Planning Control of Dynamic Systems Manufacturer's Radiators

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Abstract: - Control of dynamic processes is a team approach to understanding the depth and control the manufacturing process of radiators. Experience teamwork, analytical tools, knowledge and planning are used to fix a product of scientific knowledge. Process controls are developed and implemented from the system of scientific knowledge. Purposes of the dynamic processes are to develop a manufacturing process capable of producing high quality products at a competitive cost, according to a schedule of deadlines set.

Key-Words: - Control plan, radiator manufacturing, capability, implementation.

1 Introduction
Manufacturing all the components for automotive industry requires a stable process and a continuous interaction between the processes of product design, process design and production processes. This can be done through an open document whose evolution will be presented next.

2 Notation and terminology
FMEA - Failure Mode and Effect Analysis
PFMEA - Process Failure Mode and Effect Analysis
Cpk - Coefficient capability of processes

3 Implementation

3.1 What is expected?
All processes must provide all of the specification of the production. If these expectations are not meet, there must be a plan to correct the problem and protect the client. Significant features should be in state of statistical control with $P_{pk} \geq 1.67$ and $C_{pk} \geq 1.33$.[1] Dynamic control is applied to all features, functions not only critical of the process.

3.2 Who is part of the team?
Interdepartmental team of staff paid on an hourly worker or go to complete the process. Is required for all operations related to the manufacturing plants of all cars and suppliers.

3.3 Who approves?
Forms (dynamic control plan) must be signed / approved by a representative of the development team, product engineer, engineer and supplier development is appropriate to be signed by the factory uses.

3.4 When implemented?
Initial implementation of dynamic control plan must coincide with the approval process of production. The team exists on the life of the product. Upgrading and improvement tasks are current team.

3.5 What is the method?
- People in the original production clients. Apparent success in working instructions useful, effective control and reaction plans trustworthy.
- Working in teams is crucial. Teams design and implementation consisting of people from production, product engineers, manufacturing engineers, customers, suppliers and any others that the team needs. Strong support from senior management is necessary to ensure team success. Dynamic Control is focused on the production process, from raw material to assembly. Product and process characteristics are considered together for each manufacturing operation. The dynamic control act both to develop new manufacturing processes and to optimize existing ones.
- Control-oriented dynamic content. The team should strive to build and use knowledge effectively. The documents are simply the way in which knowledge is recorded and shared.
4 Data entry of dynamic control plan

4.1. Points of entry
- Team
- Questionnaire
- Helpful Information
- Flow Chart of Process
- The measurement
- Process Capability
- Matrix characteristics [2]
- Type characteristics
- The operations
- Process FMEA
- Policy Control
- Classification of control

4.2 Knowledge of manufacturing process
The most important task on which they assume the team is to gain and document an understanding of the manufacturing process. All other tasks depend on the success of this activity. The team must:
- Set the contents of a questionnaire;
- Gather important reference documents, such as analysis of design failure modes and effects (DFMEA)[3] and Process FMEA.[4];
- Define how the process and product characteristics flow together;
- Identify sources of variation.
Set measurement systems to support investigations where there are gaps in knowledge
- Set targets and tolerances;
- Identify sources of variation.
It is important that the team should consider the route change and work for filling gaps in knowledge (figure 1).

4.3 Capability Determination
The team must (figure 2):
- Set measurement capability
- Use the measurement to check the result of
- Supervise whether each step is carried out in accordance with the objectives and the tolerances that you specified team.
- Make corrections to the problems of process capability and establish countermeasures
- Ensure that when a single production process produces a family of parts, the process is able to field all pieces of the family.

Fig. 1 Understanding of the manufacturing process
Fig. 2 Verification capability
Fig. 3 Manufacturing process capability
4.4 Development control
Effective control of the process is based on:
- The relationship between features and process steps;
- Measurement and process capability;
- Effects on characteristics of both conditions in and outside the specifications;
- Methods of control that apply changes / goals away in the specifications and / or causes of defects;
- Controls to prevent current and / or detect failure modes;
- Illustrations, instructions and plans side operating effectively.

Monitor and react to changes product / process innovation.
The dynamic control is an important tool for managing change. The team must continue to meet regularly to respond to changes.

5 Conclusions
Manufacturing parts with automotive destination require additional requirements in terms of manufacturing. Such manufacturing systems require high degrees of accuracy and complexity. The method presented in the paper above indicates a reliable way to solve problems in shortest time and with greater efficiency and effectiveness possible, starting from the concept of advanced planning product quality and processes. The existence of forms “open”, implementation, monitoring and continuous improvement made possible the concept of predictability of any defects, correct processes before production of parts with potential defects reducing manufacturing costs.

References: