

CHAPTER VIII

CONCLUSION AND RECOMMENDATIONS

8.1 Introduction

The various techniques of product quality improvement employed to the manufacturing area so as to improve the quality of product for the end users. In chapter III, critical quality criteria were selected from the customer complaints record in fiscal year 1997 and then five part number were selected to be implemented FMEA technique. This chapter will summarize the improvement on customer complaint after FMEA implementation.

8.2 Improvement on customer complaint items in manufacturing area

Since FMEA technique has implemented to the selected five part number such as 889-4529, 889-0692, 889-5034, 889-4859 and 889-4941 and data was collected and evaluated which are described in Chapter VII at table 7.1.

FMEA technique started to run to the five selected part number from the second week of December 1997 to the fourth week of February 1998. After that, comparison of the monthly customer complaint items in manufacturing area before and after FMEA implementation was done. Seven months data of customer complaint items in manufacturing area before implementing FMEA technique which is from April 1997 to October 1997 was collected. After implementing FMEA technique, the customer complaint items in manufacturing area for seven months which is from April 1998 to October 1998 was done. Result of that, the evaluation of reduction of customer complaint items in manufacturing area was done and come out 43.76% reduction after implementing FMEA technique.

8.3 Improvement on QAS of quality criteria for selected part number

There are five part number which are selected to implement FMEA technique such as 889-4941, 889-4859, 889-5034, 889-0692 and 889-4529. In table 8.2 show the QAS improvement of each part number according to selected quality criteria from chapter III.

In table 8.1 show the quality criteria which are selected and show what part number is selected for that specific quality criteria consideration.

Table 8.1- Quality criteria and Part number

Selected part number	Selected quality criteria
889-4941	wrong wire color be assembled
889-4859	wire alternation
889-5034	terminal bent
889-0692	wire is out off housing
889-4529	unlocked

Table 8.2- Improvement on QAS for selected quality criteria of selected part number

Selected Part number	QAS Before FMEA implementation				QAS After FMEA implementation			
	Aug	Sep	Oct	Avg	April	May	June	Avg
889-4941	500	533	450	494	0	0	0	0
889-4859	625	500	500	541	200	200	0	133
889-5034	467	800	900	722	83	100	100	94
889-0692	560	533	500	531	0	0	0	0
889-4529	600	500	500	533	0	0	0	0

8.4 Standard procedure after FMEA implementation

After FMEA implementation, standard procedure came out and they are used in Molex Thailand to prevent the same quality criteria that might lead to the customer complaint in the future. Chapter VII show the standard procedures after FMEA implementation which are summarized as following.

8.4.1 Standard procedure for setting up crimping machine: This standard procedure is used to reduce "Terminal bent" , "Wire is out off housing" and "Unlocked"

8.4.2 Standard procedure for preventive maintenance level II and level III: This standard procedure is used to reduce "Unlocked"

8.4.3 Standard procedure for crimping specification and tolerance analysis: This standard procedure is used to reduce "Wire is out off housing"

8.4.4 Standard procedure for tighten sampling plan and reduced sampling plan: This standard procedure is used to reduce "Wrong wire color be assembled" , "Terminal bent" , "Unlocked"

8.4.5 Standard procedure for continuity test: This standard procedure is used to reduce "Wire alternation"

8.4.6 Standard procedure for color cable checker: This standard procedure is used to reduce "Wrong wire color be assembled"

8.4.7 Standard new carton: This standard procedure is used to reduce "Terminal bent"

8.5 Recommendations

8.5.1 In this implementation, some of the potential quality problems have been solved but some of them still pending due to the time constraints and limitation of resources. Therefore, we should gather the common quality problems from major part number and solve it simultaneously. Not just to solve individual part number.

8.5.2 After FMEA implementation and evaluate the first recommend action, it should be continue to reduce RPN until this RPN is less than 50 if RPN is still higher than 50.

8.5.3 In this FMEA implementation, the second high RPN and the third high RPN should be considered as well.

8.5.4 Not only manufacturing area that is improved by FMEA technique but the other activity area should be considered as well such as buy and resell area, application area, warehouse area and marketing area.

8.5.5 In FMEA form should add type of detection method in the form. This can help to implement FMEA more easier and more systematic.

8.5.6 Actually, do it right first time should be promoted rather than tighten the sampling plan

8.5.7 FMEA technique should be implemented by going through main process or problem process rather than going through by product or part number

8.6 Limitations

Basically, one FMEA team can not be a universal team to implement all preventive program. Practically, the resource management is a big issue in harness wire manufacturing and it becomes a limitation issue of FMEA implementation. Human resource and time are the main problem of this program.

According to the high competition in the harness wire business, it is very need to have quick act and fast response to the market. Therefore, product life cycle of each product is not long enough to be able to run FMEA by part number. This is also the limitation of implementing FMEA program.

Because of the nature of harness wire itself in term of pricing. Most of the price of harness is very cheap. The average unit price is not higher than fifty baht, so whatever movement in factory is money and if management contribute in the wrong section, it might not be able to break-even the cost. Consequently, the cost of implementing FMEA become a limitation to implement this program for this business.