## [Acts by using Equipment Engineering Data]

[Tomio Iwata] [tomio.iwata@toshiba.co.jp] [TOSHIBA Corporation Semiconductor & Storage Company] [800,Yamanoisshiki-Cho,Yokkaichi,Mie-Pref,521-8550,Japan] Phone: +[81] -[59-330-1063] Fax: +[81]-[59-330-1131]

## 1. Introduction

In order to work 300mm semiconductor production equipment efficiently, in the manufacturing site, in order to grasp various situations which occur with equipment, a quick action is desired. Therefore, in order to grasp what occurred, the importance of equipment data (Equipment Engineering Data) is high. How to obtain equipment data has some types (refer to Fig. 1). (1) The equipment log which the equipment maker is creating in self-defense. A data format and the contents of data are various. (2) The equipment communication log currently used by the manufacture execution system (Manufacturing Execution System). They are mainly wafer tracking and a process log. (3) Data collection logger only for an equipment maker (Equipment Engineering System). The data which can mainly check whether equipment is operating normally is acquired. (4) Data acquired by the Equipment Data Acquisition communication (Interface A) standardized by SEMI in order to acquire equipment data. The standard characterized by standardizing the acquisition method of equipment data and being able to deal with a lot of data than the conventional MES data. Anyway, it is required to be able to play back the phenomenon which occurred. In this report, it proposes to an equipment maker about a data (health condition visualization) item required in order to carry out stable operation of the equipment.

2. The index for carrying out stable operation of the equipment

There are some measures which measure the operation state of equipment. Being shown according to Overall Equipment Efficiency is common. It computes using the Availability, Performance, and Quality. (1) An operating ratio needs to increase time to maintain a producible state. The number of times of trouble generating and maintenance time is decreased as much as possible. (2) Performance (equipment performance), isn't there any loss in the time from a lot supply start to end or not? The rate of (A)Process processing time and (B)the other time (Time required for conveyance in equipment, or process processing) is set to Process time infinite.

(3) Quality makes a quality loss a minimum (it loses). Or it is required to have a device which does not continue making inferior goods.

3. Data required for KAIZEN activities

In order to abolish the variation this occurs between equipment. Basic motion time of equipment, temporal data which can grasp the set-up specification value exactly, for example, the operating time of a cylinder and a robot's travel time are measured, and it utilizes for activity which abolishes a setup of a proper value, and the machine difference between equipment infinite, and secures an output. The loss in equipment can be clarified now by acquiring data when not operating by the data, for example, the plan, and a recipe setup at the time of wafer.

## 3. Finally

In a 300mm semiconductor manufacturing process, since automation is progressing, the operator is not in an equipment side. Therefore, when a trouble occurs, it is difficult to grasp what occurred. The importance of equipment data will come out increasingly from now on. It requires of an equipment maker about the required contents proposed this time. And manageable structure is completed. We would like to go further aiming at the improvement in equipment operation, using data from now on.



⊠ 1 Equipment Engineering Data