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**UPDATING IMS PROGRAM TO MEET ISO 9001-2015
REQUIREMENTS IN A STEEL CONSTRUCTION
COMPANY**

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ABSTRACT

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<p>The purpose of this thesis was to improve and update the quality management system of Pohjanmaan Metalli Oy by using IMS software. In addition to general improvement work, objective was to develop the quality management system so that it can get an ISO 9001-2015 quality certificate. The improvement and development of the quality management system of a company were a methodical and long- spanned activity in both short and long terms. The ISO 9001-2015 quality standard was presented the guidelines for improvement of quality management system. On the other hand, IMS software may be utilized to the extent that was purposeful in the terms of the organizations targets and needs.</p> <p>In the theoretical part, the term of quality and quality management system was clarified from different points of view and also IMS software was clarified based on process illustration tool, a document management tool, processing tool for feedback and evaluations, a separate section for an organisations indicators, a task management tool and editor for creating manuals. Moreover, ISO 9001-2015 focused on the three enhancements related to the context of the organisation, the introduction of risk based thinking and elaboration of how to manage quality objectives.</p> <p>In the practical part the quality project of Pohjanmaan Metalli Oy was reviewed from the development plan to practical implementation and certification readiness throughout the IMS software. According to the research the company has improved their external corporate image, quality management system and development activities through the IMS software. Moreover, this research developed their internal process to enhance their working capability.</p>		

<p>Key words Quality Management, IMS, ISO 9001</p>

CONCEPT DEFINITIONS

QMS	Quality Management System
IMS	Integrated Management System
ISO	International Standards Organization
EFQM	European Standards for Quality Management
BSC	Balanced Scorecard
PDCA	Plan Do Check Act
CEO	Chief Executive Officer
SHQS	Scottish Housing Quality Standard
OHSAS	Occupational Health and Safety Management System
IBM	International Business Machines
SSO	Single Sign On
CAF	Common Assessment Framework
IWS	International Welding Specialist
SFS	Suomen standardisoimisliitto

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1 INTRODUCTION

The objective of this thesis was to update the quality management system ISO 9001-2008 to ISO 9001-2015 standard by using IMS system for Pohjanmaan Metalli Oy. Now the present situation of Pohjanmaan Metalli Oy has IMS system, production control system according to the EN-1090 standard. Quality management system was designed to the IMS system based on production control system EN 1090-1 that can be easy to understand and it could be used efficiently as a part of the business management system.

The thesis was commissioned by the company, which provides welding manufacturing component, structural steel, design and sales. In this thesis, the target was to meet the ISO 9001-2015 requirements and update Integrated Management System software. All process description should be based on ISO 9001-2015 requirements and information should be in the IMS system. If the company has any limit, then it will be described what is the missing and what should be done to fulfill the ISO 9001-2015 requirements.

For meeting the ISO 9001-2015, research work method will be used for quality management system. Moreover, in this thesis IMS program was studied by company to update IMS program. After that a self-evaluation was made. This thesis consists of two parts. The first theoretical part of this thesis discusses the quality management system and integrated management system software. Second part was practical work according to the ISO 9001-2015 requirements in the Pohjanmaan Metalli Oy. Finally, conclusions are drawn in the thesis.

2 HISTORY OF POHJANMAAN METALLI OY

Pohjanmaan Metalli Oy is a Finnish leading company of building construction, steel structure, and steel structural design, welding, sales of iron and maintenance heating plans as well as installation works. Pohjanmaan Metalli was established in 1976 and it is a family business. Currently there are five shareholders. This company works for steel and metal industry. Pohjanmaan Metalli has expanded its business area and activities day by day and the long term success business is based on high quality structural steel products. Nowadays they have also activities in bigger projects. (Pohjanmaan Metalli Oy 2015.)

The company employs over 10 professionals and the budgeted revenue for 2012 was approximately EUR 2 million. The five shareholders are self-employed and four of them work full time in the company. One shareholder is retired, but he is Chairman of the Board, as well as a counselor. The company currently employs 10 people, four of them are responsible for installation and other four employees do assembly work. In the office, there are two full-time employees. Nine employees have welding qualifications, one has experience in finishing line, one is an electrician and other one have good experience in saw laser cutter machine. (Pohjanmaan Metalli Oy 2015.)

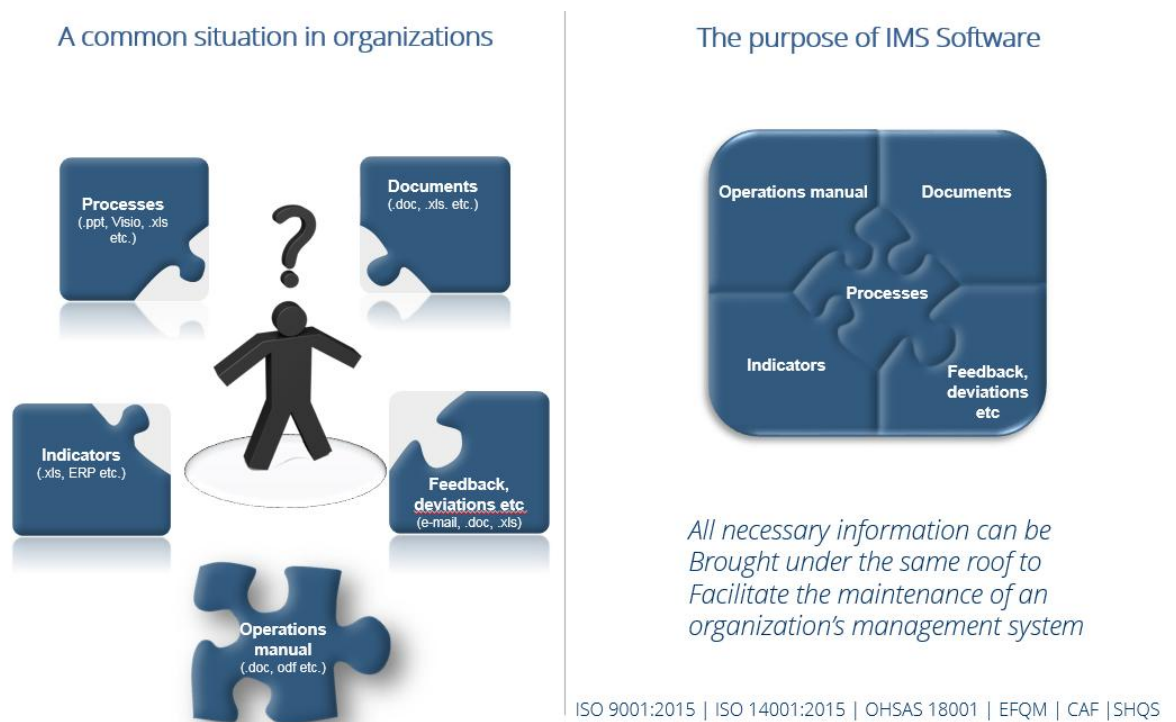
Pohjanmaan Metalli manufactures all metal and steel molding from special Finnish structural products. The company continuously develops its products according to production control system. Pohjanmaan Metalli OY also invests more in effective and environmentally strong production technology. Generally the company works for structural steels products based on customer needs such as stairs, building and so on. The company's main export country is Russia and also export to Asia. Pohjanmaan Metalli is situated in Ylivieska and it enables fast delivery in Finland and also around the world because it is close to the port of Raahе. (Pohjanmaan Metalli Oy 2015.)

The board of director is responsible for accounting and financial management. The CEO is also responsible for the company's accounting and provide necessary information for the board of duties. Company's mission is to produce quality structural products, security of supply and customized products. In the recent years the company has invested heavily in training activities and essential equipment to meet the current and future workloads. (Pohjanmaan Metalli Oy 2015.)

3 INTEGRATED MANAGEMENT SYSTEM

IMS Software is a browser-based solution for creating a management or quality management system platform. IMS stands for Integrated Management System – a system that includes all the elements of a management system under the same roof. The functionalities of IMS Software include process illustration tool, document management tool, processing tool for feedback and evaluations, a separate section for an organization’s indicators, task management tool and an editor for creating manuals. (IMS 2014 Update 6)

IMS Software allows to build a visual and maintenance operating system regardless of the size of an organization. The functionalities of IMS Software support a wider range of frameworks like as Quality Management System, Environment Management System, Health and Safety Management Systems and European Foundation for Quality Management. The following graph 1 demonstrates how IMS Software works for an organizations management system. (IMS 2014 Update 6)



GRAPH 1. IMS Software Tools (IMS 2014 Update 6)

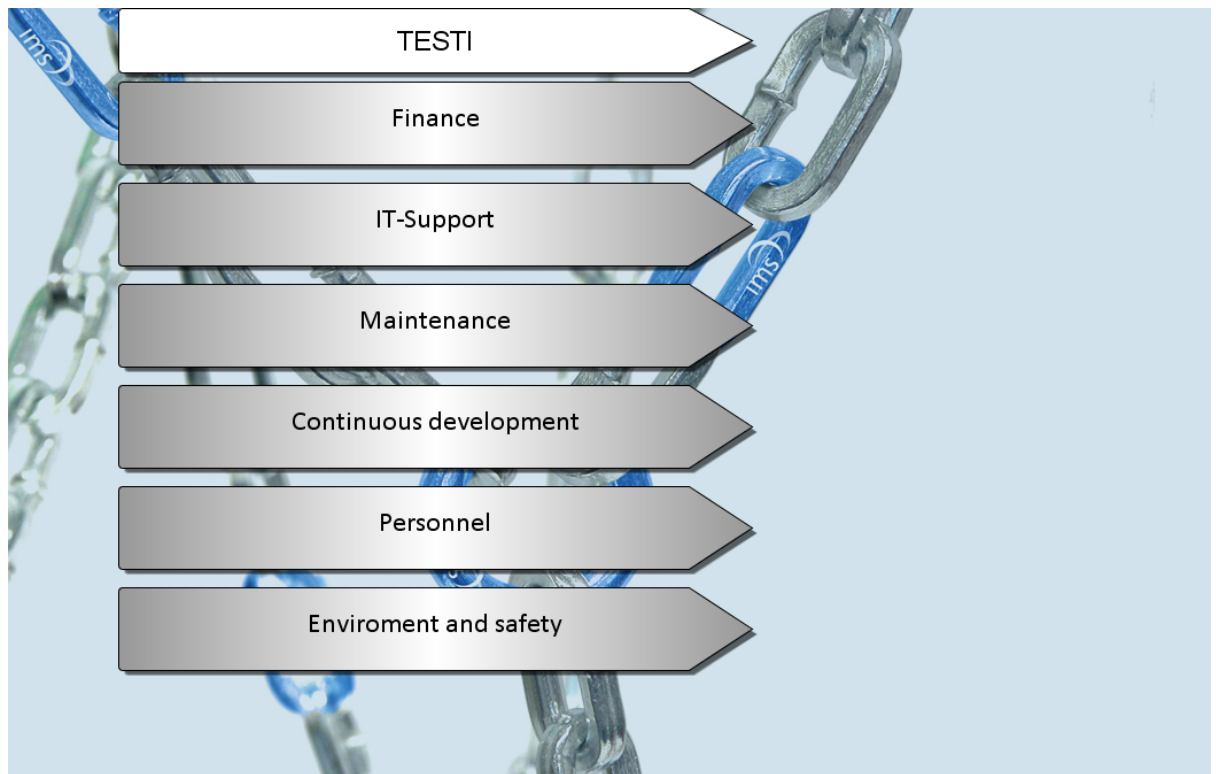
3.1 Processes

IMS software has a special section in a separate user-designed processes of drawing section, which makes it possible to describe the entire operation of the organization's processes. Processes are described hierarchically from the abstract level and proceeding toward the concrete. None of the IMS process description is left separate but are closely integrated with each other by the same hierarchical structure. Graph 2 provides a simple illustration of the interface of the IMS process. (IMS 2014 Update 6)



GRAPH 2. IMS Software Processes (IMS 2014 Update 6)

There are three important entities in the processes section, for example process map, process tree and the three page technique of the each process description. The system builds a framework for process descriptions and this framework creates a uniform so that system can be balanced process. Graph 3 presents the IMS support process.(IMS 2014 Update 6)



GRAPH 3. IMS Support Processes (IMS 2014 Update 6)

The process descriptions can be linked with work instructions and forms, folders, metrics, web pages, as well as, for example, transitions to other information systems. (IMS 2014 Update 6)

3.2 Documents

By the IMS software it is easy to create a documents for an organization. Moreover, most of the documents directing the operations and records that are generated as a result of the operations can be managed in section documents. In addition, documents are easy to find in a hierarchical directory structure or using various comprehensive search functions. As seen in the graph 4 bellow, planning and guidling business might be applied to control documents. (IMS 2014 Update 6)



GRAPH 4. Planning and Guiding Business (IMS 2014 Update 6)

Creating documents in IMS Software is greatly facilitated with the possibility for creating document templates with preset setting combinations that can be used for different document types. Procedures related to reviewing, approving, versioning and archiving documents as well as the division of responsibilities can be systematized with the help of the functionalities the system includes. The archived documents may be returned to use if needed. The systematized approach to documentation management is further enhanced by the possibility to receive messages from the system in case some form of action needs to be taken on the behalf of the user responsible for a certain document. (IMS 2014 Update 6)

3.3 Indicators

It is quite a visual and informative approach to communicate and operationalize an organization's strategy by applying indicators in the IMS Software. It is an important part of management for monitoring the indicators and therefore it gives a basis for further decisions. Mainly strategic and operational indicators may be created in a structured format in IMS Software's section. Indicators may be developed according to balanced scorecard (BSC), the structure of an organization, processes or practices of an organization. Graph 5 illustrates the indicators, with a focus on financial perspective and customer perspective. (IMS 2014 Update 6)

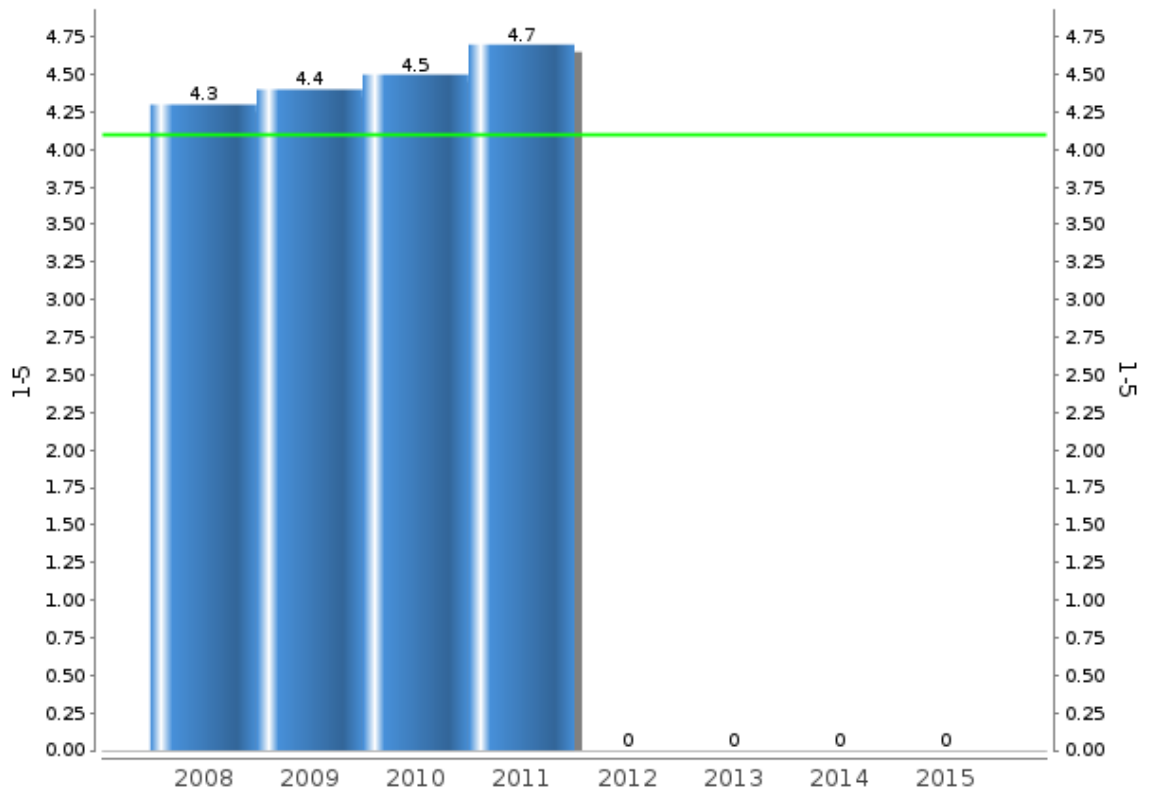


GRAPH 5. IMS Indicators (IMS 2014 Update 6)

The section “Indicators” of IMS Software is a visual platform for publishing an organization’s indicators. Indicator data may be added manually or the data may add automatically from an Excel file or an SQL database. The possibility to set responsibilities and reminder messages creates a possibility to systematize indicator data collection and use. A functioning, up-to date set of indicators that is in line with an organization’s strategy provides a solid basis for steering and analyzing an organization’s operations and continuous learning. (IMS 2014 Update 6)

3.4 Reports

Reports in IMS software provides a powerful tool for feedback and a systematic tool for evaluation management. The system creates standard form templates such as questionnaires, development proposals, deviations, complaints or reviews for logging, processing and evaluating the effectiveness of the measures. The following graph 6 represents the customer reclamation statistics in the IMS Software. (IMS 2014 Update 6)



GRAPH 6. Customer Reclamations (IMS 2014 Update 6)

In the IMS Software reports can be more comprehensive statistics to support decision-making and proactive development of surveys and evaluations, responsive development through feedback control. Moreover, reports can support achieving the goals and performance of the development and monitoring. The Report depends on customer reclamations. (IMS 2014 Update 6)

3.5 Manuals

In the IMS system, manuals can be used when management need to create the organization's code of professional standards, induction manual, sales manual, self-monitoring plan, and description for self-evaluation. The manual can be response immediately that we can easily share our manual between persons of different stage to maintain the management system. The operations manual often acts as a door opening to the organization and the system. The operations manual is intended for the use of staff and key stakeholders. There is also some possibility to add links to other content in the management system. (IMS 2014 Update 6)



OPERATIONS MANUAL

This is a sample cover of an operations manual. Organizations can edit their own cover the way they want. This operations manual guides the way work should be done in our example organizations and the structure of it is based on the EFQM model and standards quality, environmental and safety

On the left hand side in the navigation tree four main levels can be found together with their sub-levels. Number of pages is unlimited and therefore the length of an operations manual is not predefined.

GRAPH 7. Operations Manual (IMS 2014 Update 6)

An operation manual is a summary of an organization's operational and management practices as well as a description on how the organization's operations are developed further. The operations manual is completed by the content linked to the manual, such as instructions and process descriptions. (IMS 2014 Update 6)

3.5.1 Management practices

These directions help defining quality-, environment- and safety systems. The idea is to define a short, precise, concrete and business related operation description that includes important factors about operation guidance, quality security, management of environmental effects, and other factors that are essential in a healthy and functioning work place. The basis for defining these systems is to support the expectations of customers, personnel, owners and authorities. The idea is to collect quality-, health-, and environment- and safety matters to one operation system that meets the standards of 9001:2008, ISO 14001 and OHSAS 18001, and take notice of EFQM or CAF -evaluation standards. (IMS 2014 Update 6)

3.5.2 Resource management

Organizations operation system is based on flexible and responsible active operation and management of processes that are planned in advance. The operation system is based on ISO 9001 and EFQM principles. In the experience from many years is the basis for IMS own management system and developing customer solutions (quality management, safety process and goal management models). IMS emphasizes the operation system's flexibility and the ability to support the organization's effectiveness, when building customer solutions. (IMS 2014 Update 6)

3.5.3 Process management

The process of the organization is described at this point of the operations manual. Process flowchart states the core and support the processes of the organizations. The actual process descriptions are described in IMS solution's processes section. IMS solution is used to plan, to implement and to communicate the organization's process flowchart, process structure, processes and part processes. The solution supports directly the so called three-page-technique, which can easily be shaped according to the customer's needs.

Documents, records, indicators, intranet and Internet links can be linked to process activities. Links are showed in a small window at the left hand corner, and also in the stage description procedures column and directions column at the right hand corner. Process links are also showed on the front page of processes, and in the stage descriptions as button icons. The idea is to combine the theoretical and visual information of a process. This way it is possible to comprehend an entirety, a big picture of the process that is easy to understand.

In addition to vertical modelling, IMS solution supports also horizontal process network definition. The horizontal linking of a process is done with its own symbol. This way processes form a process network. (IMS 2014 Update 6)

3.6 Monitoring, measurement and results

This section describes the indicators and measurements of the organization's success. ISO 9001 requires that customer satisfaction and processes are followed and measured. Environment indicators can be related to process indicators, because environment effects are formed in processes. If perspective is expanded to all business areas, also economical and personnel related matters should be evaluated.

For example, customer related measurement tools could be surveys, customer satisfaction, sales, reclaims, hit rates, reliabilities and permanence of customer relationships. Process indicators could be for example error cost percentage, delivery reliability percentage and usage level percentage. Economic indicators could be related to financial growth and profitability. Personnel indicators could be work flexibility, customer feedback, training costs and work atmosphere. (IMS 2014 Update 6)

3.7 Tasks

In the IMS Software, tasks allow several operating system, effective planning, monitoring and responsibility throughout the organizations. Strategic planning is an essential part of any kind of an organization but it is connected to development projects. Function modules and systematic monitoring provide the necessary information for better management tools. Tasks can be scheduled and may be projected into larger entities and subtasks. (IMS 2014 Update 6)

3.8 Summary of IMS

The functionalities of IMS Software can be utilized to the extent required by the organization's needs and objectives. There are some several features of the IMS Software: (IMS 2014 Update 6)

- Installed can be in the service provider's or customer's server
- User interface is graphical and browser-based

- Multi-language functionality (English, Finnish, Swedish, Russian, Estonian, Chinese, German)
- Supports and responsibilities related to the content in the system
- Compatible with MS Active Directory and supports Single Sign-on - Functionality
- SSO is supported
- A tool to describe the processes, the automatic versioning and approval procedures
- Tool for the preparation of manuals, automatic versioning, approval procedures
- Management of documents and records, automatic versioning, approval procedures.
- Feedback and evaluations event management
- Graphical dashboard, switchable Excel and information systems
- Identification of software automatically sends reminders and alerts the persons responsible tasks
- Metadata search
- Support for development and maintenance of the system, the company's own R & D and support for functional English user

3.9 IMS program in Pohjanmaan Metalli

Quality management system might be paper based on, software based such as a data bank or web pages. However, nowadays as IMS system is a part of a company's management system there have to be linkages for the boundaries between processes. There are several web pages for example IMS program, IBM program and so on. There are many benefits for the quality management system for example different link from many different websites can be added in the IMS Software. IBM is world largest information technology company and it provides hardware and software products for business server, storage products and custom design. The business is changing more rapidly than ever. Nowadays business agility is the key to success. Most of the times it depends on technology and a system that can react and change quickly. However in the modern age designing an information technology system can meet this diverse and often conflicting set of needs which is main challenge for all kinds of companies. Many IBM application servers already provide support for IMS transaction access today. IMS outbound scenario is for integration with business role engine and IBM provides information for the operational decision manager to build IMS transaction. (Pohjanmaan Metalli oy 2015)

Pohjanmaan Metalli are uses IMS program because IMS system includes all elements of management system in the same way. The functionalities of IMS software include process illustration tool, document management tool, processing tool for feedback and evaluations, a separate section form and the organisations indicators, task management tool and editor for creating manuals. In the IMS Software documents are used for procedures related to reviewing, approving, management system and information technology for specific work for specific person. (Pohjanmaan Metalli oy 2015)

The screenshot displays the IMS software interface for Pohjanmaan Metalli. The top navigation bar includes the IMS logo, contact information (HELPOESK +358 44 292 8791), and language selection (Suomi). The main navigation menu on the left lists various process categories such as Prosessikartta, Projektit, Asennukset, and Myynti. The central content area shows a process map titled "Pohjanmaan Metalli" with a sun icon. The map consists of several colored boxes representing different process stages: Johtaminen (blue), Myynti (yellow), Projektit (yellow), Asennukset (yellow), Kyläseppä (red), and Tukiprosessit (blue). The map is flanked by vertical text "ASIAKKAAT" on both sides. A sidebar on the right contains "Organisaatiokaavio" and "Harjoitusalue". The bottom of the interface includes a "Prosessin tiedot" section with a "Aseta aloitusprosessiksi" button.

GRAPH 8. Pohjanmaan Metalli IMS Program (IMS 2014 Update 8)

As seen in the graph 8 above, Pohjanmaan Metalli Oy has implemented IMS Software to control all documents and standards within the organisation. Also Pohjanmaan Metalli Oy viewing the documents directly when new content is added to the document hierarchy. IMS is used for all the number types that are supported by the current system implementation such as routing analysis. Not only the routing analysis but also process diagrams are used for measuring different factors such as customer satisfaction, product delivery, finance, quality cost, the organizations monthly turnover, coverage percent, amount of customer feedback, offers, profit and lost. IMS was established in Pohjanmaan Metalli in 2011. In 2014 they implemented Factory Production Planning Control system based on EN 1090. Currently, the production capacity is sufficient. At the present time, the production technology is up to date by production control system SFS EN-1090 in the Pohjanmaan Metalli oy . (Pohjanmaan Metalli oy 2015)

4 QUALITY AND QUALITY SYSTEM

Today quality is much more important than before. The quality of products and services has to be accepted by customers. Thus, quality can be called as one of the main demanding parts in the whole bargaining process. Undoubtedly, globalization influences the development of quality meaning. Therefore, nowadays quality management includes four main activities of managing the quality, which can be identified as follows: quality planning, quality control, quality improvement and quality assurance. All these four activities are essential pillars of quality management. They are related to each other and could not function separately. (Hoyle 2007)

4.1 Concepts of quality

Everyone hears the word quality almost on a daily basis. The meaning of the word is not as clear-cut as one might at first imagine. Often, the word quality indicate tangible content such as the maximum speed of the car which is an easily measurable thing. Some of the quality attached to things again seem very abstract. These abstract things are often opinion and taste issues, which cannot be measured, such as appearance. (Hokkanen & Strömberg, 2006, 18)

Generally, the quality of a product or service defines to the degree to which continuous product or service meet the customer expectations. In the business sector, there are many definitions for quality such as:

”A product or service free of deficiencies” (Deming 1993)

”Meeting or exceeding customer exceptions” (Juran 1993)

”The number of defects per million opportunities” (Six Sigma 2012)

”Uniformity around a target value” (Kano 2001)

However nowadays a globally accepted definition of quality based on ISO 9001 is that:

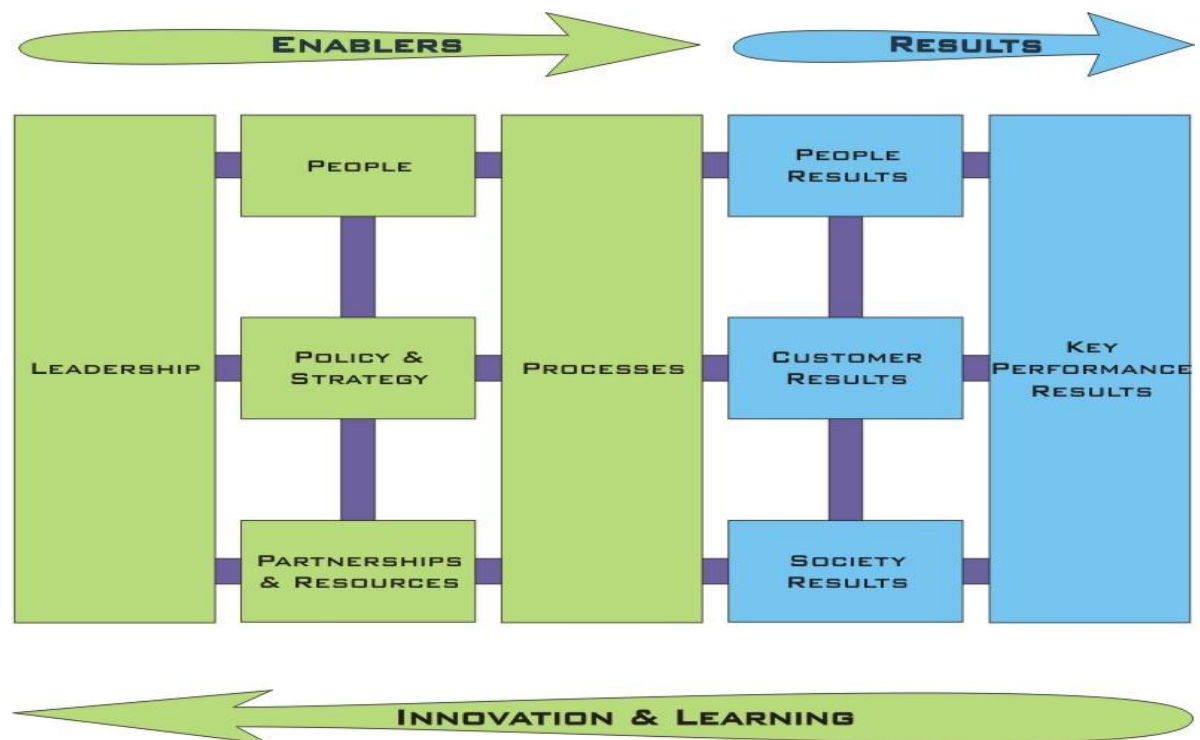
”Quality is the degree to which a set of inherent characteristics fulfils requirements” (Tricker 2008)

4.2 Quality management principles

All four activities of quality management might be implemented in the real strategies of any company with quality management systems that will be described in the next chapter. However, the foundation of any quality management system is based on eight main quality management principles. These principles explain the main sense of quality management and cover the meaning of requirements of most of the standards and quality management systems (International Organization of Standardization 2014). Within the principles an organization could find the most significant reasons of achieving the highest quality. (Hoyle 2007)

4.2.1 Business process management

Business process management is a systematic approach to increase the efficiency by delivering results through a business process. European Foundation for Quality prize (EFQM) method can be used for effective business process organization. This model helps to understand the cause and effective relationship between what the business processes is and the results it achieves. The EFQM model for business excellence is shown in graph 9.



GRAPH 9. EFQM Excellence Model (Hendricks and Singhal 1996)

All European organizations, both in the public and private sectors, are facing new challenges. The increasing pressure to compete on a global stage with limited resources means we all have to work together to secure our future prosperity, and that of generations to come. The EFQM Excellence Model provides a framework that encourages the cooperation, collaboration and innovation that we will need to ensure this goal is achieved. (Rompuy 2010)

4.2.2 Continual improvement

Continual improvement is a set of recurring activities that are carried out in order to enhance performance. Continual improvements can be achieved by carrying out audits, self-assessments, and management reviews. Continual improvements can also be realized by collecting data, analyzing information, setting objectives, and implementing corrective and preventive actions. (SFS 2012).

Continuous improvement is a one kind of method that can focus on increasing the effectiveness and efficiency throughout the organization to meet its policy and objectives. By using Deming method (PDCD) cycle every organization can meet their objectives and policy. The graph 10 illustrates the PDCA cycle for continuous improvement.



GRAPH 10. William Edwards Deming cycle (Deming 1993)

Every effective organization needs to have the PDCA cycle for continuous improvement. Continual improvement is also a part of total quality management philosophy. Moreover, it leads to better results such as price, productivity, time, delivery, responsibilities, profit and customer and employee satisfaction. (Deming 1993)

4.2.3 Customer focus

Customer focus is normally a strong contributor to overall of a business and also includes delivering customer value where business needs and potential markets. It involves ensuring that a company needs to focus on customer satisfaction first because customer focus is an essential part of any successful business. (Howard 2010)

4.3 Quality control

The definition of quality control is the part of quality management focused on fulfilling requirements (ISO 2001). In other terms it means the functional techniques and activities that are used to fulfil the requirements for quality. Quality control ensures the maintenance of standards of the quality of goods and service and the process of making sure that products or service are ready to consistently high standards. The following graph 11 presents the five elements of quality control of an organization. (Tricker 2008)



GRAPH 11. Process of Quality Control (ISO 2008)

The process of quality control part covers mostly fulfilling requirements and regulating future performance of a product or service. Quality control might be applied to different parts of the operational processes. It is used in the beginning steps of manufacturing, the intermediate stage of the developing of a product or even in final measuring of the performance of a produced product. Wherever quality control is applied the main issue is to prevent changes and to increase the level of predictability. Operations under control and a high level of predictability are the key of success of any business. (Hoyle 2007)

4.4 Quality assurance

Quality assurance is focused on providing the confidence of the future fulfillment of all requirements. There are always some restrictions and requirements to maintain quality and these have to be completed in order to gain the result. A customer or a manager are not able to handle or observe all actions by themselves, thus they have to trust a company that the requirements are met. Eventually, creating quality assurance is understood as recording, organizing reviews and documenting the processes and results. However, these activities can be mentioned also as quality control tools as well as quality assurance parts. Nevertheless, from the customer's point of view the standards mainly show an assurance and provide confidence about the quality. Thus, those standards that are used to assure a customer in quality are mostly described as the main example of quality assurance. Therefore, quality assurance is the key feature of the standards and the most visible part by customers. (Juran & Gryna 1993)

4.5 Quality planning

This part of quality management is based on the defining quality objectives and all components to achieve those objectives (Bergman & Klefsjö 2010). Quality planning could be divided in two ways – strategic and operational. Strategic is considered as the setting process of long-term goals that explain vision, mission and the values of the business. This way of quality planning is more theoretical and leads to analyzing all the external and internal sides of the business. However, the operational way of quality planning is considered as more realistic and, primarily a more systemic way. It mainly consists of creating product

goals that contains for example estimated demand, figures of productivity, etc. Both ways could not be separated due to the mutual supplement structure. (Hoyle 2007)

In the aspect of any company, quality planning could be seen as e.g. creating of a quality system team that is responsible for coordinating the quality planning within all departments. These professionals are representing such functions as planning and establishing quality management policies gradually to all parts of the business. The quality system team is also continually working with other three parts of quality management. However, the main function is firstly to involve all the departments to the quality management policy of the organization. (Harrington & Mathers 1997)

5 ABOUT ISO

ISO (International Organization for Standardization) is the world's largest developer of voluntary International Standards. It was founded in 1947, and since then it has published more than 19 500 International Standards covering almost all aspects of technology and business. Today they have members from 163 countries and about 150 people work full time for their Central Secretariat in Geneva, Switzerland. (ISO 1947-1997)

5.1 ISO 9001

ISO 9001 is a standard focused on quality management system and also the world's most popular quality management system standard and is all about keeping customers satisfied. ISO 9001 is the only part of the ISO 9000 family against which an organization can become certified. As a result, ISO 9001 contains all of the requirements which an organization must address within their QMS if organization's wish to be certified against the Standard. It is very important to evaluate and enforce quality management system. It specifies the requirements to successfully implement a quality management system in order to monitor and improve the performance of an organization, regardless of the size or the industry, whether that means driving down costs, increasing productivity or improving customer satisfaction. Another way we can say to meet the requirements of this standard will provide quality management systems that will be of real benefit to an organization to help manage the business effectively and put in place the best practice methodology. ISO 9001 specially focuses on quality management system. Quality management system standards of the ISO 9001 series are based on eight quality management systems such as. (ISO 2015)

- Customer Focus
- Leadership
- Involvement of People
- Process Approach
- System Approach to Management
- Continual Improvement
- Factual Approach to Decision Making and
- Mutually Beneficial Supplier Relationships.

There will be many benefits in ISO 9001. (ISO 2015)

- Enhanced customer satisfaction and improved customer loyalty leading to repeat business
- Increased revenue and market share obtained through flexible and fast responses to market opportunities
- Integration and alignment of internal processes which will lead to increased productivity and results
- Enhanced business performance and better cost management
- Providing confidence to interested parties as to the consistency, effectiveness and efficiency of the organisation
- Increased credibility and competitiveness in the market
- Consistency in the delivery of the companys product or service
- Lower costs and shorter cycle times through effective use of resources
- Improved communication, planning and administration processes.

The graph 12 demonstrates the structure of the ISO 9001 family of standrads.



GRAPH 12. ISO 9001 (ISO 2008)

5.2 ISO 9001-2008

ISO 9001-2008 was a process based approach to promote quality management. For an organization, it is essential to identify and manage numerous linked activities. Process approach is an activity using resource and managed in order to enable the transformation of input into output. Also process can be defined as a set of inter related activities. There are main eight section of ISO 9001-2008. (ISO 2008)

- Scope
- Normative References
- Terms and Definitions
- Quality Management System
- Resource Management
- Product realization
- Measurement, Analysis and Improvement

Graph 13 below shows the model of a process based quality management system



GRAPH 13. ISO 9001(Updated 2008)

5.3 ISO 9001-2015

ISO 9001-2015 is a risk based thinking approach to quality management. The approach of risks and opportunities, which emphasizes identifying potential problems as well as opportunities for improvement, needs to be applied to the quality management system processes. For risk based thinking there are no requirements for processes, procedure,

records, evidence and formal risk management. There are some changes from ISO 9001-2008 to ISO 9001-2015. For example. (ISO 2015)

ISO 9001:2008	ISO 9001:2015
0. Introduction	0. Introduction
1. Scope	1. Scope
2. Normative Reference	2. Normative Reference
3. Terms and Definitions	3. Terms and Definitions
4. Quality Management Systems	4. Context of the organisation
5. Management Responsibility	5. Leadership
	6. Planning
6. Resource Management	7. Support
7. Product Realisation	8. Operation
8. Measurement, Analysis and Improvement	9. Performance Evaluation
	10. Improvement

GRAPH 14. Comparing the latest version of ISO 9001: 2015 with ISO 9001:2008 (ISO 2015)

6 REQUIREMENTS OF ISO 9001-2015

ISO 9001-2015 is a new high level structure that every company will feature in all management systems. This revised standard should maintain the current focus on effective process management to produce desired outcomes and technology since the last major revision in 2000. The quality manager of Pohjanmaan Metalli Oy was helped to meet new requirements of ISO 9001-2015 in the company. Moreover, information was collected from ISO webpage, ISO CD version and also ISO 9001-2015 revision training webinar. In the present situation Pohjanmaan Metalli has a factory production planning control system, as a result most of the requirements of ISO 9001 they have. There are some missing requirements the fact that they do not have any kind of a quality management system and process structure and customer property. (Pohjanmaan Metalli Oy 2015)

The selected suppliers and customer satisfaction was evaluated based on their ability to meet the requirements. Requirement are very important to any organisation, and select suppliers based on their criteria. Some companies use a questionnaire form with new suppliers. Another common method is to place a few trial orders to make an assessment. If one cannot fulfil the customer's needs without a particular supplier, then it is a good idea to include a risk assessment in the evaluation – go through the “what if” scenarios and develop backup plans. This thesis will help to find out what one needs to know about transitioning to the new ISO 9001:2015 Quality Management Systems (QMS) standard. What can be changes from ISO 9001:2008 to ISO 9001:2015 and how these will affect an organization will be discussed more so that transition arrangements in Pohjanmaan Metalli Oy. (Pohjanmaan Metalli Oy 2015)

6.1 Context of the organization

The quality management planning should take into account the context of the organization so that products and services meet the needs and expectations of interested parties. The organization shall determine the internal and external factors. The quality management system design should take into account the context of the organization, so that products and services meet needs and expectations of the interested parties. (ISO 2015)

6.1.1 Understanding the organizations and its contest

The organization should determine the internal and external factors that are relevant to its purpose, strategic direction and the organizational ability to achieve the desired result of its quality management system. Organization should focus on

- a) The external issues arising from legal, technological, competitive, market, and social economic environment.
- b) The internal issues related to values, culture knowledge and performance of the organization. (ISO 2015)

There were no findings in this research.

6.1.2 Understanding the needs and exceptions of interested parties

The organization must be familiar with the interested parties that are relevant to the quality management system. The organization need to understand how they can meet customer requirements and customer satisfaction. This interested parties can be direct customers, final customer, suppliers and distributors. Moreover, the organization should monitor and review the information about these interested parties and their relevant requirements. (ISO 2015)

There were no findings in this research.

6.1.3 Determine the scope of the quality management system

An organization shall classify the limits and scope of organization. Responsible person should be defined for products, services and processes. Business environment and stakeholder requirements have been taken into consideration. The quality management system should be reserved and suitability must be determined. (ISO 2015)

The organization should determine about

- a) the operating environment and the requirements of the stakeholders is taken into consideration.
- b) the sequence and interaction of these processes
- c) if any part of the standard does not apply, then it must be justified
- d) the extent of the quality management system and is not applicable to matters must be documented as information available in stakeholders. (ISO 2015)

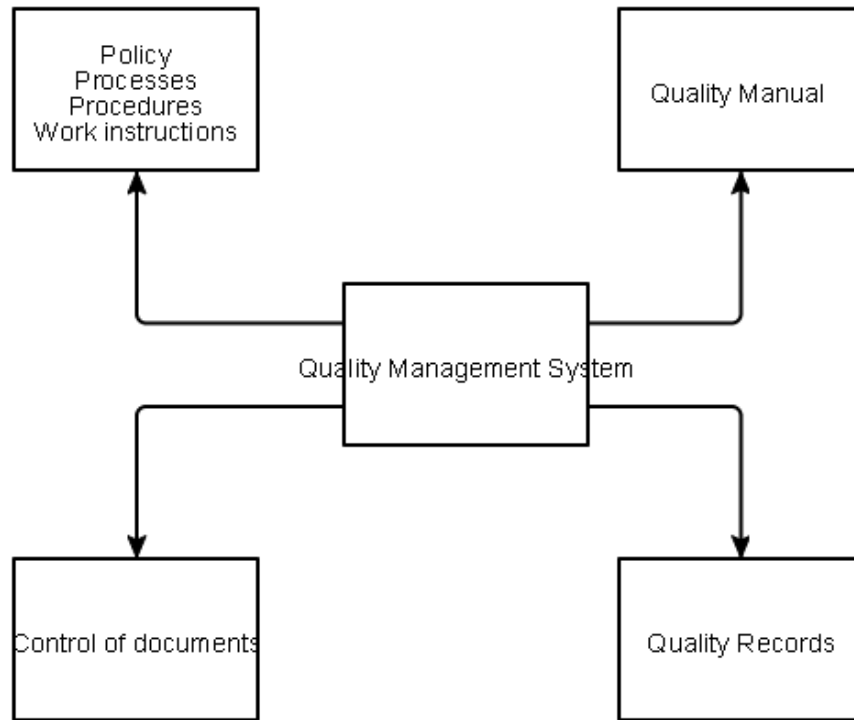
The company's has IMS Software to control all document. Pohjanmaan Metalli has continual improvement process for quality management system. The management ensure that companies has enough resource to support the operation and monitoring. (Quality Manager 2015)

6.1.4 Quality management system and process requirements

The organization needs to determine the process-oriented approach to quality management system. For an organization these will include

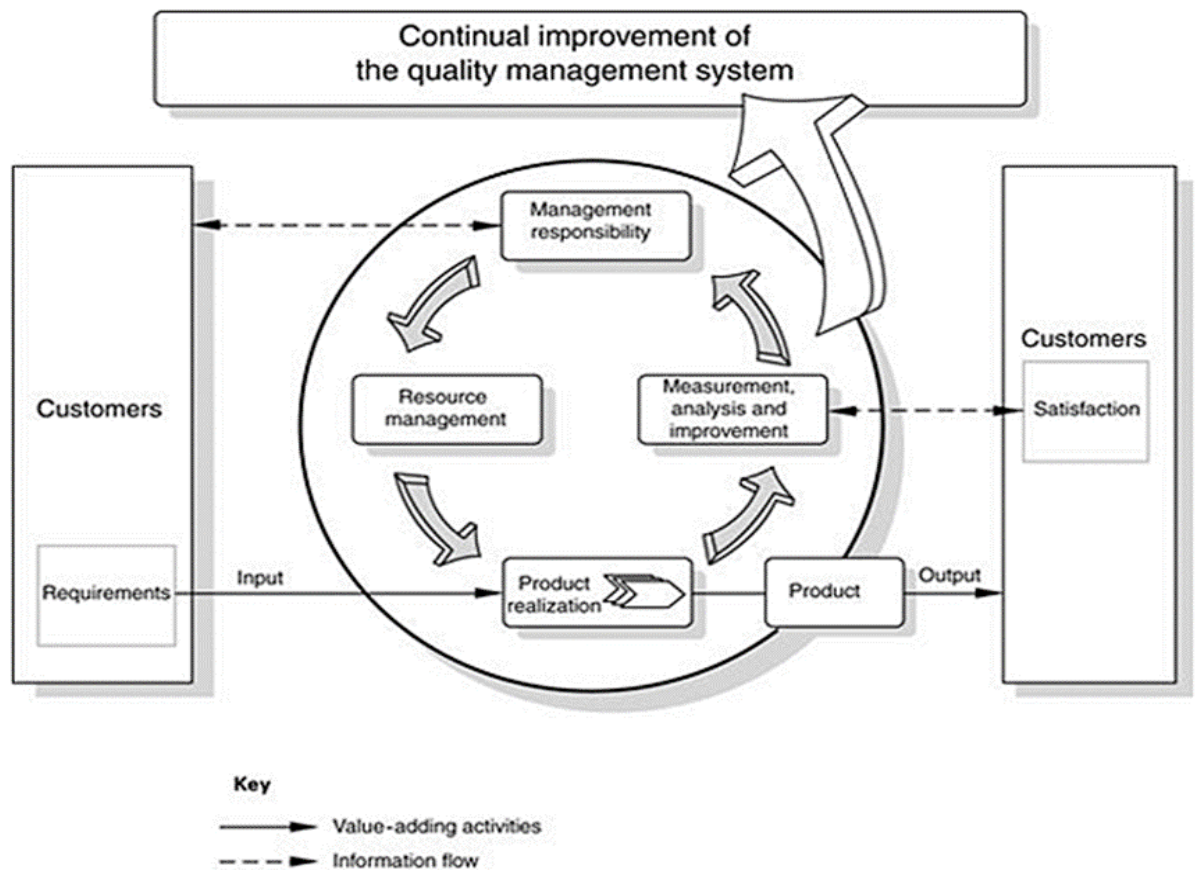
- a) determining the processes and their application throughout the organization.
- b) determining the each process in the initial and final situation.
- c) to determining the risks to which the client will flow if the undesirable products are delivered or the processes of interaction does not work.
- d) determining the criteria, procedures and performance measurements.

The following graph 15 presents the quality management system in the Pohjanmaan Metalli Oy.



GRAPH 15. Quality Management System in Pohjanmaan Metalli Oy (IMS 2015)

The graph 16 shows the continual improvement of quality management system.



GRAPH 16. Continual Improvement of Quality Management System (IMS 2015)

e) showing the responsibilities and decision-making processes.

f) monitoring, analyzing and making the necessary changes in processes, products and services, intended for the production.

g) ensuring continuous improvement of processes. (ISO 2015)

Pohjanmaan Metalli Oy follow the PDCA cycle and continual improvement process to meet quality management system requirements. (Pohjanmaan Metalli 2014).

The company always focus on continual improvement process to monitor and measure. The management apply process based approach for effective measurement. The manager of the company is responsible for dicision making process.(Quality manager 2015)

6.2 Leadership

6.2.1 Management commitment

The company's management commitment is to provide continual improvement, representatives for the whole managing process, resources and internal communication. Top management must be considered policies and objectives of the strategy goal to promote customer satisfaction. The organization should determine about

- a) the quality policy and objectives of the strategy consistent.
- b) follow-up of previous across the organization.
- c) promoting continuous improvement and innovation
- d) ensuring the availability of resources.
- e) conducting management reviews. (ISO 2015)

Company use electronic device such as mobile phones and email to communicate with customer. Moreover, it is a small company so it is easy to communicate with employees and always communicate with each other face to face depends on meeting or work instruction. Moreover. Companies has plan and process for annual management review with our customers' based on future prospects and goals, as well as developments in the field. Moreover, the management of company makes its own development plan for high quality product. (Pohjanmaan Metalli Oy 2015).

A set of self-assessment the ISO 9001: 2015 Standard was used to assess the adoption status of quality management practices. This document will describe the development of a scale for measuring top management commitment towards continual quality performance improvement in Pohjanmaan Metalli oy. (Quality Manager 2015)

6.2.2 Quality policy

Top management should ensure that the quality policy (ISO 2015)

- a) is appropriate to the purpose of the organization
- b) includes a commitment to comply with requirements and continually improve the effectiveness of the quality management system
- c) provides a framework for establishing and reviewing quality objectives
- d) communicated and understood within the organization and
- e) reviewed for continuing suitability

The company's mission is to produce high quality steel structures based on customer's need. The company's objective and strategy is to develop the quality of products, reliability and profitability. (Pohjanmaan Metall Oy 2015).

Self-evaluation and review are based on an organized and structured process of collecting, analyzing and interpreting information about all aspects of the work and standard. The authority of company have good mission and quality policy to develop the company. (IMS 2015)

6.2.3 Organization roles, responsibility and authority

Top management should ensure that responsibilities and authorities are defined and communicated within the organization. Top management is responsible for the establishment, maintenance and development of the operating system. Management need to appoint a member of the organization's management who, irrespective of other responsibilities, should have responsibility and authority that includes (ISO 2015)

- a) ensuring the process needed for the quality management system are established, implemented and maintained
- b) reporting to top management on the performance of the quality management system and any need for improvement and

c) ensuring the promotion of awareness of customer requirements through the organization.

IWS is responsible for the process, quality manager is responsible for the management of the quality management system. Sales manager is responsible to fulfil customer needs. (Pohjanmaan Metalli Oy 2015).

An organisation should more recognize its strengths and weaknesses, identify the opportunities and threats it faces and identify potential strategic alliances. (IMS 2015)

6.3 Planning

6.3.1 Actions to address risk and opportunities

The organization should establish the risks and opportunities management procedures proportionate to the potential impact of the goods, services and customer satisfaction. Procedures should be combined into the processes and their effectiveness should be evaluated. (ISO 2015)

The quality management system is integrated into the customer satisfaction as well as goods and services with the threat of the risks and opportunities for the identification of management procedures. (Pohjanmaan Metalli Oy 2015).

There were no findings in this research.

6.3.2 Objectives and plans to achieve them

The organization should retain documented information on the quality objectives and the organization will determine (ISO 2015)

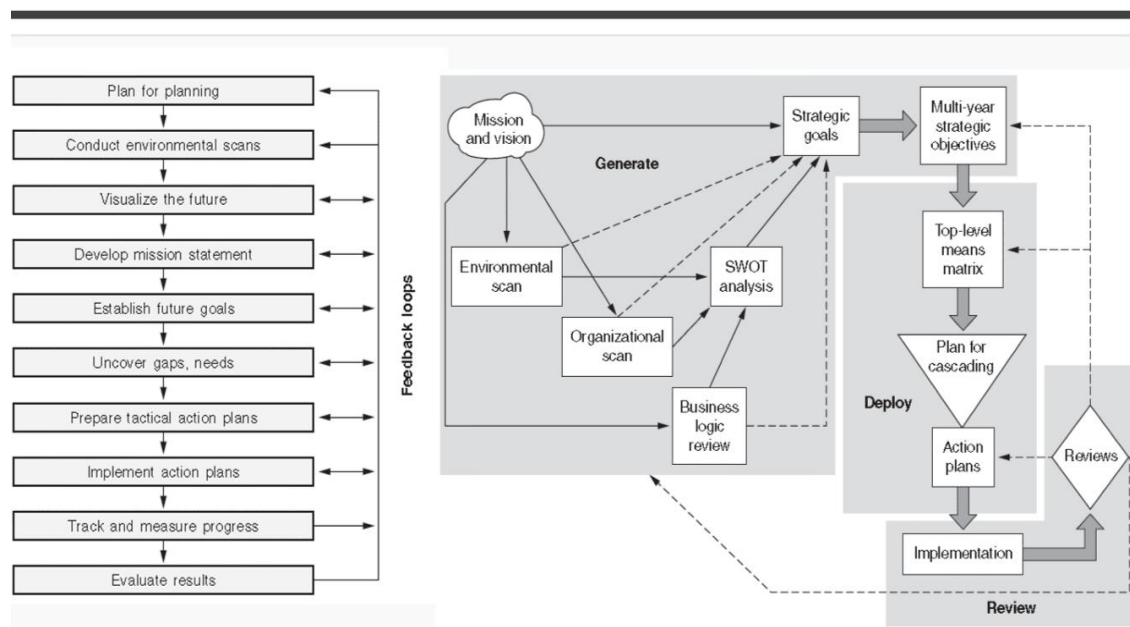
- a) what will be done
- b) what resources will be required
- c) who will be responsible
- d) when it will be completed and

e) how the result will be evaluated

There were no findings in this research.

6.3.3 Planning of changes

An Organization needs to implement a quality management system to maintain and improve the related changes in a planned and systematic process as well as to identify risks and opportunities and to assess the potential consequences of the changes. The graph 18 illustrates the planning of changes of quality management system. (ISO 2015)



GRAPH 18. Planning of Changes (ISO 2015)

There were no findings in this research.

6.4 Support

6.4.1 Resources

The organization will determine and provide the resources needed for the establishment, implementation, maintenance and continual improvement of the quality management system. The organization should determine what the existing internal, resources, capabilities and limitations are and which goods and services should be sourced externally. (ISO 2015)

The organization will determine, provide and maintain the infrastructure necessary for its operations and assure the conformity of goods and service and customer satisfaction. Moreover, maintaining the process environment necessary for its operations and assuring conformity of goods and service and customer devices can include measuring and measurement methods such as surveys. (ISO 2015)

Pohjanmaan Metalli oy has sufficient resources and capabilities like infrastructure, supporting system and good work environment for customer satisfaction. As well as, company has own quality management structure for continual improvement. (Pohjanmaan Metalli Oy 2015).

Management should make sure that the employees are aware of the link between product quality and costs. They need more focus on work environment and supporting system. (Quality Manager 2015)

6.4.2 Competence

The organization should (ISO 2015)

- a) determine the important competence for personal performing work affecting to product requirements
- b) evaluate the effectiveness of the actions taken
- c) provide training to achieve the necessary competence
- d) maintain appropriate records of education, training, skills and experience.

The company has good system for the right person for right job based on employee's experience. Sometimes, company provide necessary training to employees to achieve competence. There are some documents in the IMS Software of Pohjanmaan Metalli Oy that are provide information about employee's education, training, skills and experience. (Pohjanmaan Metalli Oy 2015)

Management needs to ensure that the competence of employees in the organization is adequate for current and future workload. (IMS 2015)

6.4.3 Awareness

The Personnel need to be aware of (ISO 2015)

- a) Quality policy
- b) Quality objectives
- c) The role in quality management and quality assurance capability
- d) Deviation from the significance of the products and quality of service

There were no findings in this research.

6.4.4 Communication

The organization shall determine the associated quality of management of internal and external communications. (ISO 2015)

- a) where to communicate
- b) when to communicate
- c) to whom communicate

As a small company it is easy to communicate with employees and the manager always communicates with workers when they need to communicate. (Quality Manager 2015)

6.4.5 Documented information

Documents and records have been replaced by documented information. The quality management system documentation should include (ISO 2015)

- a) quality policy and quality objectives
- b) a quality manual
- c) documented information records requirements by ISO
- d) control of documents
- e) control of records
- f) a description of the interaction between the processes of the quality management system

Pohjanmaan Metalli control all document by IMS system. All these document are checked twice a year. (Pohjanmaan Metalli Oy 2015)

Documents and records are used to support effective and efficient operation of the processes of the organization so company maintain their documentation by IMS software. (Quality Manager 2015)

6.5 Operation

6.5.1 Operational planning and control

The organizational will plan and develop the processes needed for operational planning and control. Operational planning and control should be consistent with the requirements of the other processes of the quality management system. In operational planning and control, the organization should determine (ISO 2015)

- a) an external operator control of processes must be ensured.
- b) quality objectives and requirements for product planning and control.

c) maintain a documented information, which can demonstrate confidence in the work process.

Pohjanmaan Metalli oy has product development process for control of product. The development process includes the level of automation, manual process, outsource process, and particular machine, verification, validation, inspection and test activities to the products. (Pohjanmaan Metalli Oy 2015)

Management levels to ensure individual contribution of quality objectives and requirements for meeting product deployed and organization identify customers' needs and expectations on a continual basis. (IMS 2015)

6.5.2 Determination of requirements for product and services

Organization needs to carry out the process of interaction with the customer and to determine the needs of customers. The organization should (ISO 2015)

- a) implement the process of interacting with the customer and find out the needs of customers.
- b) product and service setting standards.
- c) Product and service requirements review.
- d) contracts and order processing.
- e) the processing of client assets.
- f) product and service information.

Pohjanmaan Metalli always concentrate customer needs based on contracts because all customer needs are not same. The company do not use any client assets in production line. (Pohjanmaan Metalli Oy 2015)

Management will define customer related process to ensure consideration of customer need for products and service. Company has good customer feedback system about product and service from customer. (IMS 2015)

6.5.3 Design and development of products and service

The organization should plan and control the design and development of product. During the design and development planning, the organization needs to determine (ISO 2015)

- a) the design and development stage
- b) the review, verification and validation that are appropriate to each design and development stage
- c) the responsibilities and for design and development
- d) functional and performance requirements
- e) applicable statutory and regulatory requirements
- f) performance of the production of information and communication

The design results should be expressed in terms of the organization's activities in an appropriate manner.

Pohjanmaan Metalli do not have their own design and development. They always buy from other companies. (Pohjanmaan Metalli Oy 2015)

There were no findings in this research.

6.5.4 Control of externally provider of products and services

The organization should (ISO 2015)

- a) evaluate and select suppliers based on their ability to supply.
- b) Process Control division of responsibilities between the organization and the supplier.
- c) identified risks and their potential effects.
- d) monitor supplier performance.
- e) ensure that purchased product conforms to specified purchase requirements.

The organization shall establish and apply the evaluation criteria and have to select and re-evaluate suppliers based on their ability to produce the requirements of goods and services. (ISO 2015)

Always company need to evaluate and select suppliers based on their ability to supply product in accordance with the customer requirements. Their aim is to develop the procurement work. (Quality Manager 2015)

6.5.5 Product and service provision

An organization needs to take into account the development stages of the process and the control of the following: (ISO 2015)

- a) development measures, nature, duration and complexity
- b) customer, statutory and regulatory requirements related to the process steps
- c) potential impact on the organization's ability to meet the requirements of a single customer, and the ability to meet customer satisfaction
- d) the development process of individuals and groups of responsibilities

The organization will need to determine the development of the control of the following:

- a) the development of the basic information required is as clearly defined
- b) developed products or services are suitable for the purpose.

The organization needs to establish some specific process such as defined criteria for the review and approval of the process, approval of equipment and qualification of personal, use of specific methods and procedures and requirements for records and revalidation. FPC manual will cover all of these requirements. (ISO 2015)

The management activities will include for example verification and validation considered in production and service provision. They always need to focus more on revalidation and FPC manual. (IMS 2015)

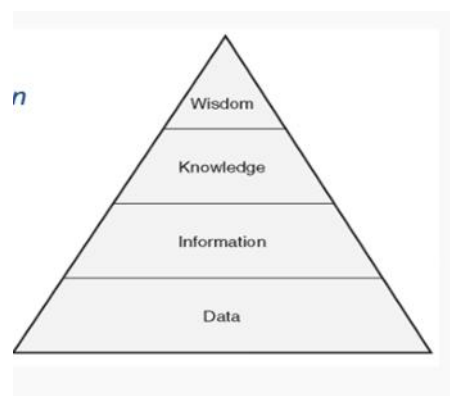
6.6 Performance evaluation

6.6.1 Monitoring, measurement, analysis and evaluation

An organization needs to take into account the identified risks and determine the following: (ISO 2015)

- a) what needs to be monitored and measured to demonstrate the conformity of initial product
- b) how the process performance is evaluated
- c) how customer satisfaction will be evaluated
- d) what kind of action will be needed for continual improvement

The graph 19 provides a simple illustration of monitoring, measuring and evaluation of the quality management system.



GRAPH 19. ISO-CD 9001 (ISO 2015)

An organization needs to monitor the customer related information in terms of what extent the requirements will be met. If necessary, the organization should obtain the information such as customer feedback, the customer views and understanding of the organization and the processes of goods and services. (ISO 2015)

Pohjanmaan Metalli use the fishbone method for problem solving method. Moreover, they have a time of delivery measurement system, process flow and customer satisfaction measurement system. (Pohjanmaan Metalli Oy 2015)

Management will concern about collection of customer-related data for analysis, in order to obtain information for improvements. Moreover the organization analyze data is to assess its performance and identify areas for improvement. (IMS 2015)

6.6.2 Internal audit

The organization should manage internal audits at planned intervals to determine whether the quality management system

- a) takes consideration of new risk.
- b) should be planned, taking into consideration the status and importance of the process.
- c) is effectively implemented and maintained.
- d) need to define audit criteria, scope, frequency and methods. (ISO 2015)

CEO is responsible for internal audit. CEO is responsible for taking corrective action for continual improvement. Manager should define where should be more audit for companies' internal process. (Pohjanmaan Metalli Oy 2015)

Internal audit should be based on companies own experience. Management should focus on their external and internal audit. The company can use a questionnaire for effective internal audit. (IMS 2015)

6.6.3 Management review

The risk must be reflected in the output data, processing and management decisions. Top management should determine about internal meeting, review key performance quality, quality policy, quality objectives, results of audit, customer feedback, preventive and corrective action, recommendation for continual improvement. (ISO 2015)

Once a year Pohjanmaan Metalli has a management review system and audits can be held software based which helps to maintain quality. (Pohjanmaan Metalli Oy 2015)

Top management review activity should be evaluated to improve the effectiveness and efficiency of organizational processes. (Quality Manager 2015)

6.7 Improvement

6.7.1 Nonconformity and corrective action

An organization needs to maintain documented information such as evidence, the deviation of the nature and corrective measures. The Company will deal with nonconforming products by taking action to eliminate the detected nonconformity, authorizing use, taking action to preclude organizations original intended use or application. (ISO 2015)

To meet these requirements, an organization has some documents such as what kind of changes needed in the management, deviation and deviation of reports. (Pohjanmaan Metalli Oy 2015)

The organization will need to more focus on how they control nonconformity products and take corrective action to meet the requirements. For that the management will concern to take preventive action for improving the cost of poor quality. (Quality Manager 2015)

6.7.2 Continual improvement

The organization needs to continually improve the effectiveness of the quality management system through the use of the quality policy, quality objectives, audit results, the analysis of data, corrective and preventive actions and management review. A documented procedure should be established to define requirements for (ISO 2015)

- a) determine the causes of nonconformities and reviewing nonconformities
- b) reviewing the effectiveness of the corrective action taken
- c) determining potential nonconformities and their causes

d) determining and implementing action needed

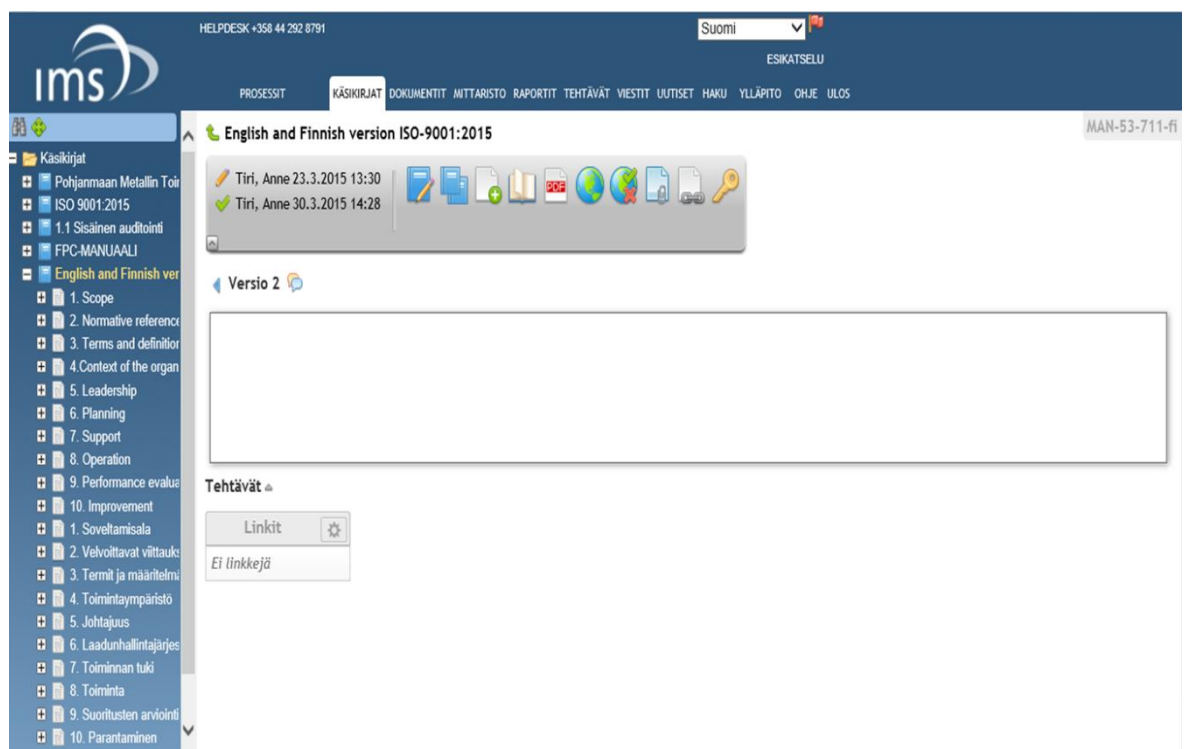
e) evaluating the need for action to prevent occurrence of nonconformities and

f) records of results of action taken

There were no findings in this research.

7. UPDATING IMS PROGRAM TO MEET ISO 9001-2015

IMS Software is a browser-based solution for creating a management or quality management system platform and it includes process illustration tool, document management tool, processing tool for feedback and evaluations, a separate section for an organization's indicators, task management tool and an editor for creating manuals. The quality manager of Pohjanmaan Metalli taught me how to use the IMS program. She is responsible for management in the company. The graph 20 provides a simple illustration of the IMS program of the quality management system.



GRAPH 20. IMS Program in Pohjanmaan Metalli Oy (IMS 2015)

To update the IMS program, I used practical and theoretical method. I collected information from the ISO webpage and seminars about what kinds of change can be in ISO 9001 revision version. For updating the IMS and implementing the ISO 9001-2015, I prepared some new documents such as quality policy, quality management system and customer satisfaction measurement system through the IMS program. Then all of these new requirements were added in IMS system to meet ISO 9001-2015. (Pohjanmaan Metalli Oy 2015)

8. CONCLUSION AND SUMMARY

Pohjanmaan Metalli Oy is a welding and structural steel manufacturing company. The company has an IMS Software to maintain quality management system. All process and description should be quality management based on ISO-9001 revision version and should be implement in the IMS system. IMS Software facilitates the maintenance and availability of instructions such as commissioning of a quality management system according to ISO 9001 requirements and creating management system. To implement ISO 9001-2015 quality management system companies need to follow several steps such as management representative, documentation, implementation, internal audits and certification. ISO 9001 for small SMES can be both easy and rewarding if done right.

ISO 9001-2015 is a risk based analysis process. The new ISO 9001 revision version will provide maximum benefit to the organization if it approaches ISO 9001 implementation in a practical way. ISO 9001-2015 creates an idea that positive risk (opportunities) should be managing the same way as negative risk. ISO 9001 revision version certification is not just suitable for a large company or organization but also a small company or organization will benefit from it by saving time and cost, improving performance and improving customer relationship. In this thesis, the target was to meet and update ISO 9001-2015 by using IMS software. Most of the requirements were meet in this thesis but some of the requirements were not meet because the new requirement will not publish from ISO until September 2015.

We implemented ISO 9001-2015 English and Finnish version in the IMS software in Pohjanmaan Metalli Oy. After that we wrote all of new requirements of ISO 9001-2015 version. Then we checked IMS software if it meets all the new requirements or not. From this thesis company got information how to make their own quality policy, customer related documents and how to measure customer satisfaction. The graph 21 presents the quality policy the Pohjanmaan Metalli Oy.

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ims

PROSESSIT KÄSIKIRJAT DOKUMENTIT MITTARISTO RAPORTIT TEHTÄVÄT VIESTIT UUTISET HAKU YLLÄPITO OHJE ULOS

ESIKATSELU

5.2. Quality policy

Käyttäjryhmä: 40 Admin
Udoy, Md Khan 11.5.2015 19:46
Ei hyväksytty

Käsikirja on hyväksyttävä ennen käyttöönottoa. Lähetä hyväksymispyyntö:

Versio 4

Mission and vision

The company's mission is to produce high quality steel structures, the customer's need.

The competitive factors of supply, quality and unique products.

The company's objective and strategy is aim to develop the quality of products, reliability and profitability.

The quality system and the creation of a full-scale implementation, working and production closer monitoring, measurement and analysis a Quality Policy refers to the way we operate and evolve continuously measure clearly, quality policy following basic elements:

- * Principle of continuous improvement
- * Knowhow and learning new things
- * Flexible policies
- * The professional activities and committed staff
- * Everyone is responsible for their own quality of their work
- * The operation must be economically viable
- * Understanding customer needs and the fulfillment of requirements

GRAPH 21. Quality Policy in Pohjanmaan Metalli Oy (IMS 2015)

For customer related document and measure customer document, companies need to make a plan of what is measurements which will be done in various stage and various department such as what kind of tools and satisfaction techniques can be apply in the company. The company can use different kind of measurement tools like as control chart, hypothesis testing, and process capabilities and so on.

In my view ISO 9001-2015 will have a positive impact as it is clearer and better than the previous standard because in ISO 9001-2015 the focus on risk management where the previous standard ISO 9001-2008 v had only preventive action. However, in this case the new requirements will be of great value for the small business that had previously not

properly managed the external and internal risk to their very existence. In fact, I got much new knowledge and experience. I had no previous experience in quality management systems and ISO standards. Although the work was challenging but it was interesting. However I think, I acquired much practical experience that will help in the future. I hope that my work will help the company and they will get good foundation for the quality management system.

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