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Orientation Training Program

What is “APQP”?

“Advanced Product Quality Planning”

Advanced Product Quality Planning (or APQP) is a framework of procedures and techniques used to develop products. It is quite similar to the concept of Design For Six Sigma (DFSS).

It is a defined process for a product development system for General Motors, Ford, Chrysler and their suppliers. According to the Automotive Industry Action Group (AIAG), the purpose of APQP is "to produce a product quality plan which will support development of a product or service that will satisfy the customer." The process is described in the AIAG manual.

History

Advanced Product Quality Planning 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. This commission invested five years to analyze the then-current automotive development and production status in the US, Europe and especially in Japan. At the time, the success of the Japanese automotive companies was starting to be remarkable in the US market.

APQP is utilized today by these three companies and some affiliates. Tier I suppliers are typically required to follow APQP procedures and techniques and are also typically required to be audited and registered to ISO/TS 16949.

The APQP process is defined in the AIAG's APQP Manual, which is part of a series of interrelated documents that the AIAG controls and publishes. The basis for the make-up of a Process Control Plan is included in the APQP Manual. These manuals include:

- The FMEA Manual
- The Statistical process control (SPC) Manual
- The Measurement Systems Analysis (MSA) Manual
- The Production Part Approval Process (PPAP) Manual

The Automotive Industry Action Group (AIAG) is a non-profit association of automotive companies founded in 1982.

Main content of APQP

APQP serves as a guide in the development process and also a standard way to share results between suppliers and their customers. APQP specify three phases: Development, Industrialization and Product Launch. Through these phases twenty-three main topics will be monitored. Most of these 23 topics will be all completed before the production is started. They cover aspects as: design robustness, design testing and specification compliance, production process design, quality inspection standards, process capability, production capacity, product packaging, product testing and operators training plan between other items.

APQP focuses on:

- Up-front quality planning

- Determining if customers are satisfied by evaluating the output and supporting continual improvement

APQP consists of five phases:

- Plan and Define Program
- Product Design and Development Verification
- Process Design and Development Verification
- Product and Process Validation
- Launch, Feedback, Assessment & Corrective Action

There are five major activities:

- Planning
- Product Design and Development
- Process Design and Development
- Product and Process Validation
- Production

The APQP process has seven major elements:

- Understanding the needs of the customer
- Proactive feedback and corrective action
- Designing within the process capabilities
- Analyzing and mitigating failure modes
- Verification and validation
- Design reviews
- Control special / critical characteristics.