THE APPLICATION OF QRQC METHOD TO SOLVE PROBLEMS AND TO IMPROVE THE PRODUCTION FLUX (1)

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Abstract: *ORQC is a quality management system which aims customer satisfaction through immediate action. The subject proposed will be developed over two parts. The first written work – respectively this - will presented initial situation within a production flow that is sensed in the appearance of defects and nonconformities in obtain the final products. In this second paper we will show the use of this method in a situation that requires elimination of a technological problem appeared in the production flux and in relieving its positive consequence.*

Keywords: QRQC, production flux, quality, improving flux

1.INTRODUCTION

The main objective of this paper is to present one way that were detected and remedied - in a timely manner - defects which appear to achieve a landmark – here in after called control box.

Derived from this main objective, are the following secondary objectives:

- detection of defects during the landmark achievement of the control box;
- highlighting the existing nonconformities;
- application QRQC control method for eliminating these nonconformities identified.

To achieve all objectives were initiated following activities:

- detailed analysis of initial production flow for observing specific problems,
- implementing a control stand to help detect potential problems,
- remedy the problems identified and improve production quality final product.

QRQC respectively Quick Response Quality Control comes from the association of the term Quality Control – which the control of quality – and the term Quick Response – which means a quick response.

So ORQC is a quality management system which aims customer satisfaction through immediate action [1]. This system appeared on the market from the progress needs of large manufacturing companies.

QRQC mission is to focus mainly on issues related to quality, but also to solve many other problems - more broadly – namely technological flow problems, security issues or problems of reliability [2].

2.MANUFACTURING FLOW ANALYSIS

To implement the method for studying QRQC it must first analyzed the entire production flow of the study highlights - control box – with all the stages through which this one passes [3]. Study highlights control box - figure 1 - is made up itself of three components, namely: top cover, side cover and bottom cover - figure 2.

Figure 1. The final piece – control box

2.a. Components top cover, side cover

2.b. Component bottom cover

2.c. Final Kit

Figure 2. Components study highlight

The technological production flow of study highlights control box consists of 17 stages – figure 3.

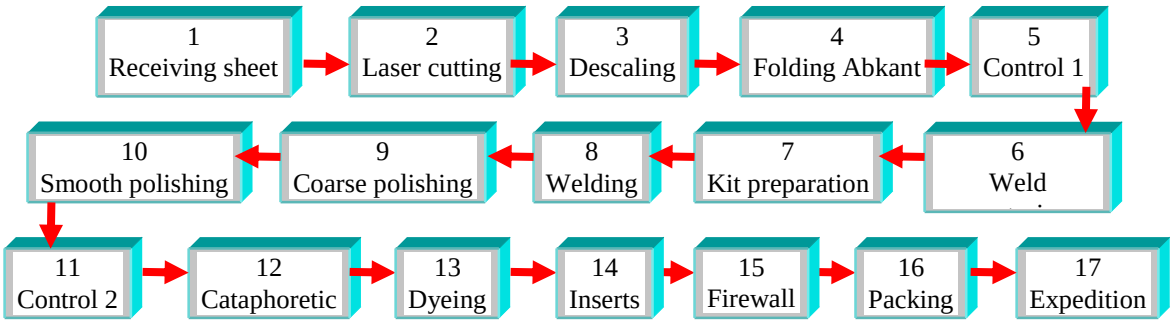

Figure 3. The technological production flow of study highlights control box

The sheet is received (1) and then sent to processing stations. Sheet used in this case is the type DD11 1,5x1500x3000 DECA. Orders for raw materials – sheet – are based on purchase orders received from customers on finished products required - control box.

Further, the sheet is placed in laser cutting machine (2) – with numerical control – Mazak Laser 4000 W, for debiting.

As a result of laser cutting of sheet metal, on the edges appears calamine – because heat emission. Calamine must be removed respectively by the descaling (3), the polishing action that is achieved.

In the next stage of the manufacturing, the sheet is bent – folded at the odds established (4). Folding machine is of type Duma AS-S 2060 that has a power output of 400 tones. To achieve the necessary components required, folding machine is set to a capacity of 10 tones force.

In control step 1 (5), visual inspection of the components is achieved, which aims: check quotas achieved after laser cutting, removing calamine and folding abkant.

The 3 components continues its way – in three different containers – to warehouse welding (6) where the kit will be ready in order to apply the weld(7). After completing the first stages of manufacture, the 3 components of the final work piece therefore meet to form the final assembly kit or to weld them together.

Then follows the welding operation (8). This is accomplished initially through welding point, in order to achieve perfect alignment between the edges of the components, and then operation is complete with the aid of welds.

Following the welding step, the edges of the piece remains and a new translation excess weld that is required to be removed in the next step. The removal is performed using an angle grinder, in the coarser grinding stage (9).

After coarse grinding stage, there will be a fine grinding (10). This operation serves to remove and smooth out even the smallest surface imperfections.

It follows another step of visual control 2 of the piece obtained (11), to ensure that the previous steps have worked out well and has been obtained conformity piece.

Landmark obtained is then introduced into a cataphoresis bath (12). During the cataphoresis, the part is immersed in several treatment baths. These baths are designed to clean and treat the surface of the kit. At the end of this stage the piece will be placed in a bath of primer.

After the cataphoresis, follow dyeing is part (13). The kit is caught in a conveyor hook that crosses the dyeing section. The operation of dyeing is done with powder paint.

The following operation requires fixing inserts (14) in special places intended them. Thus, are attached sixteen inserts to the kit obtained typeM4 and M8 type, which are mounted at this stage of the flow.

Stage called firewall (15) is the final check and consists in making a more elaborate control of the kit or of the qualities of surfaces, paint and presence of inserts.

The penultimate stage of the process flow consists of packaging and storage (16) finished parts. Packaging is done in special plastic sheets that are designed to protect the surfaces of parts of any adverse events and parts storage is in containers with a capacity of 100 pieces and transporting them safer.

The last step consists in loading trucks and shipping containers (17) to their customers.

3.MODALITY OF DEVELOPMENT ANIMATION ORQC

In the case analyzed in order to increase the treatment capacity of the issues raised will be acted on line to [4]:

- quality of problem solving,
- the number of problems solved,
- the speed problem solving.

So in this case the application QRQC performed sequentially increasing the speed of problem solving, increasing the number of problems solved and optimal quality solutions used.

To ensure the quality of problem solving are necessary:

- compliance cycle systematic and rigorous application process QRQC.
- limiting the number of problems solved - that can ensure a better quality of their resolution.
- skills development actors involved in solving problems in order to implement effective action to eliminate the causes of the problems and to make better use of implementation instruments.
- assigning responsibilities in solving problems at an appropriate level so that the initiator can respond quickly and effectively the root causes.
- continuous assessment of treatment efficacy issues to identify casual elements of difficulties and obstacles encountered.
- avoid the problems already solve to reappear.

To ensure the increasing numbers of problems solved are required:

- increased frequency in resolution, making this activity daily,
- increased time spent pursuing the flow,
- distinguishing new of the old ones problems to identify the causes of recurrence and to treat them,

- distribution problems between all players involved for maximum problems are scheduled to be resolved.

To increase the speed of problem solving are necessary:

- to be treated as soon as possible a problem and move on to solving other problems,
- protection as customer better and faster so it will not let the problem get to it and reduce the impact of finishing work,
- analyzing target area – workshop, department – by proximity indicators that allow immediate visualization of improvement,
- choosing the best responsible for problem solving,
- improving cooperation between manufacturing and support functions to increase mastery product/production process by all participants and for faster orientation to the true causes,
- capitalization of the information obtained to avoid restarting from zero when there is a similar problem or already known,
- sharing the same tools work to focus on the nature of the problem and not on the form,
- mobilize people around the issue to ensure that it will be recognized by all participants as a priority.

Once these principles have been established, proceed to their formalization and implementation of the following steps [5]:

a. Convening a meeting at senior management level, which will provide the reference, which is intended to be the exemplary meeting of the company and that will enable a quick and accurate identification of all issues.
b. Implementation in the departments and in the workshops manufacturing.
c. Implementation of rules flow problems solved between production levels.
d. Implementation of capitalization system.

QRQC animation is divided into 3 distinct sequences, which is articulated around a meeting that takes 30 minutes into a day. These are:

Sequence 1 – it occurs before the meeting and consists in selecting a problem and the individual pilot.

Sequence 2 – takes place during the meeting and involves the 4steps:

- Step 1 - consists of the submission of the results obtained up to that point,
- Step 2 - refers to the general presentation of the problem of the day,
- Step 3 – containing the presentation of the solution problem solving for the day,
- Step 4 – represents presentation of the conclusions and closing meeting.

Sequence 3 – occurs after meeting and refers to the implementation of the solution of the problem of the day.

4.FIRST CONCLUSIONS

The key points in QRQC application in this case study was to:

- daily implementation and as rigorous of decisions,
- involvement hierarchy, starting with senior management,
- presence and cooperation from departments,
- continuous improvement of skills of the staff involved,
- application of reactivity as a basic principle.

To obtain performance in QRQC meeting, comply with the following:

- The work should be carried out every day at a time prescribed and must become a priority activity, being piloted by higher hierarchical level [6].
- There shall be those responsible involved in dealing with problems - and from manufacturing, engineering, quality, maintenance, logistics - with a clear definition of roles for each.
- Treatment of the problem by a single pilot.
- Respecting a timeline same every day regarding the conduct of the 4 stages of the meeting.
- Closing the problem solved after achieve the objectives from one month of the start of the analysis and verification of standardization solutions applied.
- Continuous improvement manufacturing process flow by involving hierarchy and improving skills of participating members in the meeting dealing with problems.
- Developing a capitalization process solutions and information obtained, which made accessible to all members of the firm.

In next paper, we will identify the problems that arise in the production flow. Also, we will present the effective implementation of QRQC method to eliminate these problems and applying solutions to solve and eliminate the scraps.

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