

# **PRODUCTION INFORMATION TRACKING SYSTEM**

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## **ABSTRACT**

Production Information Tracking System is a multipurpose system that consists of yield rejects report generation, tester frequency error retrieval, to generate emergency response template, visual graphical of rejected IC, and data retention issue management. Yield reject report is extracted from the data warehouse. Previously, it was hard for the engineer to analyze the history of tester frequency error. Engineer needs to utilize multi-system to generate the emergency response template. The system provides the solution for these problems. Besides that, operator can use the system to translate the number of the rejected pin of IC into graphical visual. Managing the data retention is a daunting task. By providing the lot number, the related information will be retrieved from database and exported to excel file. Lot protocol can also be searched easily. This system can be run on any platform and it does not require installation as long as the platform has a virtual machine.

## ABSTRAK

“Production Information Tracking System” adalah sistem pelbagai fungsi yang meliputi penjaan laporan “yield reject”, mendapat “tester frequency error”, menghasilkan “emergency response template”, menjana imej grafik bagi IC yang ditolak, dan pengurusan laporan “data retention”. Laporan “Yield reject” is diekstrak daripada pelbagai variasi pangkalan data. Berdasarkan proses semasa adalah susah bagi jurutera untuk menganalisis sejarah “tester frequency error”. Jurutera memperoleh data daripada pelbagai system sedia ada untuk menghasilkan “emergency response template”. Ini boleh mengatasi masalah tersebut. Selain itu, operator boleh menggunakan sistem ini untuk menterjemah jumlah pin IC yang rosak ke gambaran visual. Pengendalian “data retention” adalah kerja yang rumit. Dengan menggunakan “lot number”, kesemua data berkaitan akan diperoleh daripada pangkalan data dan disimpan ke fail Excel. Maklumat “Lot protocol” juga boleh dicari dengan mudah. Sistem ini dapat dilaksanakan di atas pelbagai system pengoperasian dan tidak memerlukan intalasi individu jika mesin tersebut mempunyai komponen “Virtual Machine”.

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## **CHAPTER 1**

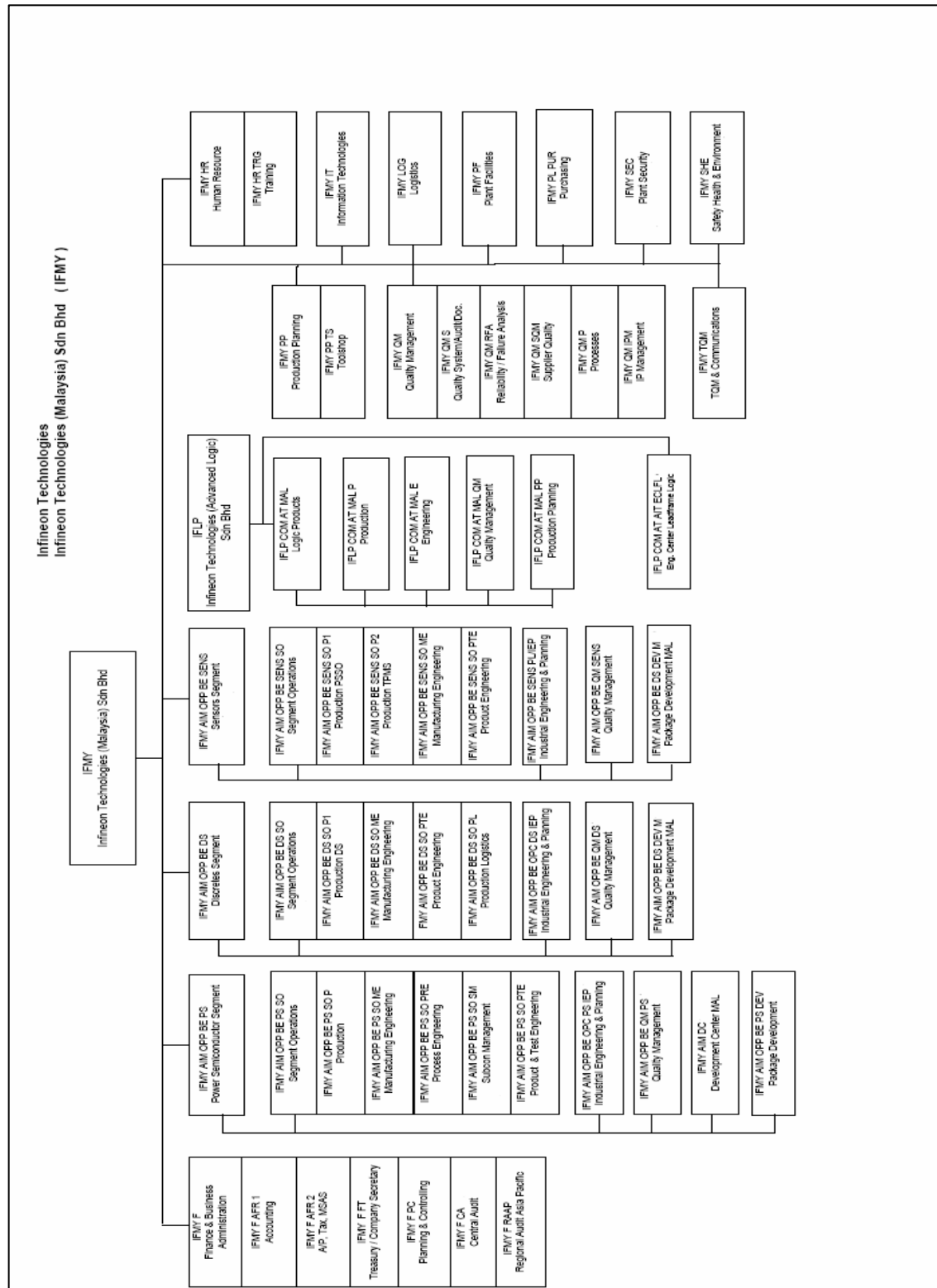
### **INTRODUCTION**

#### **1.1 Organization Background**

Infineon consists of two main companies which are:

- IFMY (Infineon Technologies Malaysia Sdn.Bhd)
- IFLP (Infineon (Advanced Logic) Sdn.Bhd)

Infineon Technologies is a German based company which located in Munich, Germany. It is a semiconductor manufacturer. Infineon has attained a very high standard as Europe's biggest manufacturer and second largest in the world. Since its inauguration in 1973, Infineon Technologies Malaysia has been continuously growing its operations by enlarging the manufacturing facilities, test-equipment and adding new product. Nowadays, Infineon Technologies Malaysia also known as the largest manufacturing sites of Infineon assembling & testing.



**Figure 1.1: Infineon Technologies company structure**



**Table 1.1: Infineon Technologies in Malaysia**

<b>Infineon Subsidiary</b>	<b>Business</b>	<b>Production</b>	<b>Notes</b>
Infineon Technologies (Malaysia) Sdn.Bhd	‘Backend production’ (Assembly & Test) In Malacca	Power Semiconductors and Discretes Semiconductor for Automotive and Industrial application, communications and customer markets.	- 400 employees - 11 billion pieces/year
Infineon Technologies (Advanced Logic) Sdn.Bhd		Logic Products for communications, automotive and Industrial applications.	- 900 employees - 400 million pieces / year
Qimonda (MELAKA) Sdn. Bhd		Memory products for Desktop and Notebook. PCs, consumer products (DVD and MP3 player, Mobile Phones etc)	- 1000 employees - 250million pieces/year
Infineon Technologies (Kulim) Sdn.Bhd	“Frontend production” (Wafer Production In Kulim)	Wafer-technology for Automotive and Industrial Power applications.	- 700 employees (2006) - 1700 employees (2008) - 100K wafer starts per month

## **1.2 Mission & Vision:**

### **1.2.1 Vision**

- To shape microelectronics by creating innovative products, leading edge solutions and services for the benefit of our customers and shareholders.

### **1.2.2 Missions:**

- To create, manufacture and market the industry's most advanced microelectronics product.
- To build upon our technological strengths to offer our customer a wide range of leading edge solutions emphasizing communications, computer. Chip cards and automotive applications.
- To attract the best talent worldwide and translate advanced technologies into value for our customers and shareholders.
- To never stop thinking.

### **1.2.3 Values:**

- Never stop thinking
- To strive for excellence in people and leadership
- To act entrepreneurially for the sake of our customer
- To win together

## **1.3 Core Business**

In Infineon Technologies, employees here adapt to the period for self-reflection and the needs in changing are observed more than just their name. The organization has been restructured from eight business units to five main business units. Customers are offered continuous leading edge products and comprehensive solutions by Infineon.

For business unit, Infineon Technologies is divided into five departments which are:

**i) Automotive and Industrial**

Produce power semiconductor, opto components, microcontrollers, sensors and discrete semiconductor for automotive applications such as power train management, dynamics systems and safety, body and convenience systems and driver information and in-car entertainment systems. Moreover, it has a wide range of products for industrial applications such as drivers, controls, system for white goods, power supplies and components.

**ii) Communication and Peripherals**

Produce semiconductors and systems for wired communication applications based on television, PC or wired telephony technologies. This is including communication ICs, computer peripheral components, image and video devices, fiber optic components and infrared components.

**iii) Wireless Products**

Produce semiconductors and complete system solutions for a range of wireless applications including cellular and cordless telephone systems and devices used in connection with GPS. Products include standardized base-band ICs (logic and analog) and standardized and customized radio frequency ICs.

**iv) Memory Products**

Produce the first working DRAM made on 300mm (12") wafer, to our revolutionary new generation of 1 Gigabyte DRAM modules. The memory products are setting the standard for smaller, more powerful, more readily available memory technology.

**v) Security & Chip Card ICs**

Develop and manufacture security controllers, security memory and other semiconductors for use in applications requiring security, such as telephone and credit card (banking), health and identity cards, pay TV and traffic control.

In order to maintain a constant products output to fulfill the market demand and to increase the customer's satisfaction, Infineon Malacca always seek for a better way to improve the company operation in terms of Human Resource (HR), Financial Controlling (FC), Information Technology (IT), Total quality Management (TQM), Logistic (LOG) and Safety, Health & Environment (SHE).

**i) Human Resource (HR)**

This department consists of five sections which are the recruitment, payroll, welfare, training and employee relations. All these sections have their own responsibilities and play an important role in Infineon.

**ii) Financial Planning (FC)**

Also known as the PA, this department is responsible towards the financial part of Infineon. It preserves customer satisfaction by delivering on time and providing sophisticated and insightful financial information.

**iii) Information Technologies (IT)**

The purpose of this department is to provide continuous improvement to business process with IT capabilities. Besides, it is also responsible to provide future IT landscape with central team to construct an IT platform for future business needs.

**iv) Total Quality Management (TQM)**

This department will ensure the quality of the incoming materials and give services to maintain the very best quality of the products produced by the Infineon's Business Unit before sending to the valued customers.

**v) Logistic(LOG)**

This department is responsible for sorting the new in-coming material before channeling them to the other departments for production purposes. Besides all the goods or products which ready to send to the customers, will be transit here.

## **vi) Safety, Health &Environment (SHE)**

This department is responsible to help to protect all the employees in Infineon Technologies from the accidents and conserving the environment. Their mission is to create and sustain a culture that produces world-class safety, health and environmental performance in ways that lead to continual improvement in productivity, quality, cost, delivery and morale.

### **1.4 Project Background**

In order for the engineer to identify data retention information and generate data retention report, they need to gather the information from machine's user interface located in the production and search the lot protocol information in the server. In the same time, to monitor the machine problems, the operators need to manually keep track of the machine problems and then report it to the engineer. This may cause incorrect result due to human error such as forgetting to keep track, writing wrong information, and etc.

For the current practice if the production lot has any problems caused during the process, the engineer need to get the information from various type of system tools in order to complete the Emergency Response Template (ERT) which summarizes information required for further investigation. Such processes are very time consuming.

Beside that, to find out which pin in the IC having failure, engineer need the help from operator to calculate the result from tester and convert it to binary form.



There might have possibility of wrong calculation by the operator. Therefore engineer might receive wrong information.

In addition, engineer needs to create a report for yield reject every week by using multiple applications. This may causes engineer consume a lot of time to use the applications to create a report.

To overcome the problem, Production Information Tracking System is proposed with the capability to identify data retention information, retrieve machine's frequency of error, create an Emergency Response Template, visual graphical IC with calculation and yield reject extraction report. This is a new system. The system extracts data from relational database and datawarehouse from heterogeneous database such as Oracle and Mysql Server.

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