create competitive advantages and grow sustainably.

Establish standardize KPIs for HPG
**176 detailed KPIs, 61 KPI Groups
and 20 Stories for C-Levels,
Directors and Managers**

Real time monitoring KPIs, reporting
5X faster

Improve data mining
4X more effectiveness



Business Challenge and Objectives

❖ **Challenge in Industry:**

- Value chains in the steel and metal industry are extremely complex. Companies must contend with a large number of interconnected volatile assets, a vast amount of product units, a diverse customer base with varying service and quality requirements, and complicated distribution channels with different margin implications.
- Asset utilization is often considered a priority and incentives are structured accordingly, yet these decisions often don't factor in all business drivers influencing profit margin, service levels, or working capital.
- Plants and assets often operate in silos, rather than being integrated to meet a larger strategic objective. Supply chain executives have little access to real-time information, leaving them unable to anticipate changes in the market. As a result, companies perpetually act defensively, without the ability to anticipate and mitigate risk or jump on short-term opportunities, which leads to significant value losses.

❖ **Challenge in the company:**

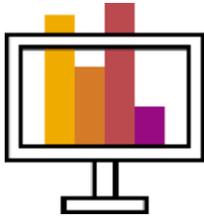
- After Covid 19, Hoa Phat is directed by the leaders to continue Digital Transformation to reach their highest productivity at manufacturing and management. Hoa Phat has implemented S/4 HANA at HPDQ Factory but not the other factories and group level. Then they see the difficulty to consolidate and manage at group level in management which is related to manufacturing with supply chain management, finance, reporting, human resource management etc.
- Before the project, IT departments has stressed at how to support Hoa Phat to form an integrated management systems SAP and Non SAP system. Data and information recorded in multiple systems, log books, and excel sheets of many different departments. It takes a lot of time and effort to collect and compare the information. Besides, all relevant in-process information is not available in real-time and incorrectly. And, mostly analysis is manual process.

In September, Hoa Phat Group's crude steel production reached 686,000 tonnes, up 20 per cent over the same period last year. Sales volume of steel products reached 738,000 tonnes, representing 22 per cent year-on-year increase. Hoa Phat's exports of finished steel products last month grew strongly. Specifically, the export volume of Hoa Phat's construction steel reached a record of 120,000 tonnes, nearly double compared to the same period last year. The main export markets are Australia, Canada, Hong Kong, South Korea, and some countries in Southeast Asia. Hoa Phat Dung Quat is contributing more than 50% of the total for the steel quantity export. With a crude steel capacity of 8 million tonnes a year, Hoa Phat is the largest steel producer in Vietnam as well as in Southeast Asia. In which, The Hoa Phat Dung Quat Steel Joint Stock Company is the largest with a production capacity reached 5,2 million tonnes a year.

Investors appreciated the progress of Dung Quat project (3 Billions USD) - Mr. Nguyen Viet Thang - and the BOD of Hoa Phat Dung Quat Steel Joint Stock Company gave an overview of the scale, schedule and measures to protect the environment of the project. With the scale of 4 million tons / year, Hoa Phat Dung Quat Integrated Iron and Steel Complex is being put all resources deployed in 2017 on the basis of inheriting Quang Lian steel project (Taiwan) after more than 10 years postponed. In early 2022, Hoa Phat will deploy the Hoa Phat Dung Quat 2 Iron and Steel Complex project with a capacity of 5.6 million tonnes of Hot Rolled Coiled (HRC) a year, bringing the total annual HRC capacity to 8.6 million tonnes from 2025.

To achieve the strategy, the management team expected the project could obtain below objectives:

- Enable real-time analytics and support self-service operational reporting directly.
- Support driver-based planning to understand and model underlying drivers of financial, sales & production performance.
- Support for multi-dimensional profitability analysis to identify most profitable customers and products.
- Track organizational KPIs in real-time with interactive dashboards. Use real-time planning forecasting and simulation capabilities for different business scenarios.



Benefits & Outcomes

BUSINESS / SOCIAL

Governance: Product-as-a-service

- Enhancing corporate governance, building a set of 61 group KPIs, complete and across departments, departments and 20 Stories for management, helping to measure the governance effectiveness of Hoa Phat Dung Quat Steel
- Increasing data mining efficiency 4 times. Serving the operational efficiency of departments: The Sales Department increases the ability to meet orders according to the company's production performance. The production department improves attrition indicators and increases production efficiency. Warehouse Department reduces inventory
- Reduce the time and resources for manual reporting, help increase the work performance of departments and departments of Hoa Phat Dung Quat, with 5 times faster reporting speed

Work and environment safety

- Integrating the data of energy management from EMS to SAC BI to optimize the energy consumption in manufacturing and mitigating process emissions could contribute to CO2 emission reductions.
- Generate insights to predict factory risk areas. Operational dashboards overseeing all related processes and incidents.

Promote the next success

- Build trust for investors, leaders and employees to run for next success in coming projects
- Dung Quat is a Case Study to help Hoa Phat Group evaluate the system effectiveness, towards applying scale to group level companies.

IT

Target to become a smart learning factory in steel industry in SEA, Hoa Phat has applied below technology:

- Cloud Adoption
- AI, Machine Learning
- Big Data: Centralized Data Warehouse

The SAC & B/W 4 HANA project is a warm up for the long journey of Hoa Phat Dung Quat to be a smart learning factory. IT team gained a lot of experience through the project and be able to define the road map to go.

And this is not only for data analysis from ERP but also to connect data from different systems, departments, factory to form a BIG DATA in the future.

IT team is to form an integrated system SAP & Non SAP

HUMAN EMPOWERMENT

- Improve the effectiveness for the whole organization. When the departments work smoothly with reports, it support BOD to give exact and fast decision.
- Upskill for employees of business insight analysis. Dung Quat people is improving knowledge and experience.
- Increase employees' satisfaction and engagement by build their trust in applying new technology to improve productivity (e.g. OEE)



Project / Use Case Details

Hoa Phat Dung Quat Iron and Steel Integrated Complex (HPDQ) is the largest project of Hoa Phat Group and is currently operating at full capacity with 11 factories and a seaport with an output of more than 5 million tons/year. In the coming years, the factory size is expected to double. Thus, HPDQ needs a total solution to build Data Warehouse with centralized data connection from systems such as SAP S/4HANA, MES, SCADA, quality management system, other systems to standardize, enrich data, build management indicators (KPIs) with multi-dimensional analysis reports and Dashboards to serve the operation smoothly, quickly, and accurately. The Smart Digital Transformation project is an important project in developing Hoa Phat Dung Quat's strategy, which will have the participation of HPDQ's Board of Directors, heads of all departments, and Digital Transformation Department of Hoa Phat Group.

SAP Analysis Cloud project has a long-term objective of forming Big Data and data mining with advanced technology applications such as artificial intelligence (AI), machine learning (Machine Learning).) to analyse, forecast, recommend, make operating and management activities smarter, and create more differences and competitive advantages. Thereby, it helps businesses develop sustainably. In this project, HPDQ built many dashboards and 176 KPIs related to Finance, Sales, Manufacturing and Warehouse.

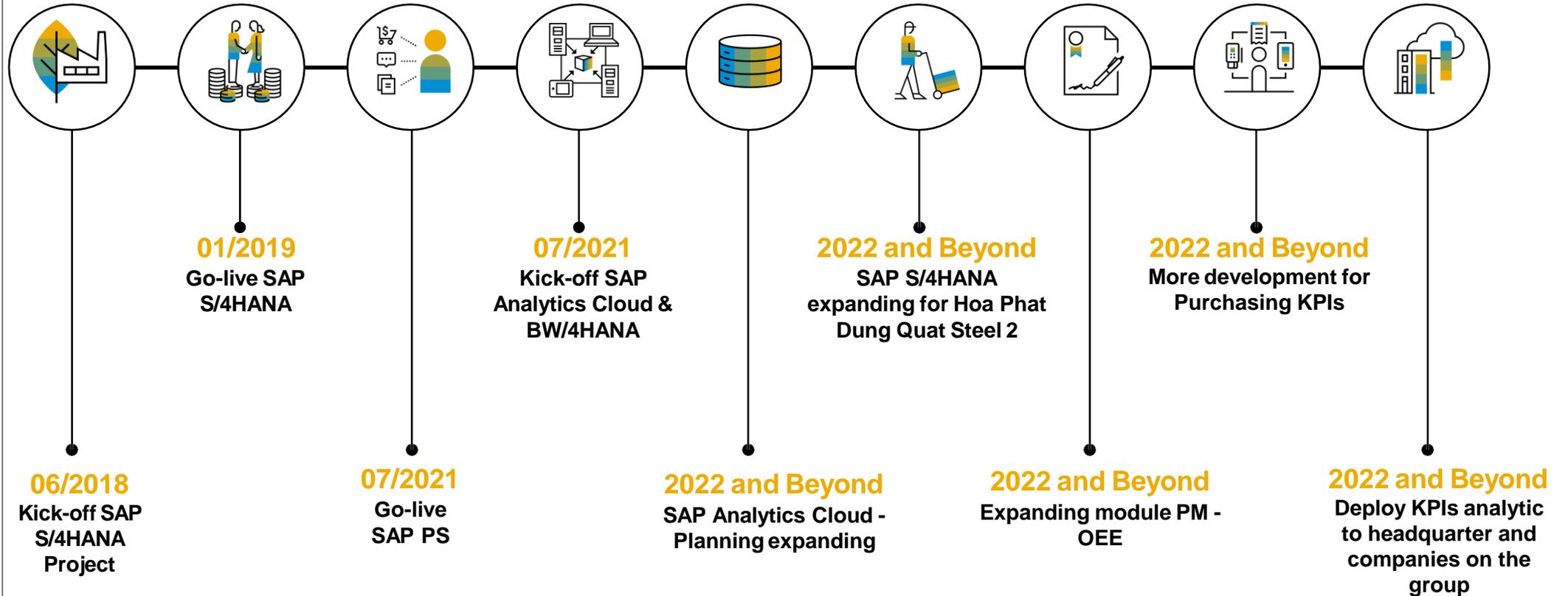
HPDQ has reached an output of more than 5 million tons/year, and the future is more than 10 million tons/year. So, the amount of data from ERP is very large. It leads to a demand to be standardized, to build Data warehouse, to have business indicators (KPIs) as well as build administrative and operational dashboards. Using SAP Analytics Cloud (SAC) solution not only stops to analyse business indicators from the ERP system, but in the long run, HPDQ can also connect data from many other systems, from departments and factories. SAC serves to analyse the overall performance of HPDQ in an efficient and timely manner.

In the future, Hoa Phat Dung Quat will apply SAC Planning serving for the overall planning activities of the company. This is also a key milestone for Hoa Phat to complete the Analytics Cloud tools from SAP



Project / Use Case Details

SAP Journey of Hoa Phat Dung Quat Steel



Additional Information

Hoa Phat Group listed in the world's Top 15 largest steel companies by market capitalization

On October 6, 2021, British financial data firm, Refinitiv Eikon (formerly Thomson Reuters Data) announced the Top 30 largest steel companies by market capitalization in the world. Hoa Phat Group (HPG) ranks 15th in this list with a market capitalization of US\$11 billion, larger than that of Japan's leading Steel Corporation, JFE Holdings.

The leading steel producer in Japan, JFE Holdings has a market capitalization of \$8.9 billion, taking 19th position in the ranking. A major Australian steel company, BlueScope Steel, is also listed in the 23rd position in the ranking with a market capitalization of \$7.3 billion.

With a crude steel capacity of 8 million tonnes a year, Hoa Phat Group is the largest steel producer in Vietnam as well as in Southeast Asia. The group is equivalent to the world's Top 50 steel producer.

Hoa Phat Group (HPG) has a charter capital of VND44.7 trillion, the fourth largest among enterprises listed on the Vietnam Stock Exchange. In the trading session on October 6, HPG shares officially set a new peak when closing at VND56,100 per share. With a total of 4.4 billion shares outstanding, HPG's market capitalization reached VND250 trillion (\$11 billion).

In the first 9 months of the year, Hoa Phat Group achieved crude steel output of 6.1 million tonnes, up 50 per cent over the same period last year. Steel sales volume reached 6.3 million tonnes, posting 43 per cent year-on-year increase. In which, construction steel was 2.8 million tonnes, up 12 per cent over the same period last year. Hot rolled coil (HRC) output reached nearly 2 million tonnes. Hoa Phat Steel Sheet Company Ltd recorded 273,000 tonnes, 2.6 times higher than the same period last year.

[Link: https://www.hoaphat.com.vn/news/hoa-phat-group-listed-in-the-world--s-top-15-largest-steel-companies-by-market-capitalization.html](https://www.hoaphat.com.vn/news/hoa-phat-group-listed-in-the-world--s-top-15-largest-steel-companies-by-market-capitalization.html)

TOP 30 LARGEST STEEL COMPANIES IN THE WORLD BY MARKET CAPITALIZATION

No	Identifier	Company Name	Company Market Cap (USD)
1	600019.SS	Baoshan Iron & Steel Co Ltd	30,059,071,590
2	NUE.N	Nucor Corp	28,987,650,506
3	MT.AS	ArcelorMittal SA	28,759,354,565
4	005490.KS	Posco	23,294,304,746
5	600010.SS	Inner Mongolia BaoTou Steel Union Co Ltd	22,420,491,760
6	JSTL.NS	JSW Steel Ltd	21,932,210,935
7	TISC.NS	Tata Steel Ltd	21,247,676,483
8	2002.TW	China Steel Corp	19,834,055,769
9	NLMK.MM	Novolipetsk Steel PAO	17,174,472,744
10	CHMF.MM	Severstal' PAO	17,080,252,543
11	5401.T	Nippon Steel Corp	16,401,464,484
12	000708.SZ	CITIC Pacific Special Steel Group Co Ltd	15,991,227,532
13	STLD.OQ	Steel Dynamics Inc	12,114,158,956
14	EVRE.L	EVRAZ plc	11,498,863,743
15	HPG.HM	Hoa Phat Group JSC	11,027,993,487
16	CLF.N	Cleveland-Cliffs Inc	10,374,496,358
17	MAGN.MM	Magnitogorskiy Metallurgicheskiy Kombinat PAO	10,294,120,438
18	RS.N	Reliance Steel & Aluminum Co	9,124,439,761
19	5411.T	JFE Holdings Inc	8,964,350,263
20	000825.SZ	Shanxi Taigang Stainless Steel Co Ltd	8,548,509,490
21	TX.N	Ternium SA	8,380,374,774
22	GGBR4.SA	Gerdau SA	7,977,498,027
23	BSL.AX	BlueScope Steel Ltd	7,376,878,439
24	CSNA3.SA	Companhia Siderurgica Nacional	7,085,824,646
25	000932.SZ	Hunan Valin Steel Co Ltd	7,079,260,837
26	000898.SZ	Angang Steel Co Ltd	6,776,576,372
27	600399.SS	Fushun Special Steel Co Ltd	6,626,295,014
28	SAIL.NS	Steel Authority of India Ltd	6,611,122,643
29	600295.SS	Inner Mongolia ERDOS Resources Co Ltd	6,505,774,337
30	VOES.VI	voestalpine AG	6,486,207,988

Additional Information



BW/4HANA & SAP Analytics Cloud Kick-off Ceremony (online)

Hoa Phat Dung Quat Steel 's factory

“Hoa Phat Dung Quat (HPDQ) iron and steel production complex is the largest project of the Group and is now operating at full capacity with 11 factories, a seaport with an output of more than 5 million tons per year. In the coming years, it is expected that the factory size will double, so HPDQ needs an overall solution to build Data Warehouse with centralized connection data from systems such as SAP S/4HANA, MES, SCADA, quality management systems, others to standardize, Enriching data, building governance indicators (KPIs) with multidigional analytics reports and dashboards to serve the operation smoothly, quickly and accurately. The Smart Digital Transformation project is an important project in Hoa Phat Dung Quat’s development strategy”.

Mr. Mai Van Ha, Director of Hoa Phat Dung Quat Steel Joint Stock

More Informations: <https://www.citek.vn/en/hoa-phat-dung-quat-steel-and-citek-sign-smart-digital-enterprise-implementation-consultancy-project/>