Improvement in Quality of Valves by ISO 9001-Quality Management System

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Abstract— Manufacturing problems are very crucial, needs vigilant and immediate attention otherwise it damages to company's not only profit margins but also reputation. Quality Management includes quality assurance and control, is very necessary technique to maintain and continuously improve quality of product and processes. Manufacturing organization applies various quality control techniques to improve the quality of the process by reducing its variability in products. Out of many techniques used to improve quality, ISO 9001 requirements are very well known and widely used for standardization and process improvement. Our research is in Valve manufacturing company and the gap analysis against the ISO 9001 requirements is conducted to identify various improvement points in various departments to improve the manufacturing process. The effective implementation of such an ISO 9001 Quality Management System (QMS) in this manufacturing company requires a proper implementation of the ISO 9001 system to allow companies to improve the way they operate, by this means increasing profitability and market share, producing innovative and sustainable industrial valves, or improving employee's knowledge and increasing customer satisfaction.

Key words: Quality improvement, Plan Do Check Act (PDCA), ISO 9001, Gap analysis, Process improvement

I. INTRODUCTION

Small business is the world's biggest business. More than 95 % of the world's businesses are small to medium sized and many countries look to small and medium businesses to power economic growth and employment. Therefore, International Standards need to assist small business just as much as they do global enterprises, government and society at large. In particular, small and medium sized enterprises (SMEs) should be able to share in gains in efficiency and effectiveness offered by ISO 9001.

A quality management system is the way your organization directs and controls those activities which are related either directly or indirectly to meeting customer requirements. Broadly, it consists of your organizational structure together with the planning, processes, resources and documentation that you use to achieve your quality objectives, to meet your customers' requirements and to provide improvement of your quality management system and thus eventually improvement of your products.

The requirements of ISO 9001 are generic and are intended to be applicable to all organizations, regardless of their type, size and product provided. However, we have chosen to use the term "organization" to reflect the broad application of ISO 9001, including to non-profit organizations.

This standard, which gives the requirements for quality management systems, is among ISO's most well-known and widely implemented standards ever. ISO 9001 is used in some 176 countries by businesses and organizations large and small, in public and private sectors, by manufacturers and service providers, in all sectors of activity to achieve company objectives.

This research has been developed to assist organizations and individuals planning to implement the ISO 9001:2008 Quality Standard. The project will address the basic concepts of quality, the requirements of the ISO 9001:2008 Standard and the importance of the management's role in implementing a Quality Management System Outline:

- Detailed review of the ISO 9001:2008 quality management system standard and its applications.
- Discussion of the strategies for improving quality and how to establish a project.

The Plan-Do-Check-Act methodology to understand a process approach to ISO standard. The introduction helped to build reinforce effective techniques for implementation of ISO standards for planning, preparation and performance. It also helped to understand how to complete implementations based on the requirements of ISO 9001:2008 Outline:

- Concepts of Quality assurance and systems
- An overview of ISO 9001:2008 standard
- Analysis of quality system documentation
- Objectives of internal audits
- Types and aims of assessments
- Planning and preparation techniques/procedures
- Performing the internal audit
- Classification/ reporting of finding

II. QUALITY MANAGEMENT SYSTEM

A. *Eight Principals:*

1) Customer focus
2) Leader ship
3) Involvement of people
4) Process approach
5) System approach to management
6) Continual improvements
7) Factual approaches to decision making
8) Mutually beneficial supplier relationships

B. *Eight Clauses:*

1) General
2) Application
3) Normative references
4) Quality management system
5) Management responsibilities
6) Resource management
7) Product realizations
8) Measurement, analysis and improvement

Quality is very important and strategic component of competitiveness. ISO 9001 has many benefits that's make it necessity to every organization to sustain in the present market condition. In year 2010 more than one million companies and organizations with certified QMS according

to standard ISO 9001. Europe and Far East regions are most engaged in quality management from perspective of ISO 9001 recognizing quality management as strategic tool for improving process, accessing foreign market and increasing competitiveness. (Janis Priede 2012)

According to Casadesus, Heras and Ochoa (2000), perceptions of the benefits of ISO 9000 have eroded over the last few years in spite of the changes and improvements supposedly provided by the latest version of the standard. However, many studies have suggested that organizations certified for longer periods of time tend to garner greater benefits than more recently certified organizations because they have had more time to integrate improvements derived from ISO 9000.

The research results showed empirical research out of 502 Spanish companies to determine the benefits and they get out of this 65% of these companies had obtained very high level of internal and external benefits. And also 96% companies considered these as a good system of quality assurance.

ISO 9000 quality systems have been developed to provide necessary conceptual and structural input for fulfilling customer need by ensuring consistent and desired product quality. It is necessary to have implementation plan, the success of which depend of top management to the workers involvement from the beginning. They started from the top management involvement, training, documentation, continuous review, employee's involvement, awareness, internal quality audit, and quality improvement studies, last was certification audit and continues follow-up for quality improvement. (Ashok Sarkar 1998)

Literature study reveals that the researcher have carried out the following outcomes,

- ISO 9001 is a strategic component for the global competitiveness.
- ISO 9001 recognizing quality management as strategic tool for improving process, accessing foreign market and increasing competitiveness.
- In QMS product quality improvement necessitates process quality improvement.
- Integration of ISO 9001-2000 requirement with 5S principles would lead towards TQM.
- QMS is tool used for ensuring consistent and desired product quality.

In QMS context, gap analysis is a tool that helps a company to compare its current / actual performance with its standard requirement. At its core are two questions: "Where are we?" and "Where do we want to be?" If a company or organization is not making the best use of its current resources, then it may be producing or performing at a level below its potential. This concept is similar to the base case of being below one's production possibilities frontier.

The goal of gap analysis is to identify the gap between the current system and the QMS system requirement. This helps provide the company with insight into areas which could be improved. The gap analysis process involves determining, documenting and approving the variance between QMS requirements and current capabilities. Once the general expectation of performance in the industry is understood, it is possible to compare that expectation with the company's current level of performance. This comparison becomes the gap analysis. Such analysis can be performed at the strategic or operational level of an organization.

III. IMPLEMENTATION PHASE

First of all quality control plan is need to prepare and accordingly necessary actions will be carried out during various processes, it is also necessary to understand the interaction between various manufacturing processes in plant.

After studying the Process flow quality control actions have been identified where improvement is ceases.

First of all Prepare quality control plan for incoming material, in process material and finish product. Set different parameter for sampling, acceptance and rejection. Mention it in proper ways of documentation or formats with nos.

Set targets or called as Quality objectives of organization. We can also give each department targets and measure it periodically so that we can takes necessary actions if needed.

Set roles and responsibility of each of the department and each person who engaged. Make reports in each of the department as per the ISO principles and clauses which fulfill the whole requirement and give all the details when needed.

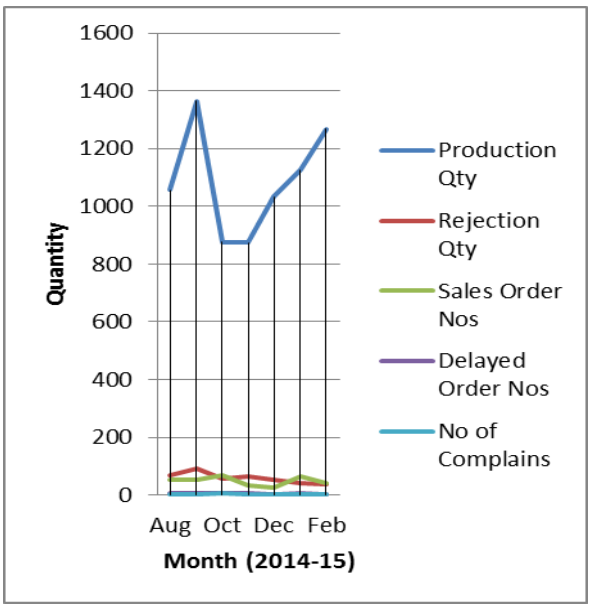
Give proper training and knowledge of documentation who is responsible in each department.

Select some employees for the checking whether the system working as per the ISO requirements once in a six month. Start minutes of meeting once in six month and discuss the objectives and the improvements in each process.

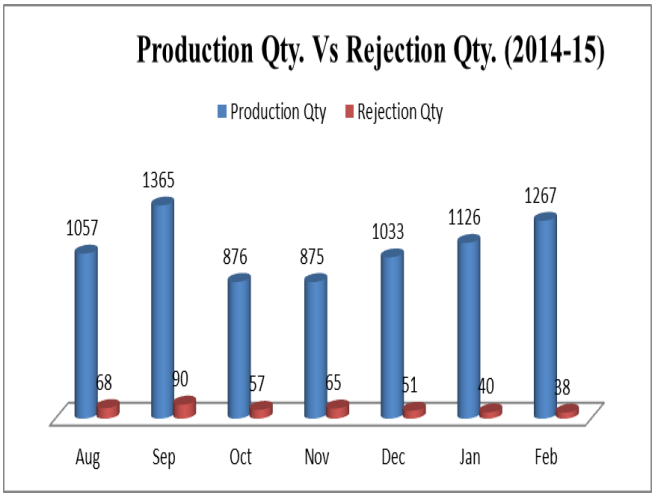
Take necessary corrective and preventive action on the non-conformity raise by the internal audit. Find out the reason for this and solve this problem by why-why analysis root cause analysis, PDCA cycle or any other techniques.

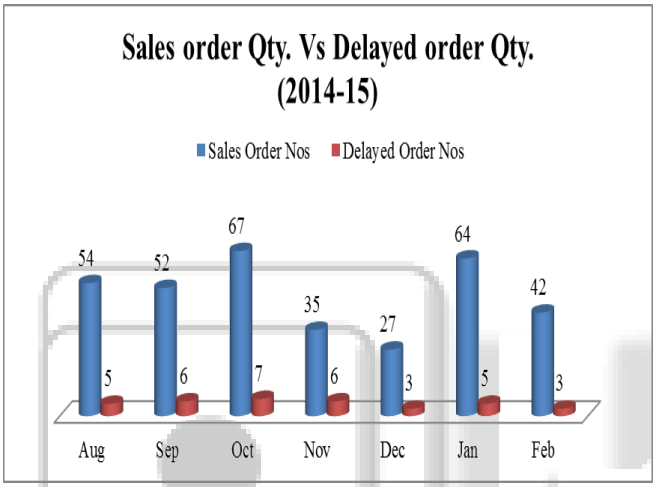
Here we have collected some of the data in our company before the implementation, in process implementation and final implementation phase.

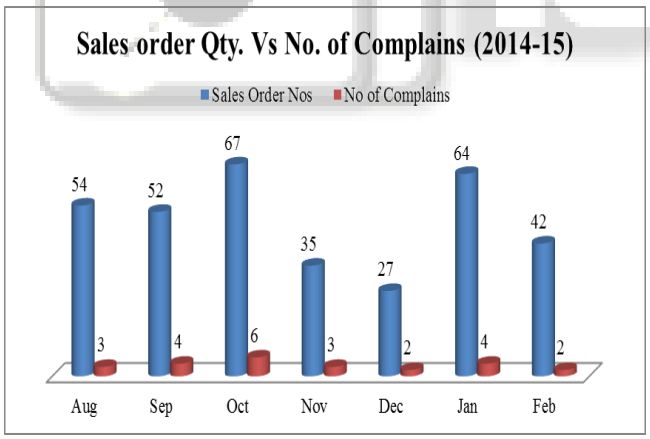
A. Data Collections:



IV. RESULTS AND CONCLUSION







The main aim of the project is to improve the quality of industrial valves in valve manufacturing company for that purpose ISO 9001 requirements were implemented in organization, main focus was for Production, QC and Maintenance department. To improve the product quality, it is basic requirement to define and improve the systems.

V. CONCLUSION

The main findings of the above review offer a strongly justified and formal answer to the many and important dilemmas presented in the organization about ISO 9001 long-term effectiveness and value to improve manufacturing process. The basic conclusion drawn, based on the combination of gap analysis and process study, is that the manufacturing process needs to be improved by implementing planning and maintaining daily production records. Also need identified to strengthen the Quality control system by preparing in process and final quality planning and checking system.

All in all, management of an organizational should have appropriate policy in place for establishing positive organizational culture and ethical mindset of staff members. As a result, ISO 9001 can help to improve quality with fulfilling customers' requirement of fairness and improvement in product.

REFERENCES

Research Paper:

[1] Janis Priede "Implementation of Quality Management System ISO 9001 in the World and Its Strategic Necessity" 8th international strategic management conference, University of Latvia, Riga, LV-1050, Latvia 2012

[2] V.M. Poblete García "Implementation of a Quality Management System according to the UNE-UN-ISO 9001 2008 standard in a Nuclear Medicine Department" Servicios de Medicina Nuclear, Hospital General Universitario de Ciudad Real, Ciudad Real, Spain January 2012

[3] Dr. Omer Abdel Aziz El Tigani "The Impact of the Implementation of the ISO 9000 Quality ms upon the perception of the performance of the organization's workers" Global Journal of Management and Business Research, Volume 11 Issue 8 Version 1.0 Aug 2011 ISSN: 0975-5853

[4] James M. Levett, MD, FACS, FACHE, "Implementing an ISO 9001 Quality Management System in a Multi-Specialty Clinic" Physician's Clinic of Iowa in Cedar Rapids, Iowa, and a volunteer of the ASQ Healthcare Division 2005

[5] Low Sui Pheng "Towards TQM integrating japanese 5S principal with ISO 9001 2000 requirements" TQM magazine, volume-13 No-5 2001 pp 334-340 MCB university press ISSN 0954 478X 2001

[6] Casadesus, M., Heras, I. and Ochao, C. "The benefits of the implementation of the iso 9000 normative emoirical research in the spanish company" Fifth worldconference on production and operations management, POMS, sevilla (Spain). 2000

[7] Ashok Sarkar "Implementation of iso 9000 in textile mill", Total quality management vol. 9, No. 1, 1998, 123-131

Books:

[8] International Organization for Standardization 'ISO' (15 November 2008). Quality management system requirements 'ISO 9001:2008', fourth edition.

[9] INTRODUCTION TO ISO 9001:2008 HANDBOOK by Roderick S.W. Goult, The Victoria group.

