

The report of international internship

~ Enterprise Resource Planning ~

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Abstract

I participated in the international internship which is part of university education. And I studied ERP(Enterprise Resource Planning) in IT department Somboon Advance Technology public company limited. Somboon Group introduced ERP last year. I write up as follows about ERP I studying.

1. Somboon Group which I saw.

2. What is ERP

- 2.1. SAP ERP

3. ERP of SBG

- 3.1 Change from old system to SAP ERP

- 3.2 SBG ERP has basic 4 processes relation between production and data.

- 3.3 Pressure confronting barcode system

4. Conclusion

1. Somboon Group which I saw.

SBG(Somboon Group) has four affiliates SAT(Somboon Advance Technology PCL), BSK(Bangkok Spring Industrial Co.ltd), SBM(Somboon Malleable Iron Industrial Co.ltd) ,ICP(International Casting Products Co.ltd). They based in Bangna and Rayong. For more details, SAT has SAT1 in Bangna and SAT2 in Rayong. BSK has BSK1,2 in Bangna, and BSK3 in Rayong. SBM has SBM1,2 in Bangna, and SBM3 in Rayong. ICP has ICP1,2 in Rayong. SBG have been producing Axel Shaft, Inner Shaft, Exhaust Manifolds, Flywheel, Brake Disc, Brake Drum, Cam Shaft, Diff Case, Coil Spring, Leaf Spring, Stabilizer Bar and so on. And SBG have been sold to the customers which TOYOTA, MITUBISHI, HONDA, KUBOTA, FORD, MATHUDA, HINO and so on.

I looked on manufacturing process. The producing machines are almost automotive and they are made in Japan. SBG bought machine tools from Japanese manufacturer of machine tools and is producing products in Thailand and is selling them to Japanese automotive companies. Thus I reaffirmed a chain between Japanese industry and Thai industry. Figure.1. shows these.

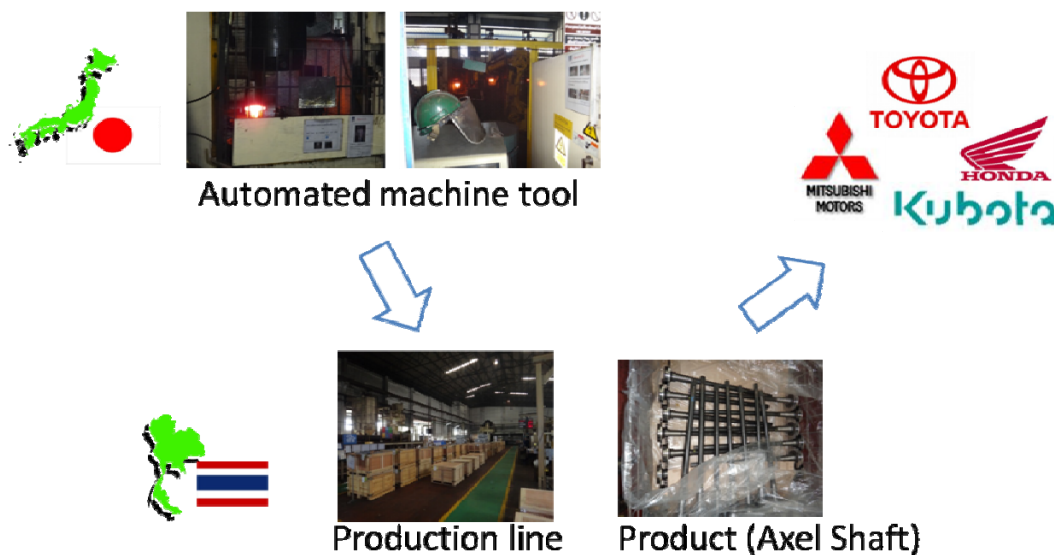


Figure.1. Chain between Japanese industry and Thai industry.

I knew SBG checks products hardly. The final product is examined over three month. There are two general phases of that testing machine. One is a breaking test and another is fatigue test. That specimen is examined adequate amount of all on statistics.

The factory lines have each manufacturer line. For example, The Axel Shaft which SBG sells to TOYOTA has a dedicated line and the one which SBG sells to MITUBISHI has a dedicated line.

2. What is ERP

ERP is short for Enterprise Resource Planning. ERP is software which has only one database and is linked finance data, raw material data, production data, plant maintenance data, quality data, sale data and so on. This can administer management planning from them. ERP automotives a function of accounting section

and make it an open possibility to manage the company. So User of ERP can manage and control process using their data. Figure.2 shows an image advantage of Introducing ERP.

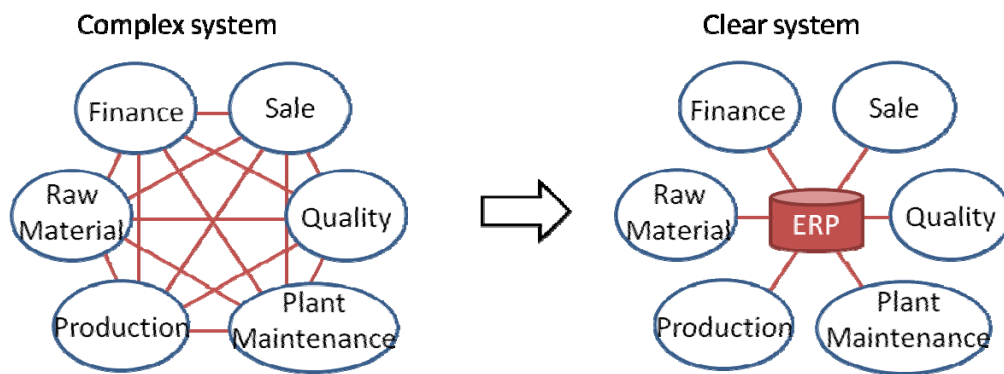


Figure.2. An Image advantage of Introducing ERP.

ERP improved from MRP(Material Requirements Planning). MRP is used to control a production in a material management. MRP have purpose which reduces the stocks which are money consuming product. The instruction of production plans in MRP pushes from a central planning authority to each factory. Accordingly, this is called “push system”. In contrast, ERP use “kanban system”. It is instructed requisite quantity from finish process to anterior process. This system has advantages that the company does not have stocks more than necessary.

The following is advantage of ERP.

1. Integrated system on online

As mentioned, ERP is a database and we can know accounting data, purchase data, stock data, sale data, production data, payroll data and so on.

2. Customizing

Each companies can customize ERP to one's situation. For example, make-to-stock production system and build-to-order manufacturing system and so on.

3. Real Time

ERP can update their data on real time. When someone input a data, ERP update the related data in database on real time.

4. Commoditized data

The standardize data can guarantee consistency and strictness. This prevent duplicative data. The user can manage and control process using their data.

The main vendor of ERP is SAP, Oracle, People soft, JD Edwards. The Introducing ERP is one of the big consultancy growing.

2.1. SAP ERP

SAP ERP has the most users in the world and SBG also use SAP ERP. This system name is SAP R/3. SAP ERP has advantages like those above. SAP has many function modules and Company can use them as necessary.

3. ERP of SBG

3.1 Change from old system to SAP ERP

SBG is using SAP ERP. SBG had used “Navision” until 2009. This system can know finance and accounting. SBG introduced SAP ERP in 2010 and this changing system put in a year and a half. Figure.3 shows some example changed function from old system to SAP ERP.

No.	Description	Method for improve	Example for Improve	Compare System	
				Old system (NAVISION)	New System (SAP)
1	Paper Less.	<ul style="list-style-type: none"> Electronic data on system. 	<ul style="list-style-type: none"> Remove sales order document and forecast document at sent to factory. 	Sale order and forecast sent by document (paper).	All Document sent by electronic data.
			<ul style="list-style-type: none"> Keep the history data in system such as account receivable document. 	Keep the data by document (paper).	Keep the data by electronic data.
2	Reduce hidden stock.	<ul style="list-style-type: none"> Center for control stock. 	<ul style="list-style-type: none"> Combined the Maintenance Store in to Warehouse. 	Stand alone for control stock level.	Centralization for control stock.
		<ul style="list-style-type: none"> Have data stock level on the system. 	<ul style="list-style-type: none"> Maintenance spare part. 	Control by excel.	Control on system.
		<ul style="list-style-type: none"> Real time stock level. 	<ul style="list-style-type: none"> All of parts. 	Stock level update on tomorrow.(Receive stock and Issued stock to days but input data in the system on tomorrow.)	Real time input data after receive and issued stock.
		<ul style="list-style-type: none"> Control stock level by MRP. 	<ul style="list-style-type: none"> Raw material, Component parts, Factory supply. 	Requirement Calculated by user input data in excel table.	Requirement Calculated from SAP system.
3	Reduce Operation Duplicate.	<ul style="list-style-type: none"> Using a common database. 	Entry forecast and order in to system.	1. Sale department received data from customer and input	Sale department receive data from customer and

No.	Description	Method for improve	Example for Improve	Compare System	
				Old system (NAVISION)	New System (SAP)
		<ul style="list-style-type: none"> Integration System. 		<p>that data in the Excel.</p> <p>2. Customer service received data from Sale department and input data in the Navision and Excel.</p> <p>3. Planning department received data from Customer service and input data in the excel for create production planning.</p>	<p>sent to Customer service for up</p> <p>Load data in to SAP and Planning department can be direct create Plan order and Job order in SAP.</p>
4	Reduce Waiting Time.	<ul style="list-style-type: none"> Integration System. 	<ul style="list-style-type: none"> Approve on SAP Such as Purchase Requisition Process (PR), Purchase Order Process (PO). Internal transfer data between the factory. 	Used the document paper for approve and transfer.	Approve and transfer data on system.
5	Reduce Human Error.	<ul style="list-style-type: none"> Using a common database. 	<ul style="list-style-type: none"> Material type design for protect the error missing type create Purchase Requisition. 	The system cannot lock type for create Purchase Requisition.	SAP can Lock type for create Purchase Requisition.
		<ul style="list-style-type: none"> Protect error by system. 	<ul style="list-style-type: none"> Separate Material group for control such as create PR-PO, Control stock by MRP, Good Issued and 	Not control.	All of Process can be control by SAP system.

No.	Description	Method for improve	Example for Improve	Compare System	
				Old system (NAVISION)	New System (SAP)
			Receive Finish goods from job order, Receive invoice from purchasing, Issued DO and Invoice to customer.		
6	Speed Up.	<ul style="list-style-type: none"> Auto Generate Report from SAP. 	<ul style="list-style-type: none"> OEE Report. Actual Cost Report. Balance Sheet. Income Statement. WIP Report. Sale Report. 	Create report from Excel by manual input data.	Auto Create report from SAP system.
		<ul style="list-style-type: none"> Transfer Data on System. 	<ul style="list-style-type: none"> Forecast. Customer Order. Job Order. Internal transfer data between the factory. 	Send data by Document paper, FAX and email.	Send data on system.
7	Data for decision.	<ul style="list-style-type: none"> Integration System. Using a common database. 	<ul style="list-style-type: none"> Executive meeting. Data support for investment such as new factory, new machine, new line. 	Create support data from excel, document paper and another system.	User can be using data on SAP system.
8	Tracking System.	<ul style="list-style-type: none"> Integration System. Using a common database. 	<ul style="list-style-type: none"> Customer Claim. Raw material Tracking. Quality Assurance system. Maintenance System. 	<ul style="list-style-type: none"> Tracking data by manual. Keeping history data by document paper and excel. Visual check for WIP. 	User can be checking data on SAP system.

No.	Description	Method for improve	Example for Improve	Compare System	
				Old system (NAVISION)	New System (SAP)
9	Information Reliability.	<ul style="list-style-type: none"> Integration System. Using a common database. 	<ul style="list-style-type: none"> Have database and data history on system. Working Standard. 	Can be control some process.	Control by SAP system.

Figure.3. Change from old system to SAP ERP

SBG use 7 module and they are SD, MM, PP, QM, PM, FI and CO.

SD is short for Sales and Distribution. Similarly, MM is Material Management. PP is Production Planning and Control. QM is Quality Management. PM is Plant Maintenance. FI is Financial Accounting. CO is Controlling. Figure.4 shows 7 module which SBG use.



Figure.4. 7 module of ERP

SAP ERP is wrote program using ABAP which high-level computer language. ABAP is only used SAP system. SBG extended capability of SAP ERP. This developed function which read barcode. For more details, this is interface between barcode system and database and was actualized using software and hardware for reading barcode exclusive use. This system reserve barcode data in the form of excel or access and store their data to SAP ERP database. Figure.5 shows image Bar code system SBG extended capability of SAP ERP. Specifically, Controlling data is explained using Figure.6, 9, 11, 12 through production process.

Function SBG extended capability of SAP ERP



Figure.5. Image Bar code system SBG extended capability of SAP ERP

3.2 SBG ERP has basic 4 processes relation between production and data.

SBG ERP has basic 4 processes

1. Processing Order (Getting in law material)

Store department make barcode tag(Figure.7) for law material purchased. This Barcode tag has information which material number, PO number, vendor name and quantity. Barcode reader(Figure.8) read information of barcode tag. Then this data is stored in database. This database has data construct UR, QI, BLOCK and this data is temporarily stored in QI. Next Quality Assurance department checks production quality which is length, intensity and dimension and so on. This check separates GOOD or NG. GOOD of production stocks warehouse and NG of production is returned vendor. GOOD quality product data is transferred from QI to UR. Similarly, NG quality product is transferred from QI to BLOCK.

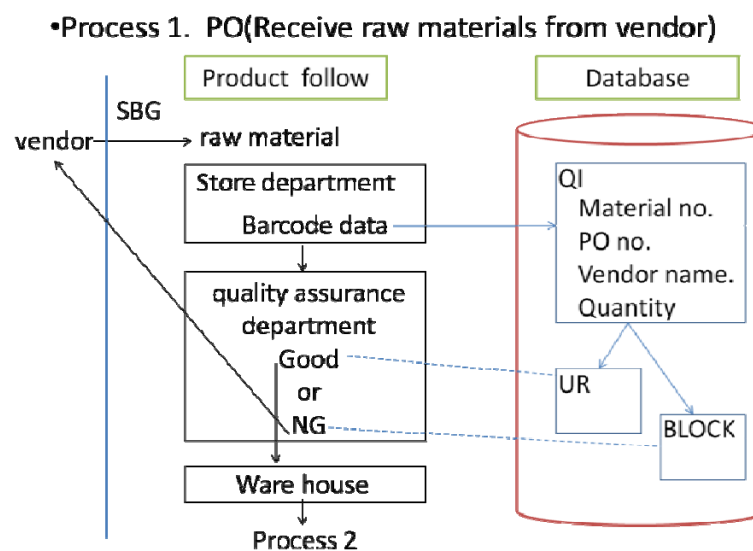


Figure.6. Receive raw materials from vendor



Figure.7. Barcode tag



Figure.8. Barcode reader

2. Receive from production order

Production department make barcode tag(Figure.10) for production. This Barcode tag has information

which production number, material number, and quantity. Barcode reader(Figure.8) read information of barcode tag. Then this data is stored in database and notate start time and finish time. This database has data construct UR, QI, BLOCK and this data is temporarily stored in QI. Next Quality Assurance department checks production quality which is length, intensity and dimension and so on. This check separates GOOD or NG. GOOD quality product stocks warehouse. Then warehouse is stocked final goods and warehouse is stocked semi-final goods. And data structure is each FG_, SM_. NG quality product is returned production department. GOOD quality product data is transferred from QI to UR. Similarly, NG quality product data is transferred from QI to BLOCK.

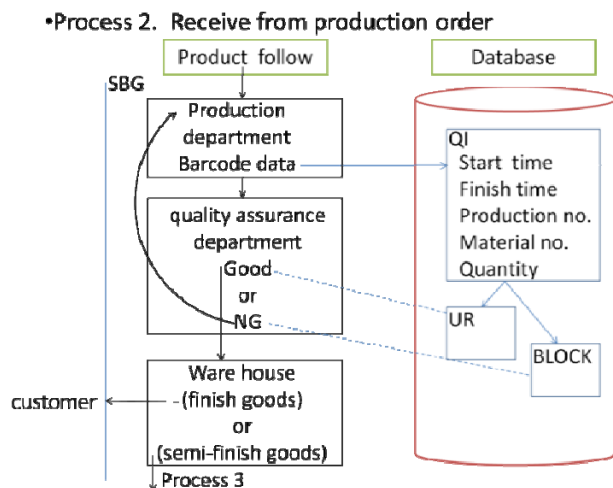


Figure.9. Receive from production order



Figure.10. Barcode tag

3. Out side out (SBG does not have coating machine and subcontract this step to other company)
Store department make barcode tag for semi-final goods. Then this tag has information which material number and quantity. This data is read barcode reader and is stored database like those above. Stored data control quantity data over logistics.

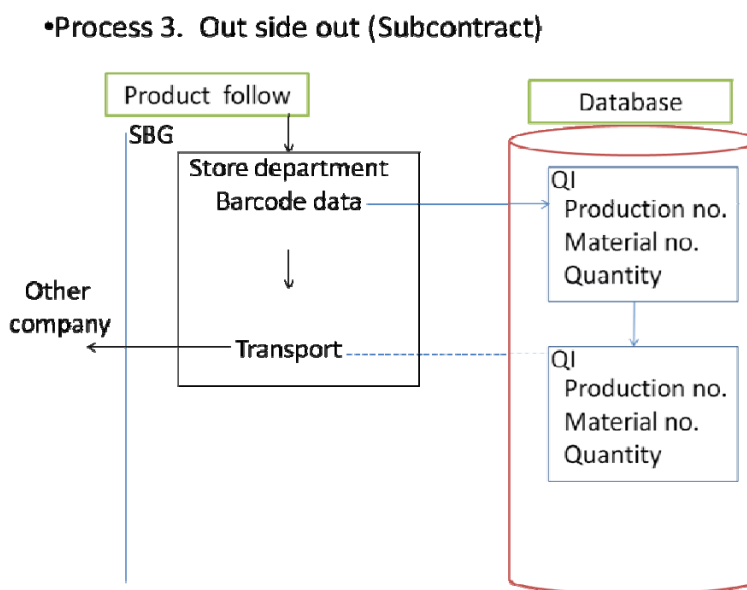


Figure.11.Out side out

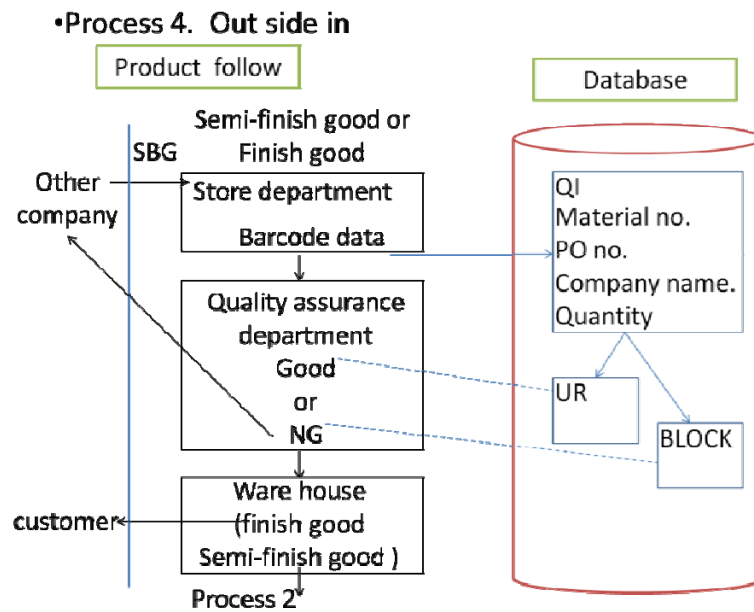


Figure.12. out side in

4. Out side in (delivery of materials from other company)

Store department makes barcode tag for delivery of materials. This data is read barcode reader and is stored database like those above. Quality Assurance department separate GOOD or NG like those above. If the products is NG, the other company repair them.

3.3 Pressure confronting barcode system

This barcode system has a problem. At present, the data processing is 1 transaction – 1material. It is to have many data and sometimes processing slowly. In the future, data processing will be 1 transaction – some material to reduce database.

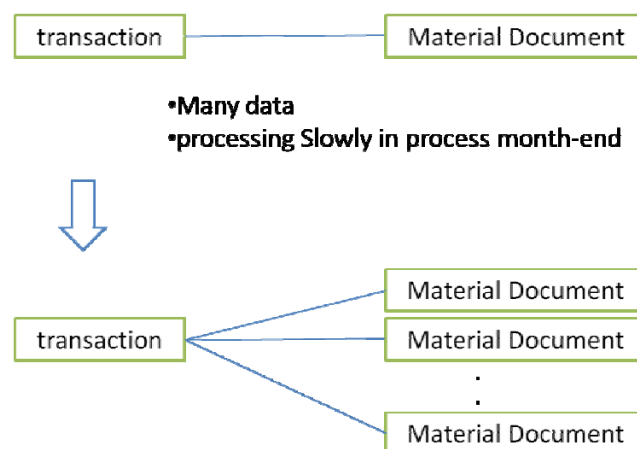


Figure.13. Pressure confronting barcode system

4. Conclusion

I knew product process of automotive industry. I learned about business process model, ERP and purpose SBG introduces it. The most painful thing is communication in English. I feel that want to learn process of automotive industry and ERP more and more and advance method of improvement barcode system problem which I learn this time. And I'm glad that I could know thai and thai culture to visit at various places.

~Acknowledgment~

We would like to thank people involved in Suranaree University of Technology and Mie University for arranging this international internship and people involved in inviting me in SBG and taking care of me and to extend my appreciation to IT department and Human Resource for providing such an outstanding work environment which I will miss greatly. I appreciate all people who give me fascinating days.