



## Quality Control and Inspection Cutting Defect Rates at Nguyen Hoang Garments

Nguyen Hoang Exim Garment Co was established in 1992 as a private company and is located in Hung Yen Province in the North of Vietnam. The company primarily produces work wear and some ladies wear for export and have their own famous brand, Kico Clothing, for the domestic children's market.



Nguyen Hoang employs 500 workers in the factory. The majority of products are exported to EU (in particular Sweden and Denmark) and the USA.

Prior to joining the FIP, Nguyen Hoang management considered that the major issues surrounded quality and (international) competitiveness and they thought that the FIP would address these issues. They were also particularly interested in Modules 1 (Workplace Cooperation) and 7 (Workplace Relations).

As a privately owned company that has grown rapidly, Nguyen Hoang faced a number of challenges concerning quality, productivity and labour conditions and was very enthusiastic to join the FIP.

### INITIAL SITUATION

The production lines were experiencing high defect rates. In 2006, the total defect rate was estimated as being around 20%. This is particularly high, even within developing markets such as Vietnam.

Two issues quickly identified by the quality expert were that the company did not have a testing and inspection plan (TIP) and that in-line quality checks were implemented only very occasionally. As a result the company largely relied on end-of-line quality control checks. In trying to control quality, 100% of product had to be checked twice at the end of the lines, firstly by quality control among the workers / supervisors and again by the workshop quality control personnel prior to packing for shipment. The lack of in-line checking resulted in an abnormally high end of line defect rate and many completed products had to be reworked completely, or rejected due to the late detection of the faults. This results in low productivity as well.

The quality issue was being exacerbated by the fact that the technical instructions for new products / orders were not always clear and detailed enough to prevent the line workers from making common mistakes. As a result the workers needed longer periods to become familiar with new orders.

In addition, management and supervisors were unable to evaluate the problems as the available statistical data was both poor and not analysed.

The FIP team, including the expert, spent some time training the factory's worker / manager Factory Improvement Team in the use of fishbone diagrams and Pareto charts which allowed them to analyse the cost of such a high defect rate.

### FIP RECOMMENDATIONS

The FIP expert responsible for the quality module recommended the following practical steps to improve the quality of production and reduce defect rates:

- The technical department should provide much more detailed measurements and descriptions of the production processes, highlighting any points that are critical to quality, for line supervisors and workers;
- Ensure that revised operational instructions for

new products include notes relating to the most important technical points.

- Any recurring errors should be analysed by the supervisors / and or technical department and distributed to the other workers immediately, once a problem (and its solution) is identified ;
- Develop and distribute a new quality control check sheet;
- Implement in-line quality checks to identify and resolve problems quickly;
- Line supervisors should share experiences with each other and the technical department;
- The company should develop and implement a formal testing and inspection plan.

### ACTIONS TAKEN BY FACTORY

As a result of these recommendations, Nguyen Hoang made some radical improvements to their systems including the development of a formal testing and inspection plan.

The provision of additional and more accurate technical information to the line leaders and supervisors has allowed them to train their teams more easily and helps to prevent workers from making common mistakes.

The factory also introduced regular in-line quality checks to find and fix problems quicker. The in-line quality checks are conducted by the workers themselves, taking place every two hours under normal conditions and more frequently in the first hours of producing a new product. This allows corrective actions to be implemented promptly.

In-line and end-of-line data collection forms have been developed, the relevant data is collected and root cause analysis is used to find causes and solutions for defects.

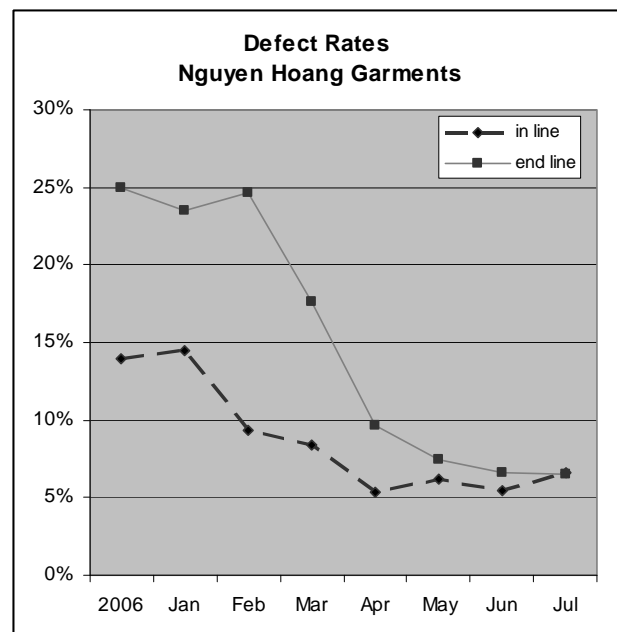
As the actions were implemented the results were communicated to the workers by posting progress and achievements on the notice boards. At first, implementation was undertaken on one line only; as the beneficial impact could be evaluated the changes have been rolled out to the factory's other lines.

### IMPACT OF CHANGES

The implementation of these recommendations by the Nguyen Hoang Factory Improvement Team has resulted in dramatic reductions in in-line and end-of-line defect rates as highlighted in the chart below.

As indicated, **end of line defect rates have dropped from an average of 25% in 2006, to 6.5%**

**by July 2007. In-line defects have fallen from an average of 14% in 2006 to 6.6% in July 2007.** This significant achievement has, in management's view, resulted from participation in the FIP.



In-line checking, which is done for 30% of production, is resulting in lower defect rates and other benefits. The reduction in sampling and rework of product reduces the overall work / time required to complete an order.

The factory now requires fewer staff to be assigned on quality control and the competence of the remaining quality control staff has improved. The workers, who now report problems immediately so that rectification can be applied quickly, are also more confident in their contribution to quality control and overall production improvement.

The most recent output has met all customer requirements, with zero rejections. In addition, the factory is now collecting much more information on the kind of defects that occur so that this information can be analysed to find the causes of the defects. This means that in the future many defects can be prevented before they actually occur. This work will continue throughout and beyond the time of the FIP.

The management's thoughts that joining the FIP would support improvements in quality and international competitiveness have proven correct.