QUALITY MANAGEMENT SYSTEMS IN METAL PROCESSING, HARDWARE AND MACHINERY INDUSTRIES IN LATVIA

KVALITĀTES VADĪBAS SISTĒMAS METĀLAPSTRĀDES, METĀLIZSTRĀDĀJUMU UN MAŠĪNBŪVES NOZARĒS LATVIJĀ

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Abstract: After increase in GDP in Latvia during the years 2005 … 2007 the growth rates started to decline since the 3rd quarter of 2007. The recession has affected all industries, including metal processing, hardware and machinery which were highly competitive – more than 70 percent of the output was exported to the EU and world markets. In order to survive under conditions of fierce international competition the companies in Latvia are developing, implementing and improving their quality management systems. The most popular quality management systems standard used for implementation is the standard ISO 9001:2008. The structure of quality management systems is designed specifically for each particular company still using the same requirements of ISO 9001. Further in publication are reflected requirements and sequence of QMS implementation which is not the same as as the sequence of requirements in the standard, therefore correct application of requirements should be done by properly trained personnel. In the final part of the publication are provided characteristics of integrated management systems and data on trends of the number of certified QMS, environmental and integrated management systems in metal processing, hardware and machinery industries in Latvia.

Introduction

High growth rate of economy has been observed in Latvia in recent years which is characterized by annual average increase of GDP during 2005-2007 by 11%, and in 2007- by 10.3%. Since the 3rd quarter of 2007 growth rates have started to decline due to the processes influencing both internal and external market. In the 1st quarter of 2009, GDP has decreased by 18% comparing to the 1st quarter of 2008. Metal processing, hardware and machinery industries totally are forming 29.2 % of Latvia's export in 2008. Metal and hardware produced in Latvia are highly competitive around the world. The most part of the export (more than 70% of the output) goes to the EU member states. Machinery and equipment manufacturing industries are also export-oriented and more than 80% of products are being exported [1].

Typically clients of exporting companies are stipulating their quality requirements for products, processes, technologies, equipment, company's management system or combination of the above mentioned elements. Normally these requirements shall be fulfilled before the start of the business relationship.

In order to get assurance that supplied products are manufactured in managed and transparent way, clients stimulate or even require their suppliers to implement quality management systems.

Companies, which are suppliers for automotive industry, can be asked to implement industry specific quality management system, using requirements of ISO/TS 16949:2002.

Implementation of quality management system does not necessarily should be certified by the third party. However, in many cases clients recommend their suppliers to undergo quality management system certification by independent, accredited management system certification body.

ISO 9001:2008 Quality management systems

The most popular quality management system standard, used for quality management system implementation is ISO 9001 – "Quality management systems – Requirements". The fourth edition of this standard was published by ISO in November 2008 [2].

According to the data of last published ISO Survey of certifications (2007) there were 951 486 certificates issued in 175 countries/economies, conforming management system compliance to requirements of ISO

9001:2000 (previous, third edition of ISO 9001) [3].

Quality management system standard ISO 9001:2008 (ISO 9001) is elaborated by technical committee ISO/TC 176 of the International Organization for Standardization (ISO), worldwide federation of national standards bodies.

ISO 9001 is not an industry specific standard, it is comprehensibly applicable to any industry and any company. It provides a set of requirements for development process based company's quality management system (QMS). Each QMS structure is designed specifically for the particular company still using the same requirements of ISO 9001.

QMS requirements specified in ISO 9001 are complementary to requirements for the products. So starting cooperation with client product requirements shall be clearly communicated and expression "Our product is ISO 9001 compliant" is false, because ISO 9001 does not stipulate any product requirement.

For the company to function effectively it has to manage numerous linked processes, therefore when implementing ISO 9001, company starts with process identification, determination of their sequence and interaction and usually depict the process flow, using flowcharts. Sequence of QMS implementation in company can slightly differ, but general steps are the following (the listing may not be exhaustive):

- Assessment of existing QMS in light of ISO 9001 and identification of gaps.
- Formulating of QMS scope (QMS can be implemented, covering part of company's processes, for example, if company produces hardware – e.g. bolts, nails, rivets, etc.), supplies them to clients, and owns retail store, QMS could be designed covering production and supply, but excluding retail. However, formal restriction which could affect fulfilment of contract requirements and influence client satisfaction, should be avoided.
- Process identification, determination of their sequence and interaction, setting process measurement criteria and methods for criteria measurements.
- Elaboration and documentation of process descriptions, taking into account requirements of ISO 9001 for specific processes, for example – supply, new products development, human resource management and others.
- Implementation of the above mentioned processes and process monitoring activities (most likely the majority of them is already a normal practise of company's way of working).
- Documentation of Quality Policy and Quality Objectives.
- Elaboration and documentation of Quality Manual (process descriptions can be a part of it).
- Execution of QMS internal audit and identification of QMS improvement areas.
- Management review.

Most suitable way of QMS implementation could be identified by responsible, preferably appropriately trained, person or group of persons – quality management system implementation coordinator (quality system manager, quality manager). Involvement of experienced consultants is highly advisable. Successful development and implementation of QMS is very much dependent on personal quality awareness of top management.

Requirements in the standard ISO 9001:2008 are grouped as follows:

- Quality management system - general requirements, QMS documentation requirements.
- Management responsibility – management commitment, customer focus, quality policy, planning (incl. quality objectives), responsibilities and authorities, communication, management review.
- Resource management – provision of resources, human resource management, infrastructure and work environment.
- Product realization – planning of product realization, customer related processes, designing and development of products, purchasing, production and service provision, control of monitoring and measuring equipment.
- Measurement, analysis and improvement – client satisfaction measurement, internal audit, monitoring and measurement of products and processes, control of non-conforming product, analysis of data, corrective and preventive actions.

The implementation sequence of QMS in the company is not the same as the sequence of

requirements in ISO 9001:2008, therefore correct application of requirements can be done by properly trained personnel.

Industry specific quality management systems

There are QMS standards, developed specifically for the particular industry sector, for example, ISO/TS 16949:2002 for automotive industry.

The requirements of ISO/TS 16949 are applicable to all manufacturers of parts which go into or onto a vehicle. The applicability requirements have been defined by International Automotive Task Force (IATF) in such a way that producers of tools or of parts not intended for use in cars or providers of indirect services (for example engineering) are not eligible for ISO/TS 16949 certification [4]. According to the data of ISO Survey of certifications (2007) there were 35 198 certificates issued in 81 countries/economies, conforming management system compliance to requirements of ISO/TS 16949:2002 [2].

Integrated management systems

To obtain feasible data on integrated management systems, developed following to requirements of international standards ISO 9001, ISO/TS 16949 or other is nearly impossible. ISO Survey, which is the only such kind of certification service data source, does not offer data about the number of certified companies. All data are provided about the number of certificates. But a company can have several certificates – each of them conveying information about different systems – company's management system could comply to ISO 9001, ISO 14001, OHSAS 18001 and ISO/TS 16949. Often requirements of standard ISO 9001 form a base for management system, because it is compatible with other management system standards – ISO/TS 16949, ISO 14001.

A fully integrated management system has to include different elements, not only quality requirements, and the management processes are to be extended to all parts of the business. All the internal management practices have to be linked up into one system and not considered as separate components. This is often called the „integrated view" approach. The objective should be to achieve a system that employs the *Plan-Do-Check-Act* cycle in a manner that addresses quality, safety, environment, and other requirements in all activities, such as finance, marketing, operations and personnel [5].

Integrated management system is not only putting together requirements of ISO 9001 and ISO ISO/TS 16949 or whatever combination of standards. It would be preferable that integrated management system comprises all processes of the company – from marketing and new products development to finance and HR management, at the same time applicability of each requirement of the standard should be carefully assessed. The term „integrated management system" should be used with a certain restriction, because not all management systems, certified as conforming to particular standards, are always really integrated. The level of management system integration can be different.

Management systems in metal processing, hardware and machinery industry

Experience of management systems development and certification in companies in Latvia is around ten years long and, depending of industry and business needs, a number of companies have developed integrated management systems.

First companies in Latvia, which received certificates, approving their management system conformity to requirements of standards ISO 9001:1994 and ISO 9002:1994 (second edition of quality management system standards) appeared in 1995-1998. In the first issue of magazine "Kvalitāte" ("Quality"), issued by Latvian Association for Quality bimonthly in 1998 totally 11 companies were listed. From 1998 to 2000 when the next version of standard ISO 9001:2000 (which superseded standards ISO 9001:1994, ISO 9002:1994, ISO 9003:1994), was published, the number of certified companies gradually increased.

Overview of management system certification in Latvia, split into sectors, shows that the certification services mostly have been used for management systems certification in construction and engineering services. Comparing to total number of certified companies in particular industry high number of integrated management systems can be observed in food industry, wood

and wood products, chemical, metal, electrical and optical equipment production industries.

The data about management system certification in metal, hardware and machinery industries in Latvia are represented in the Table. The data show number of companies, having one or more management system certificates on 16 September 2009.

Table

Management system certification in metal, hardware and machinery industries in Latvia [6]

Industry and standards	Number of certified companies	Number of companies, having QMS – ISO 9001:2000 or ISO 90001:2008	Number of companies, having quality and environmental management system – ISO 9001:2000 or ISO 90001:2008, ISO 14001:2004	Number of companies, having quality and occupational health and safety management system – ISO 9001:2000 or ISO 90001:2008, OHSAS 18001:2007	Number of companies, having quality, environmental and occupational health and safety management system – ISO 9001:2000 or ISO 90001:2008, ISO 14001:2004 OHSAS 18001:2007
EAC 17 Metal and hardware, EAC 18 Machi-nery	40 *)	27	6	2	5

*) *One company has a certified environmental management system only*

Most popular is ISO 9001 quality management system certification, although development and certification of integrated management systems is noticeable as well. In September 2008 there were 41 certified metal, hardware and machinery industry companies; 12 of them had certified integrated management systems. In 2009 integrated management systems are in 13 companies out of 40 certified (see in the Table).

The worldwide trend is that integrated management systems are becoming more and more popular, covering not only quality management aspects, but also health and safety issues, environmental management, social responsibility, information security and others.

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I.Mežinska, J.Mazais. Kvalitātes vadības sistēmas metālapstrādes, metālizstrādājumu un mašīnbūves nozarēs Latvijā

Pēc iekšzemes kopprodukta pieauguma Latvijā 2005. - 2007.g., sākot ar 2007.g. 3.ceturksni kopprodukta pieauguma ātrums sāka ievērojami samazināties. Lejupslīde skāra visas nozares, tai skaitā metālapstrādes, metālizstrādājumu un mašīnbūves nozares, kas līdz tam bija samērā konkurētspējīgas – vairāk nekā 70 procentu no ražojumiem tika eksportēti. Viena no iespējām, kā izdzīvot pieaugošās konkurences apstākļos, ir kvalitātes vadības sistēmu ieviešana Latvijas uzņēmumos. Latvijā un pasaulē populārākais kvalitātes vadības sistēmu standarts ir starptautiskās standartu organizācijas ISO izstrādātais standarts ISO 9000:2008. Kvalitātes vadības sistēmas struktūra katram atšķirīgam uzņēmumam tiek veidota, lietojot vienas un tās pašas ISO 9001 prasības. Rakstā doti kvalitātes vadības standarta nosacījumu formulējumu un kvalitātes vadības sistēmas īstenošanas secība, kas ir atšķirīgi, tādēļ KVS īstenošana jāveic apmācītam personālam. Raksta nobeiguma daļā raksturoti integrētās vadības sistēmas izveides principi, kā arī sniegti dati par sertificēto kvalitātes vadības, vides pārvaldības un integrēto vadības sistēmu skaitu Latvijas metālapstrādes, metālizstrādājumu un mašīnbūves nozares uzņēmumos un to turpmākās attīstības tendencēm.

И.Межинска, Я.Мазайс. Системы управления качеством в отраслях обработки металлов, производства металлических изделий и машин в Латвии

После роста объема внутреннего валового продукта Латвии в периоде с 2005 по 2007 гг., начиная с 3-го кквартала 2007 г. скорость роста резко упала. Спад затронул все отрасли, включая обработку металлов, производство металлических изделий, машин и оборудования, которые прежде были весьма конкурентоспособны – более 70% продукции экспортировались. В статье показана одна из возможностей выживания в условиях усиливающейся конкуренции – внедрение систем управления качеством. Самым популярным является стандарт междунродной организвции стандартов ИСО-9001:2008. В статье охарактеризованы требования стандарта, последовательность их внедрения, приведены принципы организации интегрированной системы управления и данние о числе и тенденциях сертифицированных систем управления, среды и управления качеством в отраслях обработки металлов, производства металлических изделий, машин и оборудования Латвии.