Quality and Reliability that Set the Industry Standard: Hussmann New Product Development

Hussmann’s commitment to providing customers with world-class, high-quality products, systems, and services permeates the entire organization. You’ll see it demonstrated in our corporate offices, manufacturing plants, branch offices and operations, as employees work towards continual improvement, making quality a priority at every level, and challenging the status quo to develop solutions that surpass customer expectations.

In Hussmann’s New Product Development area, a number of processes have been implemented to help ensure robust products are delivered to our customers. These processes include Lean Product Development, Design for Reliability and Advanced Quality Planning.

**Lean Product Development**

Lean Product Development strives to eliminate waste in all parts of the product and process, while ensuring that customer value is delivered. It includes using best practices and standard processes, developing competencies in our employees, driving learning and continuous improvement and proactively resolving issues. Benefits realized from using Lean Product Development include improved product quality, lower costs and faster delivery of new products to market.

**Design for Reliability**

Design for Reliability is a set of tools that support product and process design from the concept stage through to product obsolescence. The process describes the steps an organization needs to follow in order to design reliability into its products. Design for Reliability is geared toward achieving high long-term reliability by identifying design issues early in the development phase before a product reaches the customer.

One tool used in Design for Reliability is Failure Modes and Effects Analysis (FMEA). This systematic technique for failure analysis was originally developed around 1950 to study problems that might arise from malfunctions of military systems. Now widely used in manufacturing industries, the FMEA process provides a documented method for selecting a design with a high probability of successful operation and safety.

The FMEA process involves reviewing as many components, assemblies, and subsystems as possible to identify failure modes based on experience with similar products and processes; looking at the causes, or why the failures might occur; and the consequences of those failures, including their impact on customers. Failures are prioritized according to how serious their consequences are, how frequently they occur and how easily they can be detected, with the objective of taking actions to eliminate or reduce failures. Hussmann uses a process of risk prioritization based on “New, Unique, Difficult (NUDs)” items. Key NUDs are initially identified by the project team. During development testing, the NUD list is expanded to include other key elements in a case design, including the air and cooling system, electronics and wiring, as well as all structural components.

Once the potential failures are identified and actions are taken to reduce the risks, FMEA is used to evaluate results of the actions. The knowledge gained from the FMEA analysis is leveraged for use in future risk analysis activities of cases and components.
**Advanced Quality Planning**

Advanced Quality Planning (AQP) is a process developed in the late 1980s by a commission of experts gathered from the 'Big Three' US automobile manufacturers: Ford, GM and Chrysler. The structured method defines and establishes the steps necessary to ensure that a product satisfies the customer. AQP works to ensure quality through the use of work practices, tools, and analytical techniques and initiates quality controls to mitigate risks. It consists of 75% up front planning and 25% implementation, with all of the five major activities occurring prior to the start of manufacturing.

1. **Planning and Defining the Program**: Designed to ensure that customer needs and expectations are clearly understood; includes the development of design and reliability goals, a preliminary bill of material, a process flow chart, a list of special product characteristics and a product assurance plan.

2. **Product Design and Development**: Encompasses a thorough review of product design engineering requirements including tooling, facilities required and testing equipment; establishes a consensus on key product characteristics.

3. **Process Design and Development**: Ensures that customer expectations and design requirements are carefully incorporated into the manufacturing process; includes a product quality system review, process flow chart, characteristics matrix, pre-launch control plan and measurement system analysis plan.

4. **Product and Process Validation**: Includes a manufacturing assessment build (MAB), measurement systems evaluation, preliminary process capability study, production part approval, validation testing, control plan and quality planning.

5. **Feedback, Assessment and Corrective Action**: Designed to reduce variation, ensure customer satisfaction and provide documentation.

Advanced Quality Planning offers several benefits in New Product Development. It focuses resources on specific project tasks and goals leading towards customer satisfaction; improves communication between customers, project teams and suppliers; identifies issues early when they are easier and less expensive to resolve, avoiding post-launch changes; and helps ensure on time delivery of a quality product at the lowest cost.

Use of Lean Product Development, Design for Reliability and Advanced Quality Planning enables the Hussmann New Product Development team to provide world-class equipment that exceeds customer expectations, and exemplifies Hussmann’s continued commitment to **Quality and Reliability that Set the Industry Standard**.