

# Chapter 6

## Implementation and Results

### **6.1 About the Implementation**

The new incoming inspection plan and supplier evaluation system was put into use in March 2002. February was set for preparing and clarifying the new system to working people.

Prior to using the supplier evaluation system, the purchaser was asked to contact and explain the new system to all suppliers to ensure all of them understand the company's objectives and expectation before the implementation took place

At this piloted stage of implementation, only supplier rating system was conducted every month. Supplier audit has not been conducted because the no supplier has had performance history with the company under this new rating system. The Team agreed to collect data from supplier rating for a certain period before establishing schedules for visit each supplier and deciding on how to conduct the audit on each supplier.

### **6.2 Observed Results**

After the systems had been implemented, results were collected from this piloted stage. Four areas were observed for preliminary assessment of the system in this piloted stage; incoming product acceptance, supplier performance, and defect rate of finished products to compare the results obtained before and after the systems were implemented.

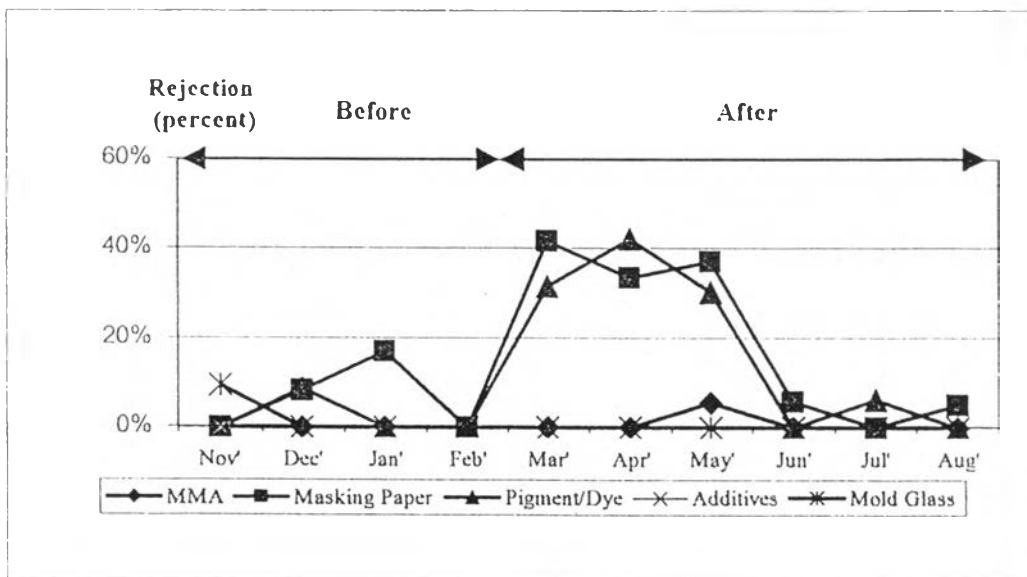
#### **6.2.1 Product Acceptance Rate**

Table 6.1 below shows the amount of rejected incoming materials prior to implementation compared to that of after implementation. Figure 6.1 is the graph constructed using this data for easy visualization.

	Nov' 01	Dec' 01	Jan' 02	Feb' 02	Mar' 02	Apr' 02	May' 02	Jun' 02	Jul' 02	Aug' 02
MMA-submitted (MT)	550	550	600	600	500	500	450	450	450	450
Rejected (MT)	0	0	0	0	0	0	25*	0	0	0
Masking Paper (Roll)	120	120	100	140	110	110	110	120	120	120
Rejected (Roll)	0	10	17	0	46	37	29	7	0	6
Pigment/Dye- submitted (kg.)	650	575	600	650	475	590	575	200	800	450
Rejected (kg.)	0	50	0	0	150	250	175	0	50	0
Additives submitted(kg.)	400	400	450	450	350	375	375	400	375	400
Rejected (kg.)	0	0	0	0	0	0	0	0	0	0

**Remark** \* contamination problem found to be caused during transportation in truck's tanker

**Table 6.1 Rejection of incoming materials after implementation**



**Figure 6.1 Graph showing rejection of incoming materials after implementation**

From Figure 6.1, a sudden rise in the amount of rejected incoming materials was evident right after the new incoming inspection was put into practice in March 2002. Masking paper and pigments were the two items with highest rejection rate. Acceptance rate was improved in the subsequent periods probably because of suppliers' improvement after being notified of their assessment results.

There appeared to be no significant effect on acceptance of other materials (MMA, additives, mold glass). This can be implied in two ways. These materials may be of good quality because they are produced by high quality suppliers so they rarely contained defects. A more cautious interpretation might be that the inspection

procedure used might not be tight enough to detect much of the defective materials. Further detailed analysis should be carried out to figure out this issue.

## 6.2.2 Supplier Delivery Performance

Figure 6.2 illustrates supplier performance in the area of delivery.

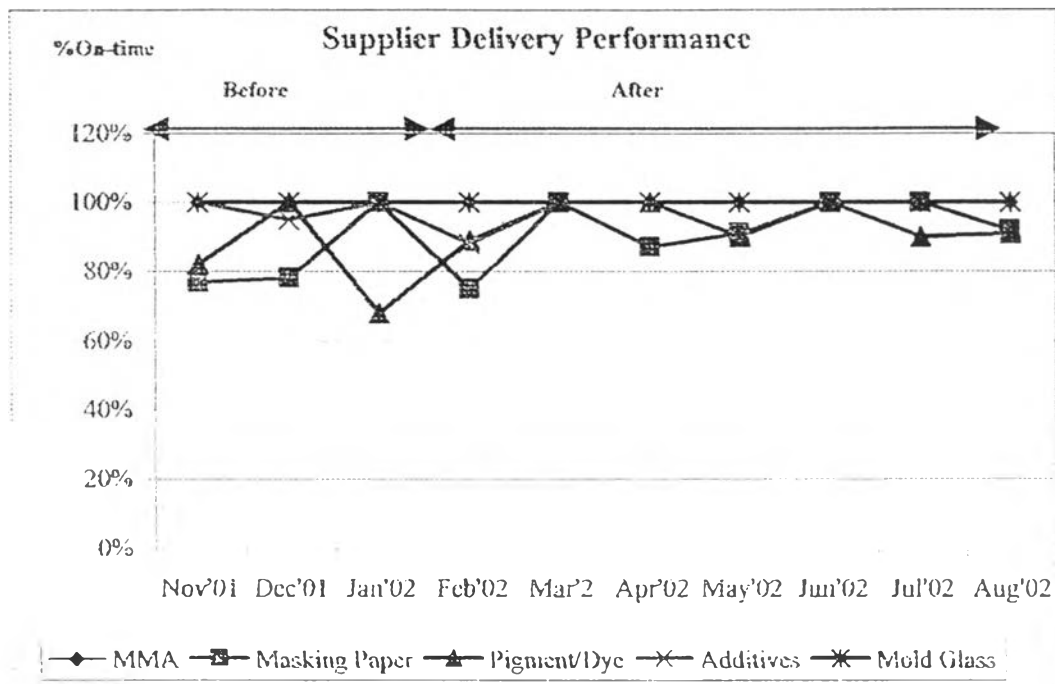


Figure 6.2 Graph showing Suppliers' delivery after implementation

From Figure 6.4, after implementing the supplier evaluation system, suppliers that had been performing well in delivery (additive, MMA, and glass) still maintained their good performance. These companies are large producers with strong reputation for quality so they perform to standard with or without our evaluation system. As for masking paper and pigments which are supplied by small companies, our new supplier evaluation system has seemed to be conveying our focus on delivery to them. There were signs of steady, though not drastic, improvement in delivery of these two materials. Average on-time delivery for masking paper increased from 85percent during Nov'01 to Feb'02 to 95 during after implementation. On-time delivery for pigment/dye also increased from 83percent to 95 percent in the same periods.

### 6.2.3 Service

From interviews with people who have contact with suppliers, most agree that the majority of suppliers have demonstrated service improvement. Each person giving the evaluation was asked to rate each key supplier's service performance on a scale ranging from 0 to 5 prior to and after implementing the supplier evaluation system. (0 = Unacceptable, 1 = Poor, 2 = Fairly Poor, 3 = Fair, 4 = Good, 5 = Very good). Result of this survey is shown in Table 6.2.

Purchasing focused on suppliers' service in term of fastness to submit quotation after inquiry, readiness and availability of specifications, responsiveness of sales representative, etc.

Laboratory focuses suppliers' service on availability of technical assistance and information. Service in accounting viewpoint is compliance with billing requirements; legibility, correctness, of invoices and other accounting documents, etc.

	Purchasing		Lab		Accounting		Avg. Before	Avg. After
	Before	After	Before	After	Before	After		
Supplier 1 (MMA)	4	5	4	5	4	4	4	4.3
Supplier 2 (Masking Paper)	2	4	Not observed	Not observed	2	4	2	4
Supplier 3 (Pigment/Dye)	4	4	3	3	3	4	3.3	3.7
Supplier 4 (Pigment/ Dye)	3	5	2	3	3	4	2.7	4
Supplier 6 (Additive- initiator)	2	4	4	4	3	4	3	4
Supplier 7 (Additive-UV absorber)	3	2	3	3	2	3	2.7	2.7
Supplier 8 (Additive- Plasticizer)	3	3	Not observed	4	4	4	3.5	3.7

Table 6.2 Supplier Service assessed before and after implementation

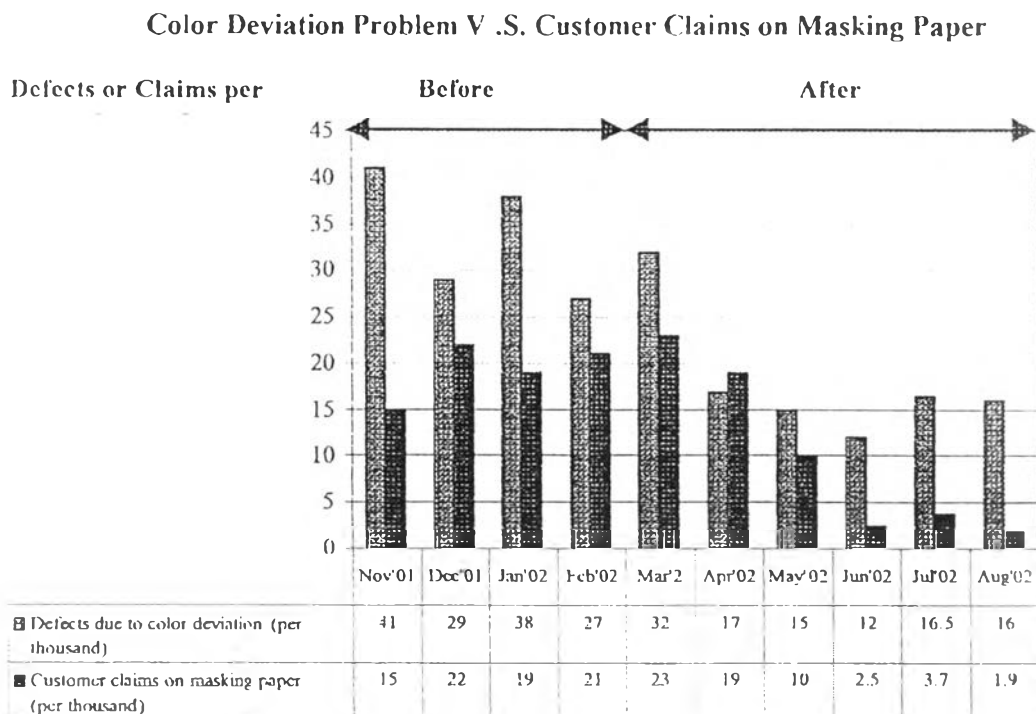
From Table 6.2, all except one supplier received an increase in service rating after the implementation of supplier evaluation system. Most interviews agree that overall suppliers are improving in term of service.

### 6.2.4 Quality of Finished Products

Improvement in the quality of raw materials received should result in significant reduction of finished product defects. However, in practice the relationship is not that simple. There are also effects from process, machine and people.

Therefore the observation on the effect of system implementation on finished product quality was divided into two parts. Part one is observation on defects whose root causes are easily identified as direct result of or mostly affected by poor raw materials. These include defects due to color deviation problem and customer claim on masking paper. Statistics of defects / claim on color deviation and masking paper is shown separately in Figure 6.3 while that of other types of defects is shown in Figure 6.4

- Defects due to color deviation and customer claim caused by masking paper

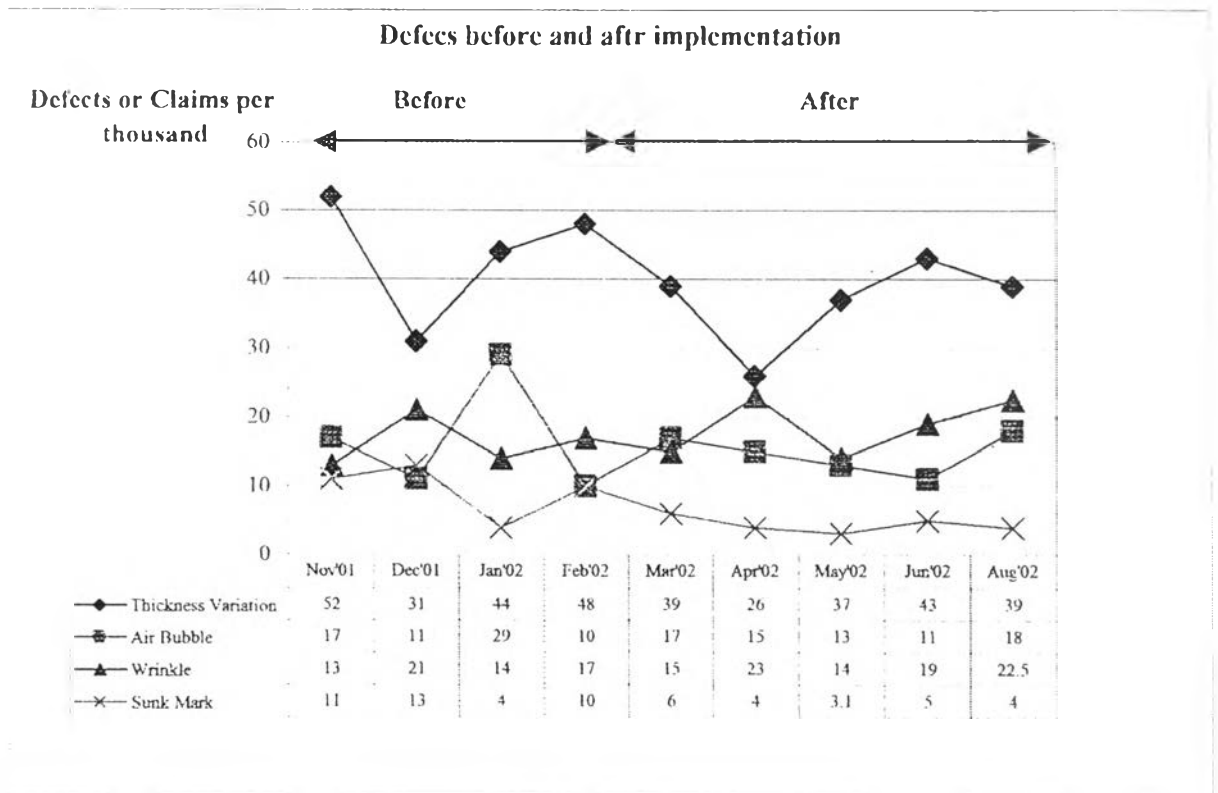


**Figure 6.3 Color deviation defects and claims on masking paper before and after implementation**

According to Figure 6.3, after the new incoming inspection methods were put into practice in March 2002 there was a steady declining trend in reduction of defects due to color deviation and customer claim on masking paper. This finding indicates an initial success of incoming inspection to screen out bad materials. This also implies the more tightened nature of the new inspecting method. It should be noted that despite new incoming inspection method put in place since March, defects/ claims in March and April were still high, probably because products produced during this period were made of old raw materials in the stock. (Normal stock level for these two materials is about 1.5-2 months)

- Other types of defects

Illustrated in Figure 6.4 is the statistics showing occurrence of defects other than those caused by color deviation and masking paper.



**Figure 6.4 Other defects before and after implementation**

From Figure 6.4, there is no clear direction of the change in defect rate except for sunken mark that demonstrates somewhat decrease after implementation. There are three possible reasons for this happening.

- The incoming inspection plan for these materials may not be tight enough to detect higher portion of substandard materials.
- There are many other factors causing these kinds of defects. Improving the quality of raw materials alone thus could not solve the problem
- These materials are really of good standard, so there were few problems found.

To really figure out about this issue, a further detailed analysis should be carried out for a certain more period of time. The company may try altering the inspection plan for these materials and observe the amount of defects. If the result greatly changes, then it is clear inspection methods has significant effect and we will have to continue to find the best inspection plan for each particular material. On the contrary, if altering inspection plan does not yield significant change in these defects, it means the root causes of these defects are not from materials, but rather from other factors probably in the process, machinery, or wrong working practice, or any combination of these factors. If this is the case, then more studies will be required to pinpoint exactly the causes.

### **6.3 Summary**

Implementation of the new systems demonstrated an initial success. Results turned out to be in line with expectations. Incoming inspection has been able to capture more substandard materials before entering production. The noticeable consequence has been significant reduction in color deviation defect and problem caused by masking paper.

Suppliers' performance also appeared to have improved in the areas measured. Delivery of masking paper and pigment/dye has greatly improved. Most people in the company expressed satisfaction for the improvement of suppliers' service.