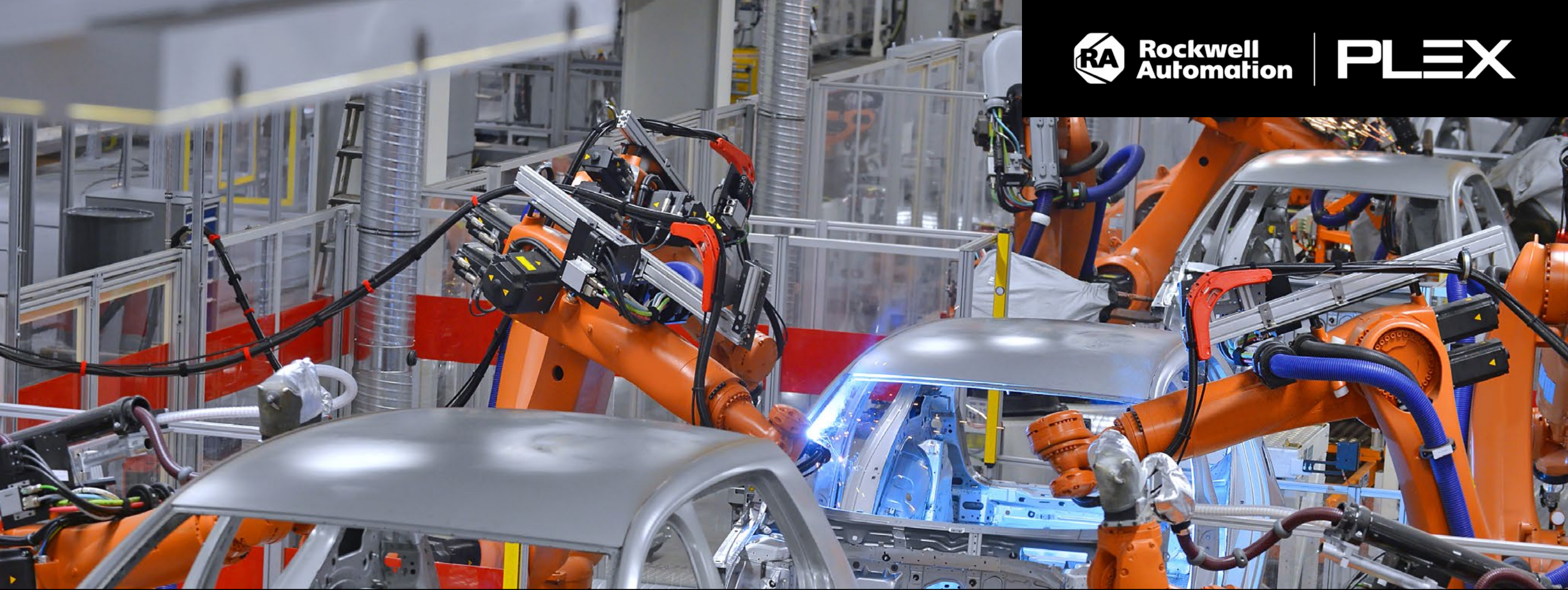




Rockwell
Automation

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EBOOK

WHAT ARE THE DIFFERENT TYPES OF QUALITY MANAGEMENT SYSTEMS (QMS)?



Introduction

There are many different types of quality management systems (QMS) available for manufacturers looking to create a plan to improve results, track progress, and increase quality. The type of QMS you need varies depending on the industry and specific goals of your business. As with everything, you'll want to do your research before you get started implementing a QMS. In this article, we're going to take a look at:

1

**The different
methods of
quality control**

2

**Types
of QMS**

3

**How to combine
different types
of QMS to create
a cohesive system**

We'll also help you identify which QMS type will help you drive your business forward and set realistic goals and expectations.

1

METHODS OF QUALITY CONTROL AND QUALITY ASSURANCE

Quality is essential for a business to succeed, and there are two primary ways of managing quality – quality control and quality assurance.

Quality control is the process of inspecting your products and services to ensure that industry standards and customer requirements are met. This can be done through feedback, factory inspections, and a 100% inspection system. Quality assurance involves carrying out quality checks at specific stages of the production process. This helps businesses identify faults and substandard products early on and resolves them before they go out to customers.

There are several different methods of quality control and quality assurance that businesses can incorporate into their QMS:



Supply Chain
Management
(SCM)



Statistical
Process Control
(SPC)



Failure Mode &
Effect Analysis
(FMEA)



Advanced Product
Quality Planning
(APQP)

SUPPLY CHAIN MANAGEMENT (SCM)

Supply Chain Management (SCM) is the handling of the flow of goods and services from manufacturing through to the consumer. This process is important for organizations that have a network of suppliers. Supply Chain Management is important because it plays a significant role in customer satisfaction, helping businesses deliver higher quality products and services. It can also help reduce operating costs and increase the scale of profitability.

There are six key components of Supply Chain Management:

1

PLANNING

Considering whether
you manufacture
or buy domestically
or internationally

2

SOURCING

Identifying, evaluating,
and building relationships
with your suppliers

3

DEMAND/ INVENTORY

Managing
your inventory and
manufacturing
schedules to meet
customer demand

4

PRODUCTION

Ensuring the
efficiency and quality
of production

5

WAREHOUSE & TRANSPORTATION

Ensuring products
are stored and delivered
effectively

6

RETURN OF GOODS

Ensuring an effective
returns process
to increase customer
satisfaction

By incorporating these six components into your organization you can provide effective Supply Chain Management and quality control.

STATISTICAL PROCESS CONTROL (SPC)

Statistical Process Control (SPC) is an industry-standard methodology for measuring and controlling quality in manufacturing. Data in the form of Product or Process measurements is collected in real-time and added to a graph to pre-determine control limits. These control limits are determined by the capability of the manufacturing process and are used as an indication of normal operations. If data falls outside the control limits, this identifies that an assignable cause is likely the source of production variation, and something within the manufacturing process needs changing in order to fix the issue before defects occur.

The benefits of using SPC as a form of quality control are:



**REDUCTION
OF WASTE**



**IMPROVED
PRODUCTIVITY**



**REDUCED
COSTS**



**INSTANT REACTION
TO PROCESS
CHANGES**



**REAL-TIME DECISION
MAKING ON THE
PLANT FLOOR**

FAILURE MODE & EFFECT ANALYSIS (FMEA)

Failure mode & effect analysis is a common analysis tool used for identifying possible failures in a design or a manufacturing or assembly process. “Failure modes” mean the ways, or modes, in which something might fail, especially if it could directly impact the customer. “Effect analysis” involves studying the consequences of those failures in order to take preventative action.

Failures are prioritized according to how serious the consequences will be, how frequently they occur, and how easily they are detected.

The purpose of the FMEA is to help eliminate the risk of failures, starting with the ones that are most damaging to businesses. FMEA also documents current knowledge and actions about the risk of failure, helping businesses foster a culture of continuous improvement.

Organizations should look to use FMEA if:



A process, product,
or service is being designed
or redesigned, after
**QUALITY FUNCTION
DEPLOYMENT (QFD)**



An existing process,
product, or service
is being applied
IN A NEW WAY



There's an expectation
to develop control
plans for a
**NEW OR MODIFIED
PROCESS**



FAILURES
of an existing process,
product, or service
**NEED TO
BE ANALYZED**



**IMPROVEMENT
GOALS** are planned
for an existing process,
product, or service

Organizations should use FMEA periodically throughout the life of processes, products, and services to ensure certain quality standards and levels of customer satisfaction are continuously met.

ADVANCED PRODUCT QUALITY PLANNING (APQP)

Advanced Product Quality Planning (APQP) is used by organizations to assure quality and performance through planning. It's a structured process aimed at ensuring customer satisfaction with products and services. APQP provides a framework that's a standardized set of quality requirements for suppliers to follow when designing a product, with the primary goal of facilitating communication and collaboration between engineering activities. APQP translates the needs of customers into technical specifications for new products.

The advantages of using APQP software include:



**DIRECTING RESOURCES
BY SEPARATING THE VITAL
FROM THE TRIVIAL**



**EARLY IDENTIFICATION
OF CHANGE**



**AVOIDING LATE CHANGES BY
ANTICIPATING FAILURE AND
TAKING PREVENTATIVE ACTION**



**ON-TIME QUALITY PRODUCTS
AT THE LOWEST COST**



**MULTIPLE OPTIONS
FOR MITIGATING RISKS**



**IMPROVED COLLABORATION
BETWEEN DESIGN OF THE
PRODUCT AND PROCESS**



**IMPROVED DESIGN
FOR MANUFACTURING
AND ASSEMBLY**



**LOWER COST SOLUTIONS
IDENTIFIED EARLIER
IN THE PROCESS**



TYPES OF QUALITY MANAGEMENT SYSTEM STANDARDS

The different types of quality management systems vary depending on the industries they are being used in and the role that is required of them.

The ISO family of quality standards are the most common types of quality management system used in many industries. There are certain accreditations and standards which are more applicable to specific industries, and the most common management systems used across the different industries are:

- ✓ **All industries:**
ISO 9001
- ✓ **Automotive:**
IATF 16949
- ✓ **Medical device:**
ISO 13485
- ✓ **Food:**
ISO 22000
- ✓ **Services:**
ISO 2000000
- ✓ **Aerospace:**
AS 9100D

If you would like more information on the types of quality management system used in different industries and the end-end benefits they can bring to your organization, you can find more information on our [quality management system by industry page](#).

P D C A

PLAN-DO-CHECK-ACT

The Plan-Do-Check-Act is a requirement in ISO 9001, one of the most common standards used by quality management systems across a variety of industries.

It is a cyclical framework that can be applied to all internal processes and helps organizations ensure that they're delivering the highest possible quality to their consumers.



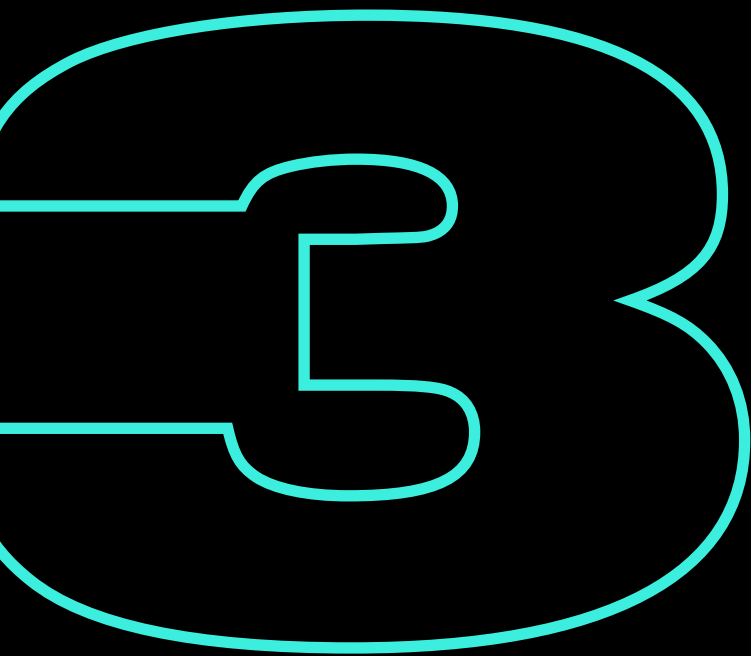
Planning is a vital part of quality control. It starts with identifying the requirements of parties interested in the QMS, which is then used to define the scope of the QMS and the QMS processes. Planning needs company leaders to be committed to driving the organization to a customer focus by defining the organizations' roles and responsibilities and establishing a quality policy. This gives the overall QMS a fixed direction. The planning process also includes identifying and addressing potential risks, setting quality objectives, and planning for changes to support continual improvement. The final step is to implement the support structure that will allow you to carry out your plans.

It's important you know how to properly execute your plan once it's completed. Controls should be identified for quality management operations, product or service requirements need to be considered, designs developed, and controls need to be placed on any externally provided processes, services, and products. The do section involves considering all the activities of creating and providing products or services for customers and what is required to deliver maximum quality.

This involves checking the processes of the quality management system to ensure everything is functioning as planned. You should monitor, measure, analyze, and evaluate internal processes and the products and services you deliver to consumers to guarantee you are delivering the intended quality standards and customer satisfaction is being met. Internal audits are a reliable method for checking the effectiveness of the QMS. The management review process reviews and assesses all the monitored data to make changes and plans to address certain issues. The process is another successful way of analyzing the effectiveness of the system.

Action involves fixing any issues found in the check step. Improving internal processes and eliminating the causes of actual or potential nonconformities are the overall goals for this step.

This process is repeated to ensure that potential issues identified in the 'Check' phase or corrective actions taken in the 'Act' phase are incorporated into planning and meet the updated requirements in the 'Do' phase.



HOW TO COMBINE THE TYPES OF QUALITY MANAGEMENT TO CREATE A COHESIVE SYSTEM

The different types of quality management standards require a ‘system’ for them to maintain all the above quality components cohesively.

A modern quality management system involves an efficient digital format that stores different ‘modules’ so that companies can meet and maintain those important quality standards and accreditations.

The modules included in a software-based quality management system include:

1

DOCUMENT CONTROL

All the quality documents, policies, and procedures which get used by employees to document, organize, and track internal processes.

2

EQUIPMENT AND ASSET MANAGEMENT

Manage the equipment and assets that are tightly connected to producing or moving goods and delivering quality service to customers.

3

CAPA MANAGEMENT

It's ideal that corrective and preventative actions (CAPA) are included in the quality management system. Tracking and implementing CAPA is critical to continuous quality improvement.

4

INTERNAL AUDITS

A good quality management system maintains version control and audit trails of all documents and interactions. Auditors use this information to monitor processes and actions that are implemented on a daily basis.

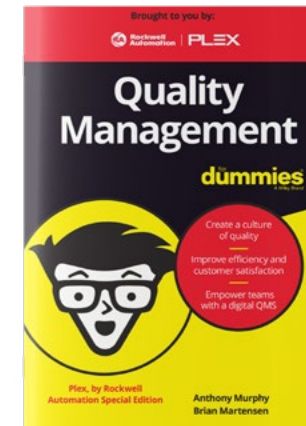
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INTEGRATED DASHBOARD AND ANALYTICS

Digital quality management systems automatically aggregate and compile quality data in a way that can be easily displayed and tracked. This can be used to predict quality over time and improve internal processes.

This article has covered the different methods of quality control, ISO standards between industries, and how to use these to create a cohesive quality management system.

If you would like more information on quality management systems, start with the comprehensive QMS guide for manufacturers.



Quality Management for Dummies.

DOWNLOAD