Environmental and quality management systems

Case: HFT Network Oy

Lahti University of Applied Sciences
Degree Programme in Environmental Technology

SIMOLA, SENNI: Environmental and quality
                                  management systems
                                  Case: HFT Network Oy

Master's thesis in Environmental Technology, 50 pages, 6 pages of appendices

Fall 2015

ABSTRACT

Environmental and quality management systems are a set of policies, processes and procedures required for the planning and execution of production, development and service in the core business area of an organization. Commonly used management system standards are the ISO 9001:2015 quality management system standard, and the ISO 14001:2015 environmental management system standard, which are published by the International Organization for Standardization.

The aim of this Master's thesis and the case study was to build and implement an environmental and quality management system for an organization that offers environmental management services for the public and private sectors. The work was started by examining the concept of environmental and quality management systems, and delving further into the theory of quality. The thesis also offers a general description of the laws and decrees that regulate the waste management, waste collection and waste transportation industry in Finland.

The implementation phase is described in a chronological order, starting from the management policy publication, and the commitment of the top management group. The next phase was building a process map and then deepening into process charts and process cards, which were built and defined together with the employees of the related departments. The execution of the management system to the grass-roots level was carried out in various training events and written announcements.

The final result of this Master's thesis is an environmental and quality management system that could be merged together with the occupational health and safety system that was carried out as another thesis project. The first stage audit of the system will be carried out in 2015, and the certification audit in the spring 2016.

Key words: ISO 9001 quality management system, ISO 14001 environmental management system, ISO standards, management system building, management system certification

Lahden ammattikorkeakoulu
Ympäristöteknologian koulutusohjelma (YAMK)

SIMOLA, SENNI: Ympäristö- ja
                                 laatujohtamisjärjestelmät
                                 Tapaustutkimus HFT Network Oy

Ympäristöteknologian koulutusohjelman opinnäytetyö (YAMK), 50 sivua, 6
liitesivua

Syksy 2015

TIIVISTELMÄ

Laatu- ja ympäristöjärjestelmät ovat menettelytapojen, prosessien ja
toimintaohjeiden koosteita, joita organisaatio käyttää ydintoimintojensa
suunnitteluun, kehittämiseen ja toteuttamiseen. Yleisesti käytettyjä laatu-
ja ympäristöjärjestelmästandardeja ovat Kansainvälisen
standardisoimisliiton julkaisemat ISO 9001: 2015 – laatujärjestelmä-
standardi ja ISO 14001:2015 – ympäristöjärjestelmästandardi.

Tämän opinnäytetyön ja tapaustutkimuksen tarkoitus on rakentaa ja
implementoida laatu- ja ympäristöjohtamisjärjestelmä yritykselle, joka
tarjoaa ympäristöhuollon kokonaispalveluita kunta- ja yksityissektorille.
Tapaustutkimus aloitettiin tutkimalla laatu- ja ympäristöjärjestelmiä ja
niiden käyttö yleisellä tasolla ja syventymällä laadun teoriaan. Työssä
kuvataan pääpirteittäin lait ja asetukset, jotka säätelevät jätteen käsittelyä,
keräämistä ja kuljetusta Suomessa.

Laatu- ja ympäristöjärjestelmän implementointiprosessi on kuvattu
kronologisessa järjestyksessä, alkaen toimintapolitiikan julkaisusta ja
johtoryhmän sitouttamisesta. Työ jatkui prosessikartan määrittelyllä ja
avaamalla prosessikarttaa prosessikaavioin ja – kortein. Kaaviot tehtiin
osastoittain yhdessä työntekijöiden kanssa. Toimintajärjestelmän jalkautus
juuritasolle, jonka muodostavat valtakunnallisesti sijoitetut kuljettajat,
toteutettiin erilaisilla koulutustilaisuuksilla ja kirjallisilla tiedotteilla.

Työn lopputuloksena on koko yhtiön kattava laatu- ja toimintajärjestelmä,
joka voitiin yhdistää saumattomasti toisena lopputyönä tehdyn työterveys-
ja turvallisuusjärjestelmän kanssa. Järjestelmän esiauditointi toteutetaan
vielä vuonna 2015 ja sertifiointi keväällä 2016.

Avainsanat: ISO 9001 laatujohtamisjärjestelmä, ISO 14001
ympäristöjohtamisjärjestelmä, ISO- standardit, toimintajärjestelmän
rakentaminen, toimintajärjestelmän sertifiointi

CONTENTS

1 INTRODUCTION

A management system is a collection of procedures and processes that a company uses to ensure that it meets its objectives. Commonly used management systems are based on the ISO 9001, ISO 14001 and OHSAS 18001 standards, which represent quality, environment and occupational health and safety, respectively. The management systems based on an ISO standard can be certified, and the certificates admitted by an accredited certification company are internationally acknowledged. The benefit of certification to a company is that through the certification it can ensure to its customers a certain level of quality, environmental and health and safety management.

HFT Network Oy is an environmental management company that provides waste collection and transportation services, environmental reporting and consulting services for municipalities and for business and industry. Both the public and private sector customers have shown an increase of interest towards the quality, environmental and occupational safety work in the company. Many of the business and industry clients are high-profile companies and known either nationally or internationally. The current economic situation in Europe, the tightening competition in the waste collection, transportation and handling industry and the increase of people's knowledge about environmental issues as well as the changes in the company structure laid the groundwork for the need of a working and practical management system.

The aim of this thesis is to create and implement a quality, environmental and occupational health and safety system to a level where it would be possible to start the certification process. This thesis concentrates on the quality and environmental parts of the management system, as the occupational health and safety part was carried out as a separate thesis project due to its more practical nature. After reading this thesis, the reader should have an understanding of the laws and regulatory requirements that regulate waste collection, transportation and handling in Finland. The reader should also know how an environmental and quality

management system can help organizations to fulfill these requirements, meet and exceed customer expectations, and reduce the environmental impacts of the organization.

The author of this thesis has been in charge of the planning and carrying out the management system building project and its implementation together with the customer service director. Before her employment in HFT Network Oy in late 2012, the author already had a history of working with certified management systems, including ISO 14001:2004 and EMAS. The project originally started in late 2012- early 2013, but was suppressed by the organizational changes until late 2014 and 2015. At the same time when finishing this thesis, the author and the customer service director had made a contract with an accredited certifier, and the first stage audit was set for December 2015 and the certification audit for early March, 2016.

2   WASTE MANAGEMENT AND TRANSPORTATION IN FINLAND

Waste management and transportation in Finland are regulated in the Waste Act (646/2011) and detailed further in the Government Decree on Waste (179/2012). In addition, there is the National Waste Plan that aligns the objectives for waste management in Finland. HFT Network Oy has tended the carrying of hazardous waste to its subcontractors, so the Government Decree on the Transport of Dangerous Goods by Road (194/2002) is ruled out in this thesis.

2.1   Waste Act (646/2011)

Waste legislation in Finland covers all waste, except radioactive and some certain special types of waste, which have their own legislation. Finnish waste legislation is based on EU waste legislation, but it some areas it has stricter limits and standards. (Ministry of the Environment 2015.)

2.2   National Waste Plan – Towards a recycling society

The National Waste Plan for 2016 was published in 2008 and it is approved by the Government. The plan's objective is to introduce the waste hierarchy and the strategy covering the principles, aims and objectives of prevention of waste generation and waste management. (National Waste Plan, 2008.)

2.3   Waste hierarchy

All waste management must comply to the order of priority, as pictured below.
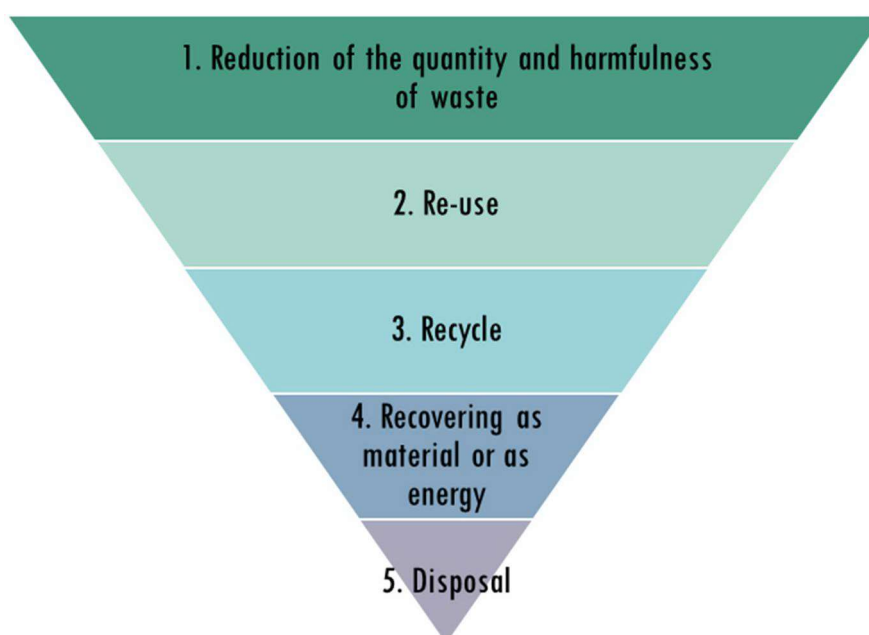
Figure 1. Waste hierarchy (National Waste Plan, 2008.)

A plan on how to implement the order of priority is established in the National Waste Plan. The plan aims to reduce the amount of municipal waste disposed to the landfills by 20% by the end of the year 2016. This is reached by recycling 50% of the municipal waste as material and 30% as energy. The 14th section of the Government Decree on Waste declares the waste fractions to be collected separately:

> *The operator of an industrial, service or other business activity, any other waste holder, and municipalities are obliged, subject to the conditions laid down in sections 8, 13 and 15 of the Waste Act, to organize the separate collection and recycling of paper, cardboard, glass, metal, plastic and bio waste for which the operator is responsible.*

2.4   Responsibilities

Section 12§ of the Waste Act declares that it is the waste producer's responsibility to be aware of the waste produced in the production process or by the product itself, of the waste's environmental- and health impacts and waste management, and work towards decreasing those impacts.

The waste holder's responsibility is to be aware of the quantity, quality and type and other important properties of the waste, so the holder is able to organize waste management.

These responsibilities are further specified in the 20th section of Government Decree on Waste (179/2012). The waste producer must keep a chronicle order of records that include the following information:

> *1) The quantity of waste;*
>
> *2) The waste entry in accordance with the list of waste and description of the type of waste and essential information on the properties and composition of the waste;*
>
> *3) In a case of hazardous waste, the main hazardous properties in accordance with annex 3;*
>
> *4) When the waste is delivered to another location for treatment, the name and contact information of the consignee and waste carrier and the method of waste treatment.*

The waste carrier, broker or collection operator must keep the same records as the producer and also the following information:

> *5) The dates of waste transport or waste reception and delivery;*
>
> *6) The name and contact information of the consignee of waste.*

2.5   Municipal waste collection in Finland

As declared in the Waste Act, section 32

> *(1) A municipality must organize waste management for the following non-hazardous waste:*
>
> *1) waste generated in permanent dwellings, holiday homes, residential homes and other forms of dwellings, including sludge in cess pools and septic tanks;*
>
> *2) Municipal waste generated in health care and social welfare services, and educational activities;*

3) waste generated by administrative and service activities of the state, municipalities, parishes and other corporations and associations subject to public law, other than the municipal waste referred to in paragraph 2;

4) Municipal waste generated on business premises, collected at the property together with the waste referred to in paragraphs 1–3;

5) Other municipal waste collected together with the waste referred to in paragraphs 1–4 in a regional automated pipe collection system for waste, or in another corresponding collection system.

(2) In addition, municipalities shall organize the reception and treatment of hazardous waste generated in dwellings. Municipalities are responsible for the reception and treatment of hazardous waste generated in agriculture and forestry, unless excessive quantities are involved.

(3) The obligation of municipalities pursuant to subsections 1 and 2 does not apply to waste delivered for waste management organized by the producer or distributor, in accordance with chapter 6 [producer responsibility] and or 7 [beverage containers].

Most of the municipalities have formed municipal waste management companies that offer waste reception and treatment, waste guidance and invoicing services. These companies do not usually offer waste transportation services. The Waste Act allows the waste transportation from a property to be organized either by the municipality or by the property holder. If the municipality has chosen to organize the transportation, the municipal waste management company will hold a competitive tendering and the contract will go to subcontractor.

2.6 Waste transportation

Waste transportation in Finland is strictly regulated. A transportation company cannot collect waste before applying an approval in the waste management register.

2.6.1 Waste management register

According to the Waste Act, sections 94-99, anyone who intends to collect, transport or act as a dealer of waste on a professional basis must submit an application for approval of activity in a waste management register. The register is maintained by and the applications submitted to the Centers for Economic Development, Transport and the Environment (ELY Center) in whose area the majority of the operation occurs. The application must include information about the operator, the area of operation and the waste that will be handled, and information about the operator's professional skills and financial guarantee. The application must be submitted and accepted before the collection starts.

The decision concerning approval in the waste management registry must include a certificate containing information entered in the waste management register and information on the deadline for changes to the certificate. The certificate must be in the vehicle during operation and the driver must provide it to the authority and the police if asked. In the calendar year when three years have passed of the approval, the ELY Center will send a request for verification of the information of the certificate. The operator will notify the centre of any changes in the information.

2.6.2 Notification to the municipal environmental authority

According to the Waste Act, section 100, anyone who intends to collect waste on a professional basis must submit a notification for entry in the waste management register. The notification is submitted to the environmental protection authority of the municipality in which the collection occurs. The notification must be submitted well before the collection starts. The information given in the notification must include the waste types that are collected, location of the reception points and information about the equipment used in the collection. The municipal environmental authority will notify the collector of its entry to the waste management register or ask further questions if necessary

2.6.3 Shipping document

According to the Waste act section 121 and the government decree on waste, act 24, the waste holder must compose a shipping document of hazardous waste, sludge in cesspools and septic tanks, sludge in sand and grease interceptors, contaminated soil and construction and demolition waste. The document must contain information about the quantity, quality, type and origin of waste, and the delivery site and waste carrier. The document must accompany the waste during transportation and it will be submitted to the waste consignee after the transportation.

3 ENVIRONMENTAL AND QUALITY MANAGEMENT

Environmental and quality management are a company's way to ensure its performance meets the objectives it has established to its operation. These procedures are often collected to an environmental and quality management system, later EQMS, which is a compilation of common procedures. An EQMS can be based on a standard, which means it will fill the requirements of the standard in question. The standards establish what measures of action needs to be done, but they do not establish how the actions should be carried out.

The benefit of a standard-based environmental and quality management system is that the system can be certified and the certificates are commonly known and the company is able to prove a certain level of environmental awareness and quality control with the certificate. The goal of environmental and quality management systems however should never be just the certification. An EQMS should enable organizations to provide services and products that exceed their customer's expectations and to minimize the environmental impacts of its operations (Hoyle, 2009, 1). When talking about quality management of products, it is important to notice that the term "product" can also refer to service (ISO 9001, 15).

3.1 Defining quality

According to Pyzdek and Keller (2000, p. 17), organizations have traditionally been structured according to functional specializations, for instance, marketing, engineering, manufacturing and invoicing. All of the departments perform an activity essential in delivering value to the customer. In the past these have been performed sequentially, which can often lead to the "silo-mentality" (Pyzdek and Keller, 2000, 21), where every department tends to focus on its own functioning. Lately the co-operation of the departments has been seen to form a spiral or a circle, where each new cycle uses the information and knowledge gained in the previous cycle. This model emphasizes the view where quality is the

responsibility of many departments, and if a separate quality department exists, its role should be a supporting one.

Quality functions can be grouped into three categories:

Quality planning, which consists of five steps; defining the customers and their needs, developing products and service features to meet customer needs, developing processes to deliver the wanted product and service features and transferring the resulting plans to operational personnel. (Juran and DeFeo, 2010, according to Pyzdek and Keller).

Quality control is the process used by those in charge of the operational product or service production to evaluate if the process meets the requirements defined in the planning stage. Quality control can be divided into three parts; evaluation of the operating performance, comparing that performance to the goals and acting on the difference.

Quality improvement aims to attain levels of performance that are significantly better than any past level (Pyzdek and Keller, 2012, 22). There are many different methods and tools for quality improvement, such as the ISO 9001 Quality management systems- standard, Six Sigma, Lean and Business Excellence Model. All the three quality functions are aspects of quality management.

3.2 Quality management principles

ISO/TC 176, a technical committee of the ISO responsible for the ISO 9000 family of standards, has defined quality principle as follows:

> *A comprehensive and fundamental rule or belief, for leading and operating an organization, aimed at continually improving performance over the long term by focusing on customers while addressing the needs of all other interested parties (According to Hoyle, 2009, 9).*

In the recent decades, eight quality management principles have been formed to help determine the right things to do and why they are done. It is essential for an organization to adopt these principles before establishing

actual quality objectives. If these principles are not adopted, the organization faces a risk on being consumed in the details of the quality objectives and losing sight of their true purpose of quality improvement. (Hoyle, 2009, 9).

The achievement of quality depends on eight principles:

1. *Customer focus* – understanding the needs and expectations of customers and meeting and exceeding their requirements. Communicating these needs and expectations through the organization. Measuring the satisfaction and acting according to the results.
2. *Leadership* – a strong leadership will create a unity of purpose and quality culture. Establishing and communicating to all levels a clear vision on the organization's future. Building trust and promoting open communication. Setting goals and targets aligned to the mission and vision.
3. *Involvement of people* – Leadership in the organization is more than giving orders and includes people throughout the organization in participating in achieving the organizations goals. The employees should be focusing on creating value to the customers and deriving satisfaction from their work.
4. *Process approach* – Anything an organization does should be viewed as a process which includes an input and resources and a desired result. Finding better ways of achieving the process objectives and improving the process efficiency.
5. *System approach to management* – only understanding interactions and interdependencies can lead to meeting objectives. The employees are able to visualize the organization as a system of interacting processes.
6. *Continual improvement* – a commitment to continually improve all the organizations activities. Identifying areas of potential improvement by using periodic assessments against established criteria of excellence.

7. *Factual approach* – basing all the decisions on the analysis of data and information. Collecting data and information and taking measurements relevant to the product, process or service. Ensuring that the data is accurate, reliable and accessible.

8. *Mutually beneficial relationships* – creating cooperative relationship with suppliers that create value to both parties. Creating clear and open communications and joint improvement of processes. (Hoyle, 2009, 9; Pyzdek and Keller, 2012, 44-45).

A failure to understand the meaning of one or more of these principles, pictured below, or managing them ineffectively can lead to a deficiency in quality. The consequences of the deficiency can be severe for the customer, the organization or the whole stakeholder group and even further.

The requirements of ISO 9001 are based on the eight quality principles, and their purpose is to provide assurance of product quality.
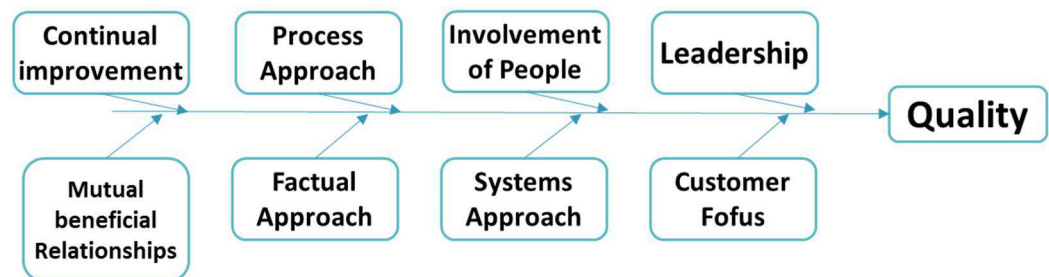
Figure 2. The eight principles of quality.

3.3   Reducing environmental impacts

Despite their trade field, all sizes and types of organizations have been showing an increase of interest in the potential environmental impacts of their activities, products or services. This is due to the growing concern of the state of the environment and better awareness of the effects of climate change. An environmental management system can be used for controlling, managing and reducing environmental impacts from operations. Organizational commitment to continual improvement of the

organizations environmental performance can be expressed to the concerned parties by implementing and environmental management system. (Department of Energy &Climate Change. UK. 2002).

The Public Health and Safety Organization, USA, which is an independent accredited testing, auditing and certification company (NSF, 2015), has listed the benefits of having an environmental management system:

- Improved environmental performance
- Pollution prevention
- Enhanced compliance
- Cost reduction/ increased efficiency
- Employee awareness of environmental issues
- Competitive advantages
- Attracting new customers (According to Weiß and Jörg, 2007, 21):

3.4   ISO 9001:2008 and ISO 14001:2004

ISO (International Organization for Standardization) 9001:2008 and ISO 14001:2008 (later: ISO 9001; ISO14001) are commonly used, international quality and environmental management system standards. It has become increasingly important for all kinds of organizations to be aware of their environmental impacts. This is both because of the stringent legislation and policy that lead towards environmental protection and the increasing concern expressed by their customers and public in general (ISO 14001, 7.). Both of the standards are generic, and can be used in any kind of organization.

Many organizations have taken action in measuring their environmental and quality performance with audits or reviews. These assessments should be conducted in a company's structured, integrated management system to be effective (ISO 14001, 7.). ISO 9001 and 14001 specify requirements for an EQMS in a manner that a company is able to develop and implement an environmental and quality policy and – objectives and to adhere to legal requirements. The core purpose of ISO 9001 is to help the

organization to meet and exceed customer requirements. The purpose of ISO 14001 is to make the organization analyze how its operations affects the environment to minimize those effects.

Both standards are based on the four-step methodology called the Deming Circle, figure 3 below, or PDCA or, Plan-Do-Check-Act (ISO 14001, 9; ISO 9001, 11.).

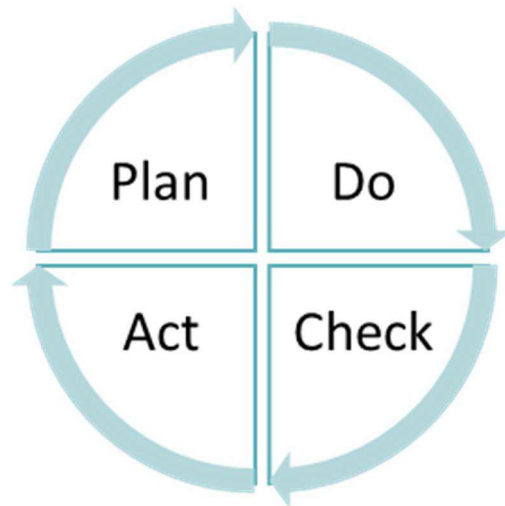Figure 3. The Deming Circle

To improve its quality and environmental management, an organization should not focus only on what happens, but why it happens. The systematic identification and corrections of deficiencies of the system will lead to a better organizational performance. Figure 4 below is a model of continuous improvement of a combined environmental and process- based quality management system.
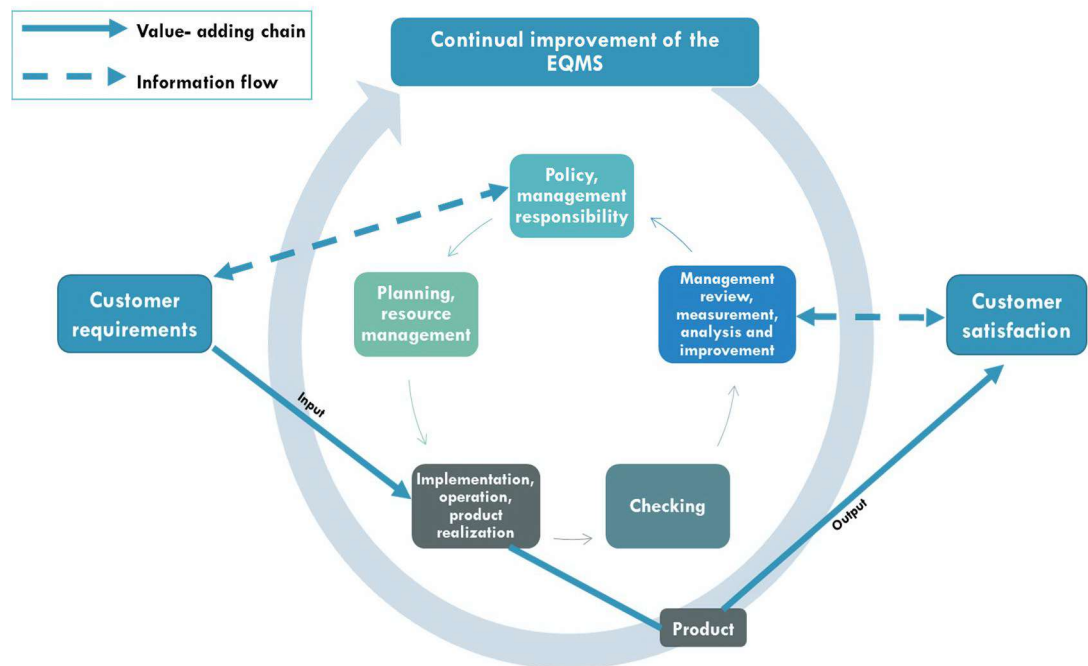
Figure 4. Model of a combined environmental and quality management system.

PDCA meaning:

- Plan: Establishing the processes and objectives necessary to deliver results in accordance to organizations policy and customer requirements.
- Do: implementing the processes
- Check: Monitoring and measuring the processes and products against organizations policy, objectives, legal and other requirements and report the results
- Act: Taking actions to continually improve process performance and the management system (ISO 14001, 9; ISO 9001, 11.).

3.5 Common elements of ISO 9001 and ISO 14001

The ISO 9001 and ISO 14001 standards are built in a manner that the user is able to combine the quality and environmental management systems into one system. The standards only specify the structure of the

EQMS, the contents are for the organization to decide. All the requirements of ISO 9001 are related to one or more of the quality principles listed in chapter 3.2. (Hoyle, 2009, 10.). The parts that both system have in common are listed below in table 1, using the corresponding terminology.

ISO 9001		ISO 14001	
5.3	Quality policy	4.2	Environmental policy
5.4.1, 5.4.2	Quality objectives,quality management system planning, continual improvement	4.3.3	Objectives, targets and programmes
5.5.1, 5.5.2, 6.1	Management commitment, responsibility and authority, managment representative, provision of resources, infrastructure	4.4.1	Resources, roles, responsibility, and authority
6.2.1, 6.2.2	Human resources, competence, training and awareness	4.4.2	Competence, training and awareness
5.5.3	Internal communication, customer communication	4.4.3	Communication
4.2.1	Documentation	4.4.4	Documentation requirements
4.2.3	Control of documents	4.4.5	Control of documents
7.6, 8.2.3, 8.2.4	equipment, monitoring and measuring processes, monitoring and measuring of product	4.5.1	Monitoring and measurement
8.3, 8.4, 8.5.2, 8.5.3	Control of noncorforming product,analysis of data, corrective action, preventive action	4.5.3	Nonconformity, corrective action and preventive action
4.2.4	Control of records	4.5.4	Control of records
8.2.2	Internal audit	4.5.5	Internal audit
5.1, 5.6	Management commitment, management review	4.6	Management review

Table 1. Common elements of ISO 9001 and ISO 14001 standards (ISO 14001, 43-45.).

3.6   ISO 9001:2015 and ISO 14001:2015

ISO released new versions of the ISO 9001 and ISO 14001 standards in late October 2015. The most significant changes had been informed to the public before the release date. A new high level structure is used in both of the standards. It makes the implementation and identifying the common aspects of the standards easier for the user. The structure will also be used when the OHSAS 18001 standard will be revised and changed to an ISO 45001 standard in late 2016 (Sahlberg, 2014). The new structure consist of ten parts:

1. Scope
2. Normative references

3. Terms and definitions
4. Context of the organization
5. Leadership
6. Planning
7. Support
8. Operation
9. Performance evaluation
10. Improvement (Sahlberg, 2014.)

Risk management has been raised to a significant role in the new standards along with the increased requirement for the top management to show a greater involvement in the organizations management system. (Sahlberg, 2014.) The risks that need to be identified can include organizational, financial, operational, environmental, market, or legal risks (Weiß and Jörg, 2007, 25). In a seminar organized by the Finnish Standards Association (SFS), there was a consensus among the consultants that these risks should also be viewed as possibilities, but there has not been an official advice released about the matter.

According to Hoyle, the risk-based approach can be characterized by seeking answers to five questions:

1. What could endanger the organizations' ability to reach its goal
2. To contain the risks, what measures can be taken?
3. How can the organization know if the risks have been contained?
4. How can the organization ensure the integrity of the checks?
5. How can the organization know that the failures will not recur?

Organizations will have a three-year transition period after the release of the revisioned standards to adjust their management systems accordingly.

3.7   The benefits of management system implementation

A common mistake in organizations is thinking that a certificate is the goal of the management system. Instead, the goal should always be building an efficient management system that benefits the whole organization.

Certificates and the usage of standards are only tools for reaching that goal. If used wrongly, standards can also make the system less effective. That is why the building process should always start from organization's existing ways of operating instead of creating new ways only because they are believed to meet the requirements of the standards better. The standards do not speak out about how an organization should fill the requirements, only what requirements should be filled. (Hoyle, 2009, 1.).

Customer satisfaction is essential to the survival of a company. A reputation of being a trustworthy company and customer satisfaction are gained by delivering a product or a service to an agreed specification, at an agreed price in an agreed time. That reputation can easily be damaged by a malfunction somewhere in the supply chain or inside the organization.

ISO 9001 and other standards in the ISO 9000 family are tools meant to help organizations to develop and retain satisfied customers and stakeholders. The standard can be applied to any field of operations and products. The size of the organization is also irrelevant, the ISO 9000 family standards can be applied to any sized organization. Although the standards are voluntary, in many cases the ISO 9001 has become a market requirement. In the worst case, the lack of certification can lead to loosing contracts.

According to Hoyle, customers select their suppliers in one of the three ways below:

a) on the basis of past performance, recommendation or reputation
b) assessing the capability of potential suppliers themselves
c) using an assessment of capability made by a third party (Hoyle, 2009, 2.).

The most common options used are a) and b), but there are situations where there is no evidence supporting using option a, and option b is not economical or there are no resources available. In these cases a certificate in a relevant field of quality management is a signal to the third

party that the organization is capable to meet the regulatory and customer requirements. (Hoyle, 2009, 5.).

4 HFT NETWORK OY

4.1 The company

HFT Network Oy was founded in Finland in 2002. HFT Network Oy provides environmental management services for municipalities and for business and industry. The services include waste collection and transportation, environmental reporting and consulting. HFT Network Oy is the third biggest municipal waste collection and –transportation company in Finland (Koivisto 2015). The biggest is Lassila & Tikanoja Plc with the revenue of their environmental services being 254,4 million euros in 2014 (Lassila & Tikanoja 2015) and the next Suez Finland with the revenue of 72 million euros in 2014 (Suez Finland, 2015). The revenue of HFT Network Oy was 28 million euros in 2014, and for 2015 the estimated revenue is 30 million euros. HFT Network Oy has approximately 190 employees in its units across Finland. The organization structure can be found below in figure 5.
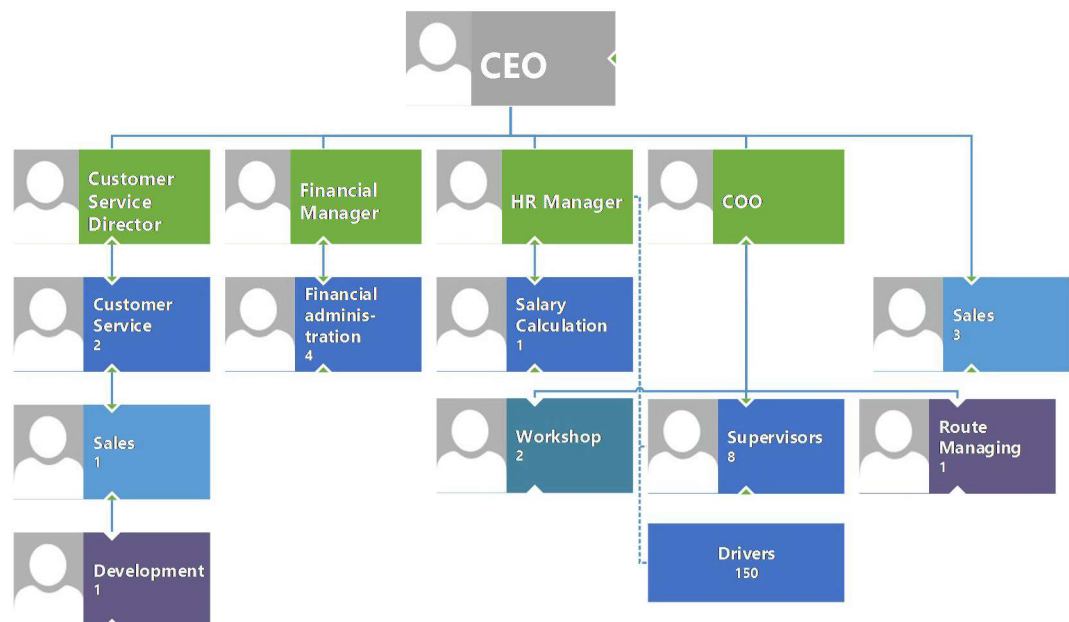

Figure 5. Organization chart of HFT Network Oy.

4.2   The municipal waste management contracts of HFT Network Oy

Until year 2012, HFT Network Oy's business was solely based on using sub-contractors. At the end of 2012 HFT Network Oy bought its biggest subcontractor, then called Environet Oy. Environet Oy was a subcontractor for many municipal waste management companies in their waste collection and transportation contracts. After the business trade, the contracts were moved under HFT Network Oy. The packing waste trucks of Environet Oy and other equipment were included in the trade.

4.3   RenoNorden ASA

After the next business trade, HFT Network Oy was bought by a Norwegian company called RenoNorden ASA in late 2013. RenoNorden ASA operates in the municipal waste management transportation services in Norway, Sweden and Denmark. The company started in the year 2000 in Norway, and expanded its services to Sweden in 2008. Two years later RenoNorden ASA started its first contract in Denmark. Currently the whole corporation is operating in approximately 230 municipalities. In November 2014, RenoNorden ASA listed to Oslo's stock exchange. In October 2015, the whole group employs 1550 people in four countries.

4.4   Stakeholders

When starting a process of building a management system, it is important for the company to acknowledge its stakeholders. Especially quality management trends are moving towards the thinking model where all the stakeholders are seen as customers. HFT Network Oy.'s stakeholders are described in the figure 6 below.

Figure 6. Stakeholders of HFT Network Oy.

4.5 The locations of HFT Network Oy

The main administrative office with customer service, sales, financial administration and development department is located in Lintuvaara, Espoo. The other major office and the center of the production department is in Kuopio. Other units are located in in Espoo Juvanmalmi, Joensuu, Kemi, Nurmes, Parikkala Porvoo, Seinäjoki, Tammisaari, Tampere and Ylivieska as seen in figure 7. In October 2015, the operating field of HFT Network Oy stretches over 70 municipalities.
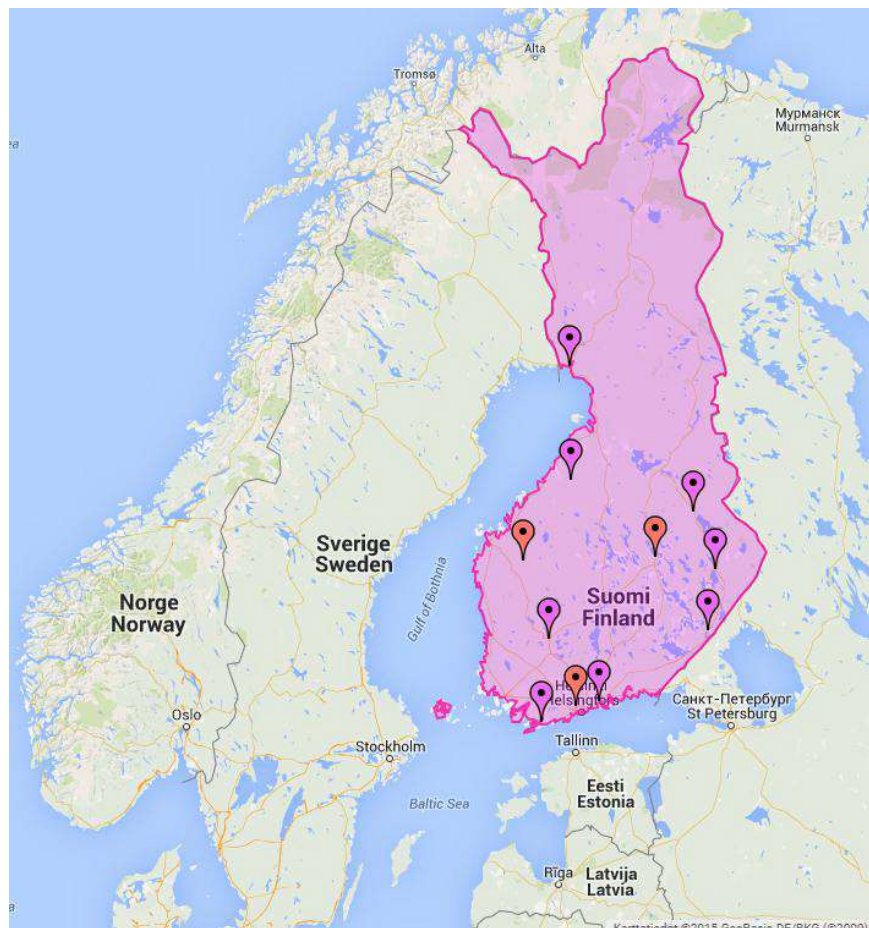
Figure 7. HFT Network Oy.'s operating areas.

There are also municipalities where HFT Network Oy Operates, but does not have a physical unit. All the stations and their supervising units are listed below in table 2.

Table 2. The units of HFT Network Oy

Unit	Supervisors	Drivers
Espoo Lintuvaara		
Kuopio	3	~28
Espoo Juvanmalmi	2	~30
Seinäjoki	1	~25
Porvoo	1	~17
Sodankylä	1	4
Joensuu	Kuopio	~20
Parikkala	Kuopio	3
Ivalo	Lapland	2
Kittilä	Lapland	1
Kemi	Lapland	4
Pudasjärvi	Lapland	2
Nurmes	Kuopio	4
Mäntsälä	Porvoo	4
Hausjärvi	Porvoo	2
Tammisaari	Porvoo	2
Tampere	Espoo	21
Jyväskylä	Kuopio	1
Ylivieska	Kuopio	8

The locations of the units are fragmented because of the municipal waste management contracts. A typical municipal contract is carried out in sections that employs 1-3 packing waste trucks. This enables also smaller local companies to participate in the competition. The contracts typically span over a 3-5 year time frame, with a possibility of one or two extra years. These contracts form 60% of the revenue of HFT Network Oy.

4.6   Business and industry waste

In 2014, approximately 40% of the revenue of HFT Network Oy came from business and industry customers. According to the Waste Act, private sector companies can choose their own waste management services. A typical situation is where a company is collecting separately from four to six waste fractions. They might be collected by 2-3 or even 4 different

waste collection and transportation companies. This makes the producer's responsibility to keep the chronological records of waste challenging. Typically the waste amounts need to be collected manually from the collectors invoices.

To reduce the paperwork and unnecessary traffic in the customer's facilities, HFT Network Oy has created a business model based on using subcontractors. The benefit of such a model for the business and industrial customers is that they only get one invoice from HFT Network Oy instead of multiple invoices from several different waste collectors. The invoices from subcontractor companies are handled in the financial department of HFT Network Oy, and the information is transported to the company's own reporting system. The business model can be seen below in figure 8.
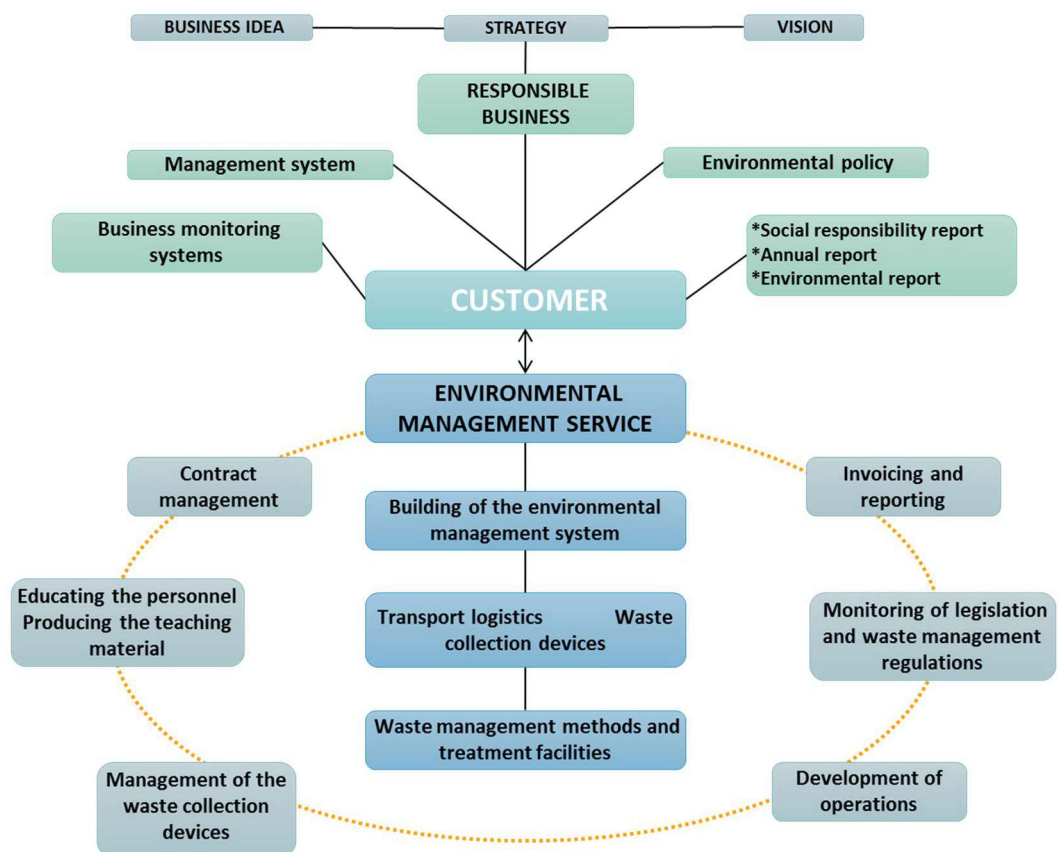

Figure 8. Environmental management services of HFT Network Oy.

4.7   Reporting system

HFT Network Oy provides an internet- based reporting service to its customers. The front page view of the service can be found below in figure 9. With the waste reports it is possible to monitor the quantities, expenses and the development of the customer's waste management. The customer can use the information provided in the reporting system as a base for the annual official reporting. It is also possible for the customer to ask HFT Network Oy to provide an annual waste report that contains all the information required by the environmental authorities.
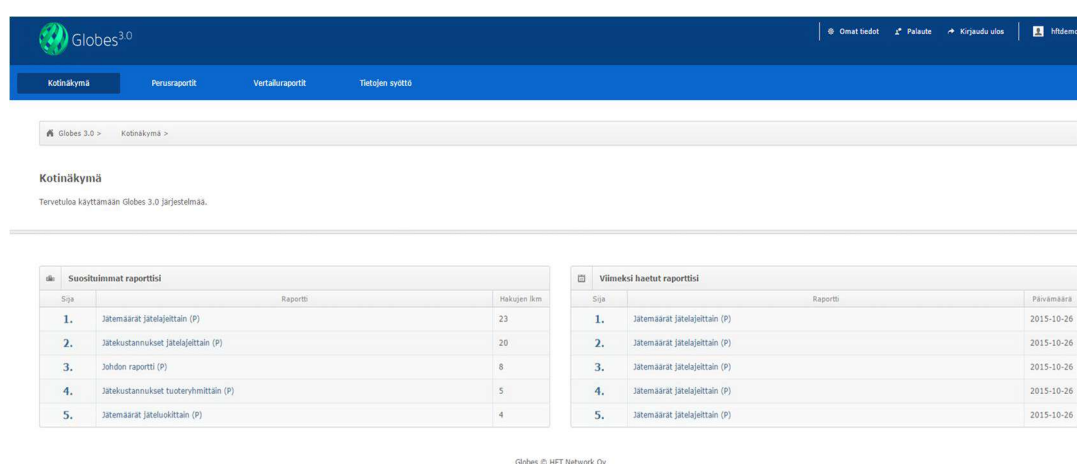
Figure 9. Front page of HFT Network Oy.'s reporting system.

If the customer operates in more than one site, the reports can be taken either nationally or by units or offices. It is also possible to use European Waste Catalogue- codes required by the authorities. The different report types include:

- Quantity reports (by waste, by treatment method, utilization rate)
- Cost reports (by waste, by product type, waste tax)
- Comparison reports (by office, by time period)
- Key figure reports (e.g. waste quantity/ revenue)
- Management report

The reports include interactive charts, so the customer can easily choose which waste fractions are examined in the charts. The chart types

provided in the system include pie-, column- and line charts. An example of a pie chart of waste costs by fraction is shown in figure 10.

Figure 10. Waste costs by fraction

4.8   Consultation

HFT Network Oy also offers a variety of consultation services, but their impact on the revenue is only marginal. Consultation assignments have typically been for example waste management plans for heavy industry or for a commercial center.

5 IMPLEMENTING AN ENVIRONMENTAL AND QUALITY MANAGEMENT SYSTEM
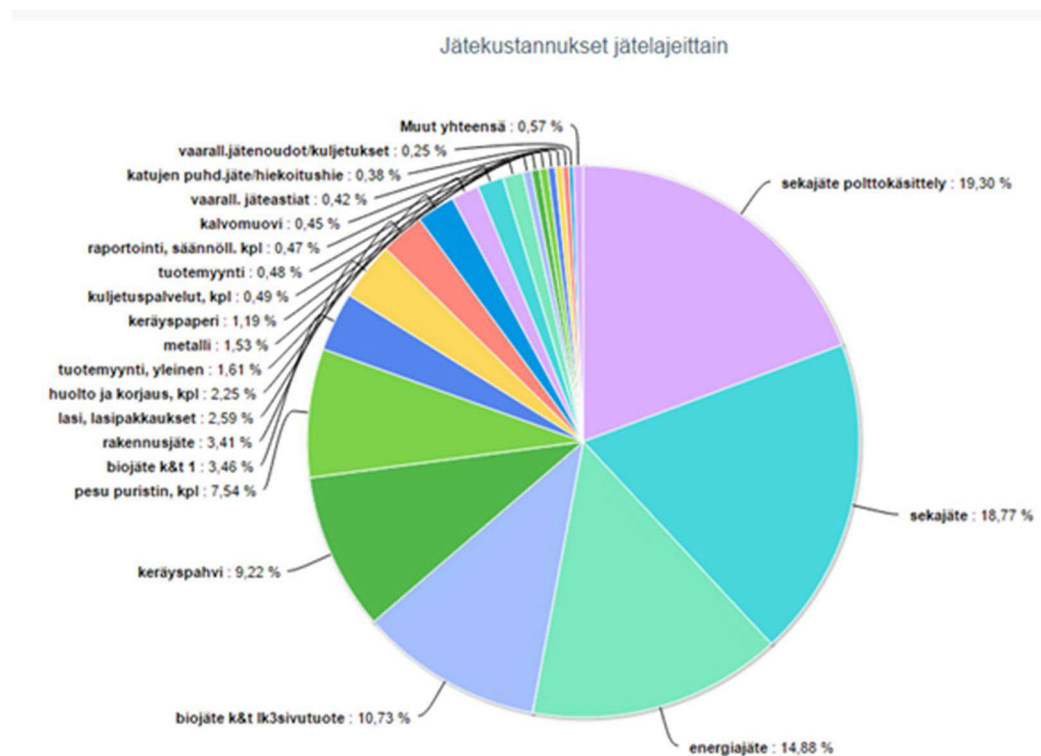
5.1 Starting point

A management system based on the older versions of ISO 9001, ISO 14001 and OHSAS 18001 was carried out in HFT Network Oy in 2002-2003. After that the system was not in active use and it had not been updated after it was originally completed. The original management system was never audited by a third party. The company's operation models had changed significantly since 2002, so it was decided that none of the parts of the old management system could be used in the new management system building project. The customer service director was named the top management representative on management system related matters.

At the very beginning of the project a brief introduction of management system building process was held for the personnel. The introduction consisted of basic information of what management system means and why it is important for a company to have it. In addition, there was information about the project program in general and how and when it would proceed. It was emphasized that the involvement of the personnel, their views, know-how, and development ideas were welcome and needed to carry out the project successfully. The feedback during and after the meeting was mixed. The personnel agreed that there was a need to unify procedures, enhance internal communication and improve the documentation system.

5.2 Business process map

The project was started by drawing a business process map, which is the highest level of process drawing. The map's purpose is to demonstrate the company's main operations in a simplified manner (JUHTA, 2002). The map can be used in describing the organizations core processes to stakeholders. The core processes are an organizations key activities that

produce value to its customers. The process map was first drafted by the development engineer and then introduced to the management. After management review and some changes, the final form was approved as pictured below.

Figure 11. Business process map of HFT Network Oy.

The four core processes are the municipal contracts, the environmental management services, the reporting services and the environmental consultation services. They are the value-producing activities of the company, and their aim is customer satisfaction and exceeding the customers' expectations. In fulfilling the objectives, the execution of the core processes need to take into account the needs of the customers and other stakeholders together with the related laws and regulations.

5.3   Management policy

Top management must provide evidence of its commitment to the development and implementation and the continual improvement of the EQMS by defining an environmental and quality policy. The policy must be

appropriate to the purpose and scale of the organizations activities and products and commit to reduce their environmental impacts and prevention of pollution and continual improvement. A statement of the organization's commitment to meet the customer expectations and filling regulatory and statutory requirements must also be found in the policy. The policy provides the framework for objective- and target setting, and it needs to be known and understood by those working in or behalf of the organization. The suitability of the policy must be reviewed regularly. (ISO 9001, 19; ISO 14001, 17.) According to ISO 14001, 17, the policy must be public.

After defining the core processes of the company, it was decided that the company management policy needed to be re-written to meet the requirements of all the three management system standards. The goal was to write one policy instead of separate environmental, quality and occupational health and safety policies. The first draft of the policy was written by the author of this thesis, who work as a development engineer in the company, and then given to the top management for corrections and review. After the policy reached its final form, it was communicated to the employees across Finland and published in HFT Network's website. It was also attached to the walls of each unit for all the employees and visitors to see. The translation of the policy below is by the author.

> *"HFT Network Oy produces environmental management services together with its associates for the public and private sectors. In our service development, planning and implementing, we take into account the quality- and environmental and legal requirements in addition to our customer's business objectives. We have a management system based on the ISO 14 001-, ISO 9001- and OHSAS 18 001- standards.*
>
> *The objective of our management system is to ensure high performance in quality and environmental and occupational safety. Our target is to provide environmentally friendly, responsible and economically efficient environmental management to our customers. We search in collaboration with our customers the best ways to advance their operations. In addition to protecting the environment, we take in to account our stakeholders'*

demands, needs and expectations. We ensure the health and well-being of our staff and are committed to preventing injuries and ill-health. To reach these objectives, we have set operational targets, which are reviewed regularly to ensure the continual improvement of our operations. Our management policy can be seen in all our operations. Our employees receive training and we follow actively the development projects of the industry."

5.4 Environmental impact assessment

According to ISO 14001, 17, the organization needs to identify the environmental aspects of its activities and products, and to determine the aspects that can have significant impact on the environment. The complete environmental impact assessment of HFT Network is presented in appendix 1.

The assessment was carried out with an improved model of the "Guidance for assessing environmental impacts", by Finnish National Board of Education (2015). First all the operations of the company were listed to an excel file and inspected in normal circumstances. If the nature of the activity was such that in abnormal circumstances, i.e. accidents, its environmental impact could be considerably more significant, it was inspected separately.

Next, it was evaluated to which parts of the environment the activity impacts: air, water, soil, waste, nature resources, flora and fauna and the human population. The gravity of the impact was given a score in a scale of 1-4, one point being an insignificant or unnoticeable impact and four being a significant, clearly noticeable impact. The top management gave a value point of 1-3 to each activity according to the importance of the activity in question. Then, a probability scale of 1-5 was given to each activity, one being highly unlikely and five being very likely, a daily event. The points of each activity were multiplied according to the example below. After inspecting the results, it was decided that the activities scoring over 70 points were considered as significant impacts.

Table 3. An example of the environmental impact assessment

	Circum-stances		Direction of impact									Value	Probability	Score
	Normal	Abnormal	air	water	sois	waste	nature-uses	resources	floor a and	fauna	men	1= insignificant 2=moderate 3=significant	1=highly unlikely 5= daily	Over 70: Significant environ-mental aspect
Activity														
Traportation	x		3				3					3	5	90

5.4.1 Significant environmental aspects

HFT Networks environmental impact assessment resulted in two significant environmental aspects. The most significant, as it was expected by the management, was transportations. All the waste types were calculated separately, but during the process it was decided to treat the transportations as one significant aspect to make the objective setting more clear later on. Transportation impacts mostly on air through its greenhouse gas emissions.

The second significant environmental aspect was route planning. If a mistake is made in the route planning or it is poorly executed, it causes unnecessary use of natural resources and emissions to air. Both of the activities also have secondary environmental impacts, like producing waste in the truck maintenance after certain kilometer levels are reached, but the environmental impact assessment was limited to primary aspects only. This was because the responsibility of managing the waste produced in the procedure belongs to the service provider.

5.5 Legal and other requirements

In ISO 14001, it is stated that the organization must establish, implement and maintain procedures to identify and to have access to up-to-date legal

and other applicable regulatory requirements and determine how they apply to the organization's environmental aspects (ISO 14001, 17). The top management group saw this as an important feature of the management system. It was decided that in addition to those acts and decrees affecting environmental aspects, all the legal and regulatory requirements would be collected in a register. The final version of the register holds approximately 60 acts and decrees.

The acts, decrees and regulations were arranged in six categories; waste, environment, transportation, occupational health and safety, work and general. The categorizing was implemented because of the large scope of the register. The name of the law or regulation contains a hyperlink to the updated law or regulation in i.e. Finlex, which is an online legislation database. The year and number of act or decree and the amendments made to it are marked in the register. The most important contents and how they are taken into account in the operation are listed as shortly as possible. This is due to the fact that they are evaluated more deeply the company's inner audits, and the results can be read in the audit reports. The audit date is marked in the final cell, as seen in the example table below.

Table 4. An example of the law register

Category	Name		Changes	Requirements	Regarded in operation	Audits
Waste	Government Decree on Waste	179/2012	153/2013; 332/2013; 86/2015	Waste shall be packaged and labelled as necessary, and information shall be provided on it in such a way that the storage and transport of waste do not pose a hazard or harm to human health or the environment. Waste shall be transported in secure packaging or by closed means of transport. Records kept by the waste carrier and collector.	JHL Win holds the necessary customer and waste information. Shipment documents. EWC-codes. Approved in the waste management registery. Customers waste bins are branded. Applicable equipment is used in the traportation.	Audit Lintuvaara office 28..4.2014: Shipment documents can be found in the invoicing files.

5.6   Action programme

The organization must establish at relevant functions and levels an established, implemented and documented environmental and quality objectives and targets. The objectives and the targets derived from the objectives must be measurable when possible and consistent with the

company's management policy (ISO 14001, 19; ISO 9001, 19). The program was divided in four objective groups with their individual targets and actions. The actions that are measurable, have a set target. All the actions are named with a person in charge from the top management group and they are given a certain time frame where they should be carried out. There is a change to add follow-up information before the official management review, where the results will be evaluated. Below is an example table of the action programme. All the targets and actions were approved by the management group. An example of the program can be found below in table 5, and the complete program in appendix 2.

Table 5. An example of the action programme

Object	Target	Actions	Meter	Person in charge	Time table	Follow-up	Management review: evaluation
Objective 1: Reducing the environmental impact of operations	Target 1. Target 2.	Target 1, Action 1.	l/km	COO	2015		
Objective 2: Improving the services	Target 1. Target 2. Target 3.						
Objective 3: Improving occupational health and safety	Target 1. Target 2.						
Objective 4: Improving internal operations	Target 1. Target 2. Target 3.						

5.6.1 Objective 1: Reducing the environmental impact of operations

The targets for the objective of reducing the environmental impact of operations are reducing the energy consumption and updating the routing more regularly and more often. These targets relate directly to the results of the environmental impact assessment.

5.6.2 Objective 2: Improving the services

The service improvement objective was set with three targets. Increasing co-operation with stakeholders was seen as an important target because of the customer feedback the sales team had received. It was felt by the management group that the company has been too invisible in the market, so increasing internal and external communications and visibility was set

as the second target. The third target was to improve the company's own reporting system even further and to make it easy for the customers to answer the record-keeping regulations of waste act.

5.6.3   Objective 3: Improving occupational health and safety

The most important target in the health and safety objective was to finalize the occupational health and safety management system based in the OHSAS 18001 standard. The other targets were the increasing of the health and safety awareness among personnel and the of increasing occupational welfare and identification of the occupational safety risks.

5.6.4   Objective 4: Improving internal operations

The general objective of improving the internal operations includes three targets. First target is to finalize the environmental and quality management system building project to a level where the certificate could be applied. The second target is to start the practice of regular meetings of the managing personnel from different units. The third target is to improve the document management of the company.

5.7   Processes

As one of the eight quality management principles, the top management wanted to emphasize the involvement of people in the different phases of defining the company's internal processes. In ISO 9001 (23), it is stated that the organization should ensure that its personnel are aware of how they contribute to the achievement of the quality objectives and the importance of their activities in the organization.

5.7.1   Top management

After confirming the core processes of the company, it was decided that the top management would open the core processes to flowchart form. It was set as a goal that the flowcharts should be kept as simple as possible,

and further opening of the process should be done literally. The execution of drawing the process flowcharts was started by the author of this thesis drawing the first drafts, and the CEO, the COO and the customer service director held a meeting to analyze and work on the drafts. The core process flowcharts are presented in appendices 3-6.

The process features that were opened further in the process cards can be found below in table 6. In the left column is the process feature and in the right column, if need, is an explanation of meaning of the feature.

Table 6. The process card

1. Process name	
2. Process owner	The top management group representative in charge of the process development, operability and setting objectives
3. Process card writer	The writer of the card can be someone from the related department
4. Process start	Input, stimulus
5. Process finish	Output- product, service of information
6. Customers, their needs and requirements	Who are the key customers and stakeholders of the process? What are their expectations and demands?
7. Objective of the process	What are the objectives of the process? What makes the process successful?

8. Indicators	How is the process metered?
9. Other processes	What are the other related processes?
10. Databases, documents	What databeses are usend during the process? What is the information produced in this process and where is it saved?
11. Process flowchart	A link to the flowchart.
12. Responsibilities	Who are the people in charge of the process?
13. Risks	What are the risks of this process and how to reduce them?
14. Process development	How to best develop the process?

5.7.2 Sales department

After the core processes were defined, it was decided that the work would continue with the management team. A workshop was included in the regular sales team meeting, and the team was sent a draft of three processes before the workshop. The three processes had been discussed in an earlier meeting. In the workshops the process drafts were analyzed with the sales team, the customer service director and the CEO. While working with the drafts, the sales team decided that the processes should be described in two flowcharts and process cards. The team also took into account the demands of the new ISO 9001:2015 standard, and defined the risks of both processes. The final versions of the flowcharts were verified in the second workshop in the fall 2015.

5.7.3 Customer service

The customer service team consists of two customer service workers and the customer service director. The customer service workshop was arranged in the morning time before the customer service call line opens for customers. Before the workshop, the author of this thesis had collected development ideas from the customer service workers. The flowcharts were addressed in the same manner as the sales department's flowcharts. The customer service workers made corrections and changes to the charts and filled out the process cards. The charts and cards were verified by the customer service director.

5.7.4 Feedback classification

As an important part of the company's quality control, the customer service and occasionally also other users of the company's customer management system, record the customer feedback in to the customer's information card. The feedback was originally divided in three classes: order, reclamation and other.

The customer service director uses a feedback database inquiry as a resource material in the management reviews. Two classifications, reclamations and orders, and imported to the inquiry, but it required a significant amount of manual labor to sort and analyze the feedback and recognize if there was a certain pattern that needed to be stopped. The customer service workers and director together with the author created a new classification system that minimizes the amount of manual labor in the feedback analysis:

- Orders
    - Emptying of bin/ collection
    - Maintenance/ repair
    - Wash
    - Equipment
    - Other

- Reclamations
  - Collection (did not take place, wrong collection day)
  - Damages caused by waste truck
  - Driver's actions
  - Invoice
- Other

The new classification system will be put to use in November 2015.

5.7.5 Financial department

The financial departments' processes were drafted by the author of this thesis after the financial director first introduced the outlines of the main processes. The author of this thesis made drafts of two process charts and cards. Two separate workshops were held with the staff of financial department, and the final versions are now waiting for the approval of the financial director.

5.8 Audits

Audits are comparisons between documented requirements and observed activities (Pyzdek and Keller, 2012, 209). The auditors collect evidence that form the basis of the improvement in the audited activities or in the requirements.

5.8.1 Internal audits

The biggest depots of HFT Network Oy were audited internally by the author who served as the lead auditor and the customer service director who was the co-auditor. In some audits, a member of the sales team with a long employment history in logistics, took part as the second co-auditor. The audits were carried out by interviewing the unit supervisor and drivers and exploring the unit's working grounds and facilities. A form, pictured below, was composed to be used in every internal unit audit.

Table 7. Audit form

Audit	Y	N	Comments	To be corrected by (date):
ENVIRONMENT				
1. Waste management				
Waste bins are marked				
Hazardous waste bins have correct labels				
2. The environment in general				
Belongings and tools are in their right place				
The grounds are cleaned up				
QUALITY				
1. The control of non-conformities				
Non-conformity forms are available				
The instructions for filling the non-conformity form are available				
2. Quality control				
The drivers' introduction forms are filled and available				
The waste driver's manual is updated and available				
The management policy is visible in the facilities				
HEALTH AND SAFETY				
1. Occupational safety				
There are safety instructions next to devices and tools				
The agronomy instruction is visible in the facilities				
2. Other safety matters				
Firefighting equipment is available				
First aid kits				
Oil absorption substance is available				
3. Health				
The contact information of occupational health office				

After the audits, an audit report was written by the lead auditor. The report included basic information about the unit, a description of how the report was executed, the answers gathered from the interviews and a general view of the environmental, quality and health and safety work in the unit. The report also included development or improvement suggestions if they were needed.

To ensure that the audits do not leave a negative impression on the participants, there was always pointed out at least one aspect of operation that was carried out exceptionally well. After all the units had been audited, a final report was sent to the top management group and the supervisors. The final report's main purpose was to enhance the co-

operation between units by informing the supervisors about the good practices in other units.

5.8.2   External audits

Because of the increasing interest towards HFT Network Oy.'s operations, many of the company's customer organizations, sub-contractors and cooperation partners have audited the company. The content and the scope of the audits vary significantly depending on the auditor, but they have also included many common themes:

- Operational planning
- The objectives and targets of the company and how to reach them
- Management commitment
- Employee induction process and employee training
- Occupational healthcare
- Occupational safety instructions and culture, occupational accidents
- Environmental responsibility, environmental accidents
- Sub-contractor management
- Feedback analysis and process
- Resource planning
- Equipment control

Non-confirmatives have not been found in the external audits, but the majority of the auditors expressed that they expect HFT Network Oy to hold at least one of the environmental-, quality- or occupational health and safety certificates in the near future.

HFT Network Oy also started to audit its subcontractors. Two different audit forms were made for transportation companies and for waste handlers. The majority of the audit questions were similar to both. The topics inspected in the audits were:

1. Basic information of the company

2. Environmental permits, information obligated in the Act on the Contractor's Obligations and Liability when Work is Contracted Out, Approval in the Waste management register
3. Management systems
4. How does the company ensure that it works according to acts and degrees
5. Management policy
6. How does the company manage and audit its subcontractors and co-operatives / audits
7. Process management
8. Management of hazardous waste
9. How does the company reduce its environmental impacts
10. Reclamation and feedback analysis in the company
11. Staff training
12. Occupational safety and risk management, induction to work
13. Equipment management

In addition, the same form used in the internal unitt audits was applied to the subcontractor's facilities.

5.9   Subcontractor control

Subcontractor control was taken into a closer inspection after an external audit. The auditing customer operates in an international industry field where using a long chain of subcontractors is a risk. In Finland, it is typical for waste transportation companies to use subcontractors. The transportation equipment is expensive and the distances are long, so it is not possible for small and medium enterprise to have different kind of equipment in different locations across Finland.

For example, a company has a contract of community waste collection services with a customer. The customer needs an emptying of its oil separator, and asks the company representative to handle the procedure. The company does not have a sewage suction vehicle, so it will ask for another company to carry out the emptying. However, if the second

company would ask for a third company, the chain starts to be difficult for the customer to manage and keep track of the waste according to the Waste Act.

According to Act on the Contractor's Obligations and Liability when Work is Contracted Out (1233/2006), a contractor is obliged to check whether the counterparty is entered in the Prepayment Register and the Employer Register. The counterparty must also be registered as VAT-liable in the Value Added Tax Register. The buyer must ascertain whether the counterparty has paid its taxes and taken out pension insurances, an account of the provision of occupational health care and the type of collective agreement or principal terms of employment it applies.

HFT Network Oy.'s operations were based solely on using subcontractors before the merge with Environet Oy in 2012. Many of the company's existing contracts with its subcontractors have started in 2002 when the company was founded. The subcontractors are well-known waste management and transportation companies, and the cooperation has been solid. According to the Ministry of Employment and the Economy, the buyer does not need to request the information obligated in The Act on Contractor's Obligations and Liability when Work is Contracted Out, if contractual relationship based on trust between the buyer and counterparty can also be regarded as having been established on the basis of earlier contractual relationships.

HFT Network Oy wanted to ensure that its use of subcontractors was transparent, and decided to create a system where all the information demanded in the Contractor's Obligations Act, as well as a copy of the Approval in the Waste management register would be asked regularly from the counterparts. In addition, HFT Network Oy decided to check the environmental permits of all the waste handlers it uses. An internet site called tilaajapavelu.fi offers an alarm service to its customers. All the major subcontractors, approximately 300, of HFT Network Oy were entered in to the service, and the service will sent an alarm e-mail if one or more of the

information from The Act on Contractor's Obligations and Liability when Work is Contracted Out is missing.

A register was built for the waste handlers that HFT Network Oy has used. The environmental permits were checked and expiry date marked in the register. In the future, the register will be updated twice a year. The copies of the Approval in the Waste management register will be asked via post when an annual subcontractor letter is sent out.

5.10 Staff training

After a year and a half of the merge between HFT Network Oy and Environet Oy, the first white-collar staff training days were held. The focus of the training days was improving the co-operation and information flow between the top management, depot supervisors and the Lintuvaara office personnel. The training days received positive feedback from the participants, and it was decided to arrange the training day or days twice a year.

In the second training day in 2014, the management system building project was introduced to personnel. Processes, work instructions, audits and occupational safety were described generally. After the training day the participants were asked to fill out a feedback form. There were 17 participants, and everyone returned the form. The form included a 1-5 point review of all the training day topics. The management system received a score of 4, but the majority of the comments said that the time reserved for the topic was too brief.

In the third training day in 2015, a longer time was reserved for management system discussion. The participants formed four groups which each answered to two questions:

1. The best measuring tools for the logistics, customer service, financial administration and the sales departments
2. What are the results that can be achieved with the right measuring tools

The answers were discussed together, and the final analysis and suggestions will be presented in the next training day.

5.10.1 Driver training

The top management of HFT Network Oy decided that it was essential for the drivers, who form the majority of the organization's personnel, to receive information about the management system. It was decided that the information source can not only be the staff magazine, because it leaves too much responsibility to the reader. The depot supervisors arrange monthly driver meetings, and it was decided that management system and certification information would be included in the meetings. The communication plan is pictured below.
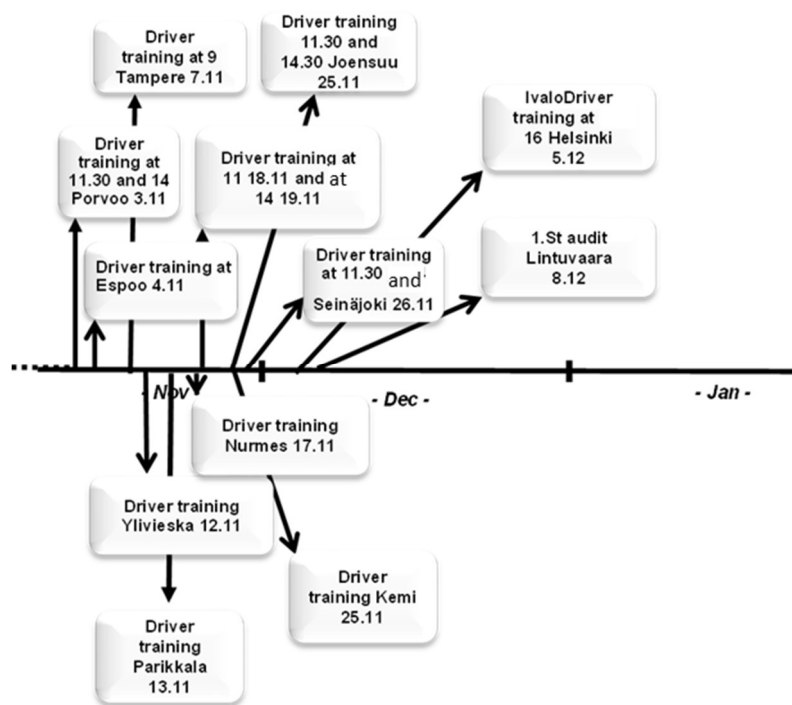
Figure 12. Communication timeline for drivers

5.11 Certification

In October 2015 the customer service director together with the author of this thesis decided that the management system building project had reached the stage where the certification could begin. After interviewing

well-known accredited auditing companies, a contract was made with a company whose auditors had a long auditing experience with environmental management companies. The first stage certification audit will take place in December 2015 and the certification audit in March 2016.

6   CONCLUSIONS

A geographically fragmented company structure, the changing of the
locations and personnel make it challenging to really implement any kind
of environmental or quality management system down to the root level.
The changes in the company management because of the business
trades have taken their toll on the management system building process.
In some cases the work that had already been finished before the trades,
has been partly, or in the worst case, completely outdated.

The work carried out so far has received positive feedback from the
management level. HFT Network Oy.'s customers, both municipalities and
the private sector, have been showing a growing interest towards their
own environmental management services. An environmental and quality
management system is a company's way to show to its customers that
they are developing and working their services constantly to better suit
their customer's needs.

One of the most important findings of this study was that the inclusion of
the staff is crucial to the success of the implementation. The top
management group can be committed and take responsibility for the
development of the processes, but they usually do not have the detailed
information and know-how of the people who run the processes daily in
practice. Workshops and training meetings have proven to be an efficient
way to increase the information flow horizontally and vertically in the
different organization levels. Before the management system building
process started, there had not been common meetings for the staff
working in different parts of Finland. The exchange of information and
experiences during the training meetings has produced new ways of
developing the processes.

The next step in the process will be in December 2015, when the first
stage certification audit will be carried out by an accredited auditing
company. It was decided that the certification will happen according to the
new ISO 9001:2015 and ISO 14001:2015 standards, along with the

OHSAS 18001:2007 standard. The certification audit will take place in March 2016, after which there will be a three month time period to settle the non-conformities. HFT Network Oy should held all the three certificates by June 2016.

Though the management system building project will come to an end once the certification is granted, the actual using of the system will begin. The company's processes have been defined, and they are set with the right indicators and objectives. Time will show if they have been chosen correctly. The next management review will take place in the early spring 2016. The action programme development will be evaluated thoroughly and adjusted if needed. The first results of the new feedback classification system will also be evaluated in the management review.

Despite the projective nature of the building of the system, it is important to acknowledge that the management system itself is not a project. A properly built and implemented management system will at best be so integrated in the company's' operations and objectives, that it becomes invisible. For that, there is still work to be done in HFT Network Oy.

SOURCES

Act on the Contractor's Obligations and Liability when Work is Contracted Out (1233/2006) Available
https://www.finlex.fi/fi/laki/kaannokset/2006/en20061233.pdf

Department of Energy &Climate Change. UK. 2002. Transport and Environmental Management Systems. Good practice Guide 318. Tangram Technology Ltd. [referred 20.8.2015] Available
http://www.tangram.co.uk/TI-EMS-
Transport%20and%20EMS_(GPG318).pdf

Finnish National Board of Education. 2015. Näkökohtien pisteytysohje. [referred 5.8.2015] Available
http://www03.edu.fi/aineistot/keke/liitteet/Ymparistonakok_pist_ohje.pdf

Goverment Decree on Waste 179/2012 Available
http://www.finlex.fi/en/laki/kaannokset/2012/en20120179

Hoyle, D. 2009. ISO 9000 Quality Systems Handbook. Oxford: Elsevier Ltd.

Koivisto, J. 2015. CEO. HFT Network Oy. Interview 3.8.2015.

Juhta. Julkisen hallinnon tietohallinnon neuvottelukunta. 2002. JHS 152 Prosessien kuvaaminen. Versio 5.10.2012. [referred 30.7.2015]. Available http://docs.jhs-suositukset.fi/jhs-suositukset/JHS152/JHS152.pdf

Lassila & Tikanoja. 2015. Annual Report 2014. [referred 8.11.2015]. Available http://www.lassila-
tikanoja.fi/yritys/vuosikertomus2014/liiketoiminta/Sivut/ymparistopalvelut.a
spx

Ministry of the Environment. 2015. Waste legislation [referred 14.7.2015]. Available http://www.ym.fi/en-
US/The_environment/Legislation_and_instructions/Waste_legislation

Ministry of Employment and the Economy. 2015. Contractor's obligations and liability [referred 31.9.2015] Available https://www.tem.fi/en/work/labour_legislation/contractor_s_obligations_and_liability

The Public Health and Safety Organization. 2015. About NSF. [referred 31.8.2015] Available http://www.nsf.org/about-nsf/

Pyzdek, T., Keller, P. 2012 second edition. The Handbook for Quality Management. New York City: The McGraw-Hill Education.

Sahlberg, S. 2014. The renewal of ISO 14001- What will change? Opening speech. SFS seminar 27.11.2014.

SFS-EN ISO 9001. 2008. Quality management systems. Requirements. Helsinki: Suomen Standardisoimisliitto

SFS-EN ISO 14001. 2004. Environmental management systems. Requirements with guidance of use. Helsinki: Suomen Standardisoimisliitto.

Suez Finland. 2015. Sitaatti. [referred 8.11.2015] Available http://sitaatti.sita.fi/sita-suomesta-suez-environnement-muutos-vauhdittaa-kiertotalouden-mallin-toteutumista/

Waste Act 646/2011. Available http://www.finlex.fi/en/laki/kaannokset/2011/en20110646

Weiß, P. and Bentlage, J. 2007. Environmental Management Systems and Certification. Environmental Management, Book 4. Uppsala: Baltic University Press. [referred 31.8.2015] Available http://www.diva-portal.org/smash/get/diva2:604281/FULLTEXT01.pdf