



The global personnel safety and security re-  
porting of the European subsidiaries of  
Wärtsilä Corporation



Suominen, Elina

2010 Leppävaara

**Laurea University of Applied Sciences**  
Laurea Leppävaara

**The global personnel safety and security reporting of  
the European subsidiaries of Wärtsilä Corporation**

Elina Suominen  
Safety and Security Management  
Thesis  
November, 2010

Elina Suominen

**The global personnel safety and security reporting of the European subsidiaries of Wärtsilä Corporation**

Year 2010

Pages 61

---

The objective of this thesis is to analyze the data that Wärtsilä Corporation has about the personnel safety and security related cases of its European subsidiaries. This analysis is implemented through two case studies. In the first case study, the objective is to analyze the data that Wärtsilä Corporation's security organization has received. By doing that, it is possible to study what types of threats these work-related accidents and different security deviations represent. The second case study is based on the information that the insurance company has received about the companies. The thesis was carried out between January and November 2010. It studies the categories of personnel risks and threats that the staff has reported to the security organization of the company during 2005-2010 and to the insurance claim report system during 2007-2010. The information of the first case study is based on the exchange of information and interviews at Wärtsilä Corporation and Wärtsilä Finland. The information of the second case study is based on the insurance statistics. Based on these cases, the purpose is to create an updated picture of the safety and security situation. By exploring the situation, it is possible to discover the biggest individual safety and security problems and larger combinations that threaten the operations. When the current situation is presented through statistics, it is possible to show how important a systematic and concentrated reporting is for the operations of the whole company. The thesis focuses on the cases occurred outside Finland, including business travelling and living abroad as an expatriate.

When approaching the subject theoretically, one of the most important objectives is to discover reasons behind cases. This contains, for example, the basic level as well as indirect and direct reasons. When studying security deviations, the conflict process theory is connected to the situation because of the way how conflicts of interests and issues occur. In Wärtsilä, a significant number of crime-related security deviations is connected to communication between different cultures and groups of people. This possible threat is investigated through the concept of crimes targeted towards Wärtsilä. One of the important points in the second case study is to analyze the situation of the cases that required medical care because of sicknesses. This category, the cases related to sicknesses, is the biggest category in the case study. The actual cultural knowledge and the effect of company image are not included in the thesis because of their large scale. The financial effect of the cases is also screened out because the focus is on personnel safety and security. The topic is mentioned on several occasions but it is not emphasized.

The writer's objective is to understand how information is collected around the world in a large international company. Thus, it is possible to recognize what information is crucial in order to secure the safety and security of the personnel. The basic knowledge about the subject before completing the thesis was mainly based on media and small scale occupational safety. The last main objective is also to comprehend how the safety and security of the personnel are organized as successfully, effectively and economically as possible.

**Key Words** Safety and security of the personnel, risk, security deviation, work-related accident, insurance reporting, analyzing, reporting

Elina Suominen

**Globaali henkilöturvallisuuden raportointi Wärtsilä konsernin eurooppalaisissa tytäryhtiöissä**

Vuosi 2010

Sivumäärä 61

---

Tämän opinnäytetyön päätavoite on ottaa selvää, minkälaista tietoa Wärtsilällä on sen eurooppalaisissa tytäryhtiöissä sattuneista, henkilöturvallisuuteen vaikuttaneista tapauksista. Tämä analyysi toteutettiin kahden tapaustutkimuksen avulla. Ensimmäisessä tapaustutkimuksessa tavoite on selvittää minkä tyyppisiä tietoa Wärtsilän turvallisuusorganisaation on saanut. Tätä kautta on mahdollista tutkia minkälaisia työhön liittyviä tapaturmia ja erilaisia turvallisuuspoikkeamia nämä tapaukset edustavat. Toinen tapaustutkimus perustuu vakuutusyhtiön saamiin tietoihin tytäryhtiöiden. Opinnäytetyö toteutettiin ajanjaksolla tammikuu-marraskuu 2010. Se tutkii minkälaisia henkilöturvallisuusriskejä ja uhkia henkilökunta on raportoinut yrityksen turvallisuusorganisaatiolle vuosina 2005-2010 ja minkälaista tietoa vakuutusyhtiö on saanut vuosina 2007-2010. Ensimmäisen tapaustutkimuksen tieto perustuu Wärtsilän ja Wärtsilä Finlandin tiedonvaihtoon sekä haastatteluihin. Toisen tapaustutkimuksen tieto perustuu vakuutusyhtiön tietoihin. Näiden tapausten perusteella on tarkoitus saada ajantasainen kuva henkilöstön turvallisuudesta ulkomaantyössä. Nykytilanteen kartoittamisella saadaan esiin suurimmat yksittäiset turvallisuusongelmat ja kokonaisuudet, jotka uhkaavat toimintaa. Kun nykytilannetta voidaan perustella tilastoilla, on mahdollista osoittaa kuinka tärkeää systemaattinen ja tavoitteellinen tilastointi on koko yrityksen toiminnan kannalta.

Lähestyttäessä aihetta teoreettisesti, yksi tärkeimmistä yhteyksistä on tapahtumien syiden selvittäminen. Tähän liittyvät mm. perusta sekä epäsuorat ja suorat syyt tapauksille. Turvallisuuspoikkeamia tarkasteltaessa otetaan mukaan myös konfliktiprosesseja käsittelevä teoria, joka voidaan yhdistää kohdattaviin etu- ja asiakonflikteihin. Wärtsilän tapauksessa henkilöturvallisuuden iso osa on toimeen tuleminen eri kulttuurien ja ihmisryhmien kanssa. Tätä mahdollista uhkaa sivutaan Wärtsilää vastaan suunnatuissa rikoksissa. Toisen tapaustutkimuksen tärkeä tavoite on analysoida mm. lääketieteellistä apua tarvinneiden sairastapausten tilanne. Nämä tapaukset muodostavat suurimman osan vakuutusyhtiölle raportoiduista tilanteista. Varsinainen kulttuurien tuntemus ja sen tärkeys sekä julkisuuskuvan vaikutus jäävät pois laajuutensa takia. Myös tapausten taloudellinen vaikutus on rajattu pois työstä, koska halutaan keskittyä nimenomaan turvallisuuteen. Aihetta sivutaan muutamissa tilanteissa, mutta se ei saa suurempaa painoarvoa.

Kirjoittajan henkilökohtainen tavoite on ymmärtää kuinka suuressa kansainvälisessä yrityksessä tiedon kerääminen ympäri maailmaa onnistuu käytännössä. Sitä kautta on mahdollista ymmärtää, mikä tieto on kriittistä henkilöstön turvallisuuden kannalta. Kirjoittajan tiedot ennen opinnäytetyötä perustuvat median luomaan kuvaan ja pienen mittakaavan työturvallisuuteen. Viimeinen tavoite on ymmärtää miten henkilöstö turvallisuus voidaan organisoida mahdollisimman menestyksekkäästi, tehokkaasti ja taloudellisesti kannattavalla tavalla.

Asiasanat Henkilöturvallisuus, riski, turvallisuuspoikkeama, työtapaturma, vakuutusraportointi, analysointi, raportointi

## Table of contents

1	Introduction.....	5
2	Key definitions .....	6
3	Working methods .....	7
4	Wärtsilä.....	9
4.1	Wärtsilä Finland and other subsidiaries .....	10
4.2	Operating environment .....	11
4.3	Reporting situation at Wärtsilä .....	12
5	The roles of different stakeholders in securing personnel safety and security .....	13
5.1	Role of the insurance company .....	14
5.2	Roles of employees .....	15
6	Literature and theoretical framework .....	16
6.1	Risk Management and reaction to the personnel safety and security threats.....	17
6.2	Reflecting the personnel safety and security situation to the type of business ....	19
6.3	Conflict process theory .....	21
6.4	Process of incidents and reasons behind them .....	23
6.5	Physical protection and environmental design in personnel safety and security ...	26
7	A case study 1: The personnel safety and security incidents reported to Wärtsilä .....	28
7.1	Work-related accidents .....	31
7.2	Crime-related security deviations.....	34
7.3	Situation-related security deviations.....	37
8	Consequences of the cases and conclusions of the first case study .....	39
9	Case study 2: The safety and security incidents reported to the insurance company ....	40
9.1	Trends and the nature of all the reported insurance cases .....	42
9.2	Cases of sickness .....	46
9.3	Cases of accidents .....	48
9.4	Cases of cancellation or interruption of travelling.....	50
9.5	Cases of lost of property.....	52
10	Consequences of the cases and conclusions of the second case study .....	54
11	Evaluation of the thesis and the process .....	55
12	Conclusions .....	56
	Sources.....	59
	Table of figures .....	61

## 1 Introduction

The objective of this thesis is to analyze the data that Wärtsilä Corporation and the insurance company have about the personnel safety and security related cases of its European subsidiaries. It also gives an opportunity to study what types of threats these cases represent. This information gives an update of the current situation of the personnel safety and security concerning the international operations of the subsidiaries. It also gives an image of the trend that the cases create. The current situation is that there is unorganized information stored in many different places. Mapping of these information sources gives an opportunity to gather all possible data to one pack. In this way, the future development of critical points is possible. It is also important to try to categorize the cases by their character. This way it is possible for the company to focus on bigger categories of cases that cause threat to safety and security. By doing this, it is also possible to act and improve to procedures. The improvements can be focused on progressing communication and instructions. It also gives pressure to make documentation more systematic and controlled as well as pressure to use insurance reports more efficiently. All this is about acting towards preparedness and more effective communication. It helps facing problems as well as reducing work-related threats and risks. The way to analyze the success of the thesis is to analyze the level of update and value that it gives for Wärtsilä Corporation. The case studies are naturally about Wärtsilä but the theoretical framework can be related to almost any large company with international operations. Some of the threats are a result of the business type (for example industry). In those cases, the thesis only applies on operations similar to Wärtsilä Corporation. On the other hand, some risks are not as business type related as they are culture and politically related. Those risks are the same for a bigger group of companies that represent the same background.

The thesis starts with a theoretical approach to the subject. The section analyzes reasons and causes behind incidents, as well as introduces the basic layout of corporate security. Through the bigger picture, it is easier to study how the safety and security of the personnel is located in that chart. Standard procedures of the business may need an individual approach because of the specific operation and operating environments. The approach can be defined according to the type of business that Wärtsilä Corporation and the subsidiaries do. In addition to the type of business, the operating locations and cultures bring a need to analyze the situations. When talking about physical protection of premises and structures, the safety and security of the personnel, crime prevention through environmental design and layered protection are important. Therefore, both of them are handled in the theoretical section. The theoretical framework includes also a presentation about how risk management and the stakeholders can be related to the personnel safety and security.

After the theoretical section, there are two case studies about the incidents. The analysis of the first case study is based on cases that have been reported to the security organization of Wärtsilä Corporation. In the first case study, all cases are divided into one of the three categories. These categories are presented more thoroughly later on. Because of the legal restrictions, all cases with different diseases and sicknesses are outside the subject. The observation includes cases that occurred in 2005-2010. This reporting is largely based on exchange of e-mails, phone calls and interviews. Since there is no proper reporting system (except insurance claim system), it is impossible to have waterproof information about the amount of cases and details. The thesis does not take a stand on how many possible cases were not reported. It is also not the purpose of the work to check the validity of these cases, unless the details from different sources clearly don't match. In some cases, even the exact date is excluded or location of an incident is not available. This must be noticed in the outcome. However, the amount of cases and details as well as the style of communication during or after an incident, give a vision of the current situation. The second case study collects data from the insurance company. It follows the trends, the regional reporting and usage of different insurances. The cases of that case study are divided into four categories. These categories are presented more thoroughly later on. The subject of the thesis includes only those cases that occurred outside Finland and directly influenced the employees of Wärtsilä's subsidiaries. That is the reason why the stakeholder factor is marked out. It would be almost impossible to identify all the subcontractors and connections. In order to understand the bigger picture, the roles of some stakeholders are analyzed shortly in the beginning of the thesis. The both case studies lead to conclusions and to analyses of the consequences. To make it simpler to read, the conclusions they are divided into two parts. The both case studies have their own section that handles the conclusions and consequences from the point of view of that particular case study.

## 2 Key definitions

Wärtsilä Corporation is a parent company for Wärtsilä Finland and other subsidiaries. Later on in the text, the name Wärtsilä is used to describe Wärtsilä Corporation. The security organization operates under Wärtsilä Corporation's organization chart. Wärtsilä Finland is Wärtsilä Corporation's biggest subsidiary. Across Europe, Wärtsilä has numerous subsidiaries working for same services and products. The security organization is part of Wärtsilä Corporation but it works in co-operation with the subsidiaries, e.g. Wärtsilä Finland.

When talking about the safety and security of the personnel, the definition includes only the employees of the subsidiaries of Wärtsilä Corporation and their safety and security. There are both European and non-European citizens working for the subsidiaries but the nationality is not a definition of this target group. The cases take place at sites (ship industry or power

plant) or outside Wärtsilä premises. There are also cases that are not from specific locations. Instead, these cases were reported from a bigger region e.g. a province or a country.

In the first case study, all cases are divided into three categories according to the reasons and the ways they occur. This means analyzing their influence on individual employees and the whole company. The concept of case study includes all collected cases from every category. All three different categories have individual definitions. The definitions of the categories are explained more thoroughly at the beginning of each category. The categories are named as following: work-related accidents, crime-related security deviations and situation-related security deviations. In the second case study, the cases are divided into four categories. These categories are cases of sickness, accidents, cases of cancellation or interruption of a business trip and cases lost of property. Each category has a more detailed definition at the beginning of the section.

### 3 Working methods

Like it was mentioned in the introduction, the main question is what type of data Wärtsilä has about safety and security related cases and what threats these cases represent. In this thesis, there is first an overview of Wärtsilä. It includes a summary about the reporting situation and analyzing safety and security related cases. This information is based on interviews and documents that Wärtsilä offers. For that reason, the information is partly influenced by people's own experiences and expertise. After that, there is a theoretical framework. It includes theories about conflict process and different risk management options.

After the literature, there are the two case studies about the collected information. According to Hirsjärvi, Remes and Sajavaara (2007, 130-131), case study is one of the three classical research strategies. It is based on discovering detailed information from individual cases. Hirsjärvi et al. (2007, 130-131) mention processes as part of the typical features. It means that, although the cases are different, they all have something in common and that they are studied as part of their environment. The purpose of this kind of study is usually to describe phenomena. This data is a base for empirical research. In this method, individual cases are analyzed in order to discover regularities. In the particular process, the empirical research starts by collecting data. After this, the information is analyzed and interpreted. Reporting is the last part of the process and the results are located at the end of each case category. Because of the confidentiality, the figures are edited from the published version. The sort-out was done in co-operation with Wärtsilä. In this way, it gives more value for Wärtsilä and serves the future development. The process follows the definitions that Holopainen and Pulkkinen (2003, 17-18) introduce about applied research and its objectives to practical research.



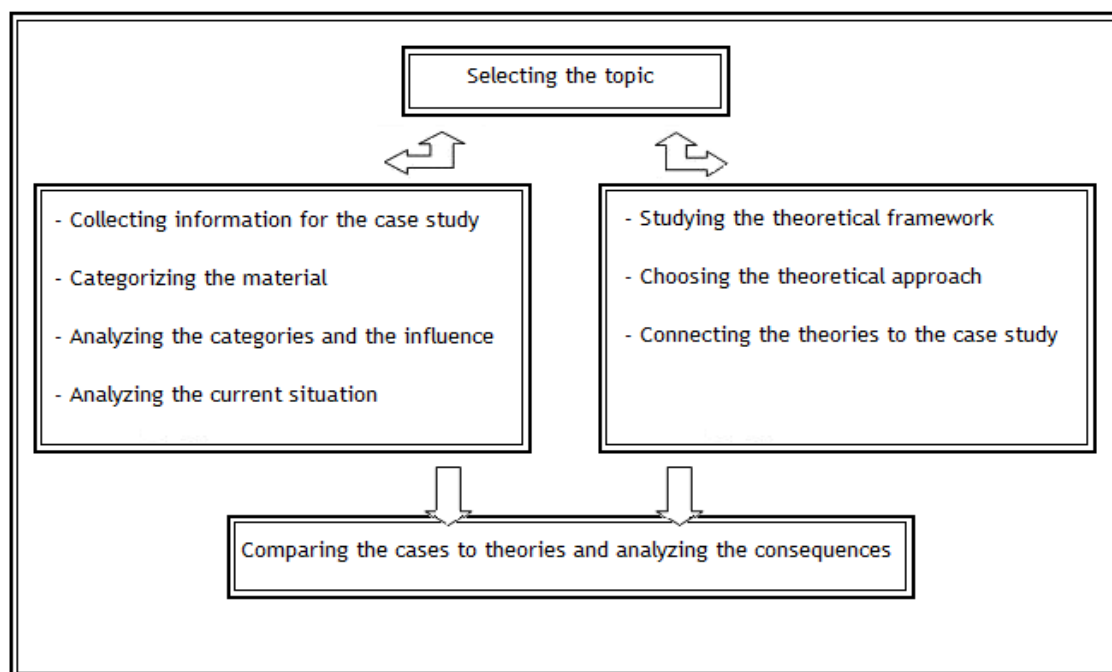


Figure 1: The process of the thesis. Suominen (2010)

The process of the thesis follows the process model by Valli (2001, 12) and it is presented above. After selecting and focusing the topic, the work holds both theoretical and empirical approach. In the end, they are combined through comparing the discovered details of the cases with the theoretical framework. The approach to the cases is a qualitative research. This however does not mean that the style of the research displaces quantitative approach, like Hirsjärvi et al. (2007, 131-133) remind. The Qualitative approach was chosen because of the nature of the cases. They contain element of human and social behavior, which makes it difficult to divide cases into firm categories. For example, if there is a case of burglary, it can include a physical threat to a victim. Because of this, one case can contain various different person and personnel risks. Yet, there is a part where the case studies take stand on the amount and frequency of the cases. That can be considered as quantitative approach to the subject. The cases of the first case study are divided into three main categorize. For example, a crime-related security deviation can be a theft, robbery, unauthorized entry or a physical abuse. If there are many risks inside one case, the case is analyzed by focusing on the most serious and primary threat to the victim. For example, if there is an unauthorized entry, the case can still be analyzed as a threat of physical injury. This approach was selected because an unauthorized entry can also include a physical threat to a person. In other words, the cases are analyzed by their threat to the employees of the subsidiaries.

#### 4 Wärtsilä

Wärtsilä Corporation (Wärtsilä) is a Finnish industrial company that operates in power plant and marine markets. It has subsidiaries all over the world, which makes it a parent company for them. The history of Wärtsilä goes back to 1834. Currently, it is listed on the NASDAQ OMX Helsinki, Finland. In 2009, the total amount of employees was over 19 000 worldwide. In the same year, the company operated in 160 different locations in 70 countries around the world (Wärtsilä, 2010.) The headquarters of the company is in Helsinki. The security organization operates mainly there. The security organization was created because of the personnel safety and security threats.

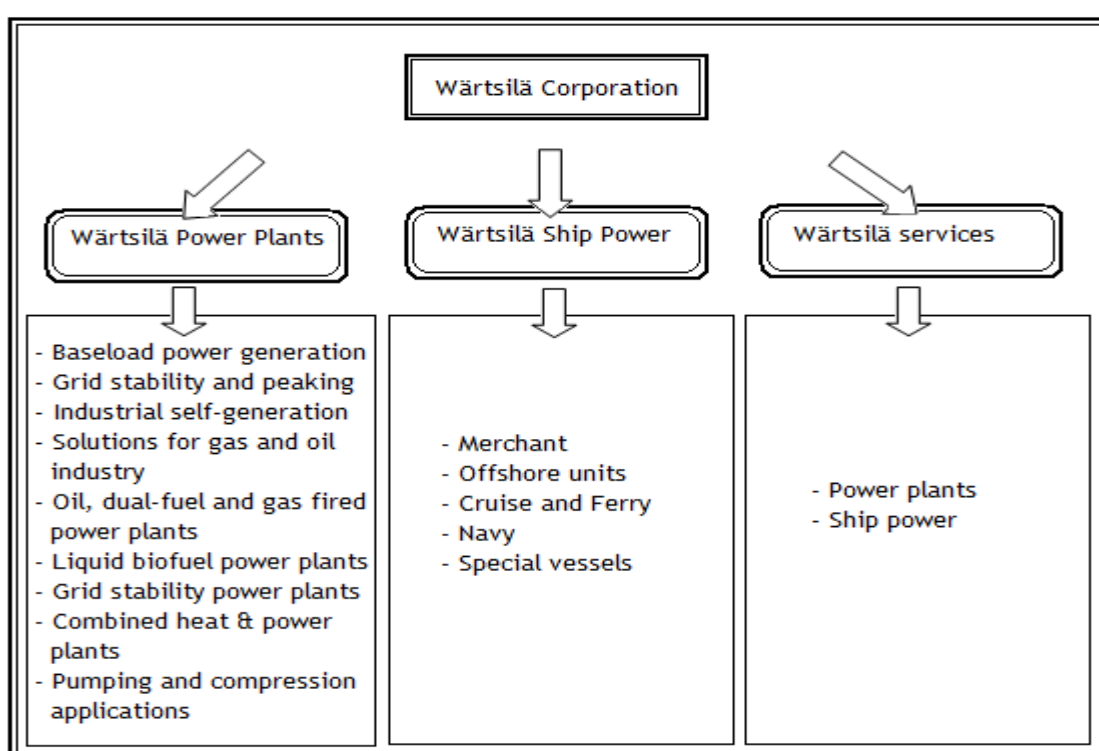


Figure 2: The business segments of Wärtsilä Corporation. Wärtsilä (2010)

Wärtsilä provides power solutions in ship industry and power plants. It also provides services to the customers around the world. Ship industry includes engines, generating sets, reduction gears, propulsion equipments, automation and power distribution systems. The customers operate both locally and globally within merchant, off-shore, cruise, navy and special vessel segments. In power industry, Wärtsilä provides products for base load power generations, grid stability and peaking, industrial self-generations as well as solutions for oil and gas industry. One of the key elements is that Wärtsilä provides worldwide service for its customers through the whole lifecycle of the products. The segments are presented in figure 2: The business

segments of Wärtsilä Corporation. The key figures in 2009 were the following. The biggest share (1,830 million €) of net sales came from services. The second share came from ship industry (1,767 million €) and the third share from power plants (1,645 million €). The total operating income was 638 million Euros (Wärtsilä, 2010.)

There are basic values that a company needs to protect. These values are, for example, personnel, company image, operations, environment and material. In some way, these elements are usually vital for the company and its future. By securing the other elements, it is possible to support the safety and security of the personnel. Wärtsilä has defined its own vision, mission, strategy and goals. The vision of the company is to be the most valuable business partner of all their customers. The mission is to provide long-lasting power solutions and create technologies that benefit both customers and the environment. Wärtsilä has listed its company values and principles that are connected to the defined responsibilities. The economic responsibility means carrying out profitable, competitive and efficient operations, creating financial value for direct stakeholders and creating well-being in local communities. In practice, the environmental responsibilities occur as sustainable use of natural resources, prevention of pollutions, providing environmentally sound products and services as well as usage of certified environmental management system. The social responsibilities are the responsible corporate citizenship, well-being at work and personnel development, safe working environment and product safety (Wärtsilä 2010.)

#### 4.1 Wärtsilä Finland and other subsidiaries

Wärtsilä Finland is handled more carefully than the other subsidiaries because it is the largest subsidiary and gives a picture about the business segments and operations. The history of Wärtsilä Finland goes back to the late 1930's. It employs 3400 people, mostly in Vaasa, Turku, Raisio, Helsinki and Espoo. Wärtsilä Finland's main market areas are Europe, Asia and America. The company provides products to various different vessels, ships and offshore units (Wärtsilä, 2010.) The operations are presented in figure 3. The operations follow partly the same structure as the operations of Wärtsilä Corporation.

In 2007, the board of Wärtsilä accepted the combined policy for quality, health and safety and the environment. In 2009, Wärtsilä Finland agreed to be committed to this policy. The policy contains a section where the company agrees to provide a safe and healthy work environment to its employees and partners inside its premises. There is also a policy about voluntary commitment to Wärtsilä's Zero Injury Approach. In 2009, the board of Wärtsilä Finland decided that the company would join to The United Nations Global Compact. It is a strategic policy and it defines ten universally accepted principles concerning human rights, labor, environment and anti-corruption (Wärtsilä, 2009.)

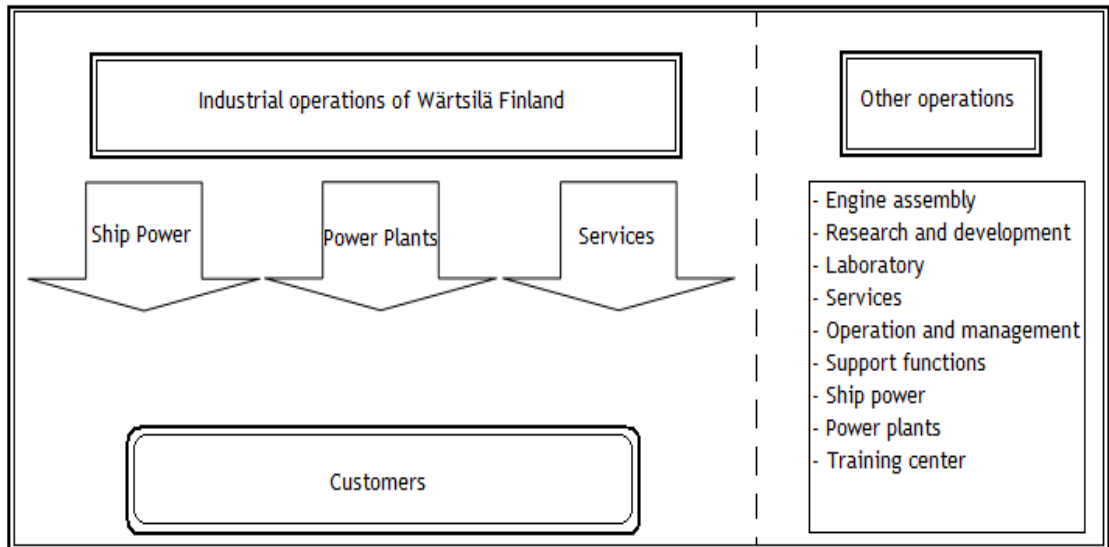


Figure 3: Operations at Wärtsilä Finland. Wärtsilä (2010)

#### 4.2 Operating environment

All cases that are included to this thesis, took place outside Finland. There is no difference whether a case took place on a business trip or if it happened to an expatriate. The unifying factors for all cases are Wärtsilä and the fact that the case location was outside Finland. There are three main physical locations where everything happens. First, there are sites or other locations where Wärtsilä operates. The subsidiaries provide power plants for industries but those sites are only one operating environment. The concept of sites includes all construction sites and locations. Sites are the primary working place where the company politics and agreements can be looked after. In reality, these sites are variably protected and limited from outsiders. The physical protection of the sites is usually organized through technical devices or guards. The type of protection depends on the preparedness and the nature of the location. Wärtsilä is not the only operator on a site. There are numerous amount of subcontractors and representatives of stakeholders. Work-related accidents mainly take place at sites or places of logistic exchange (unloading and loading). It comes up many times that access control and different physical protections are extremely important in order to guarantee the immunity of employees and structures.

After that, there are the direct surroundings of sites. Wärtsilä has many locations where there is no basic infrastructure, including roads and power. It is natural that power plants are not located in the middle of a city. This fact brings up the question of safety and security as well as logistic, maintenance, access control and smooth operations. It can also make it harder to

receive updated information of a radical situation. The success of the performance during a security deviations or a serious accident is also harder to maintain. The third sector is the region. The borders of regions are normally based on cultural or political borders. The situation inside the region can be the same, diverge or create a domino effect. For example, in Sweden the political situation is the same inside the whole country. On the opposite side, there is for example Sudan, where the situation varies inside the country. This is the case because of political tension and many non-governmental groups. In addition to sites, there are contact points outside power plants and factories. In case of Wärtsilä's subsidiaries, these contact points are Wärtsilä headquarters in Helsinki, regional units around the world and a common emergency system that gives information and instructions.

#### 4.3 Reporting situation at Wärtsilä

Currently, Wärtsilä does not have an organized reporting system that would provide updated information about sites. This excludes the possibility to achieve long-term development. There is a reporting system because of the insurance company and the official insurance compensation. However, all incidents don't end up to these files. The reason is most likely a limited knowledge of how to use the system. Possible denial of accidents and circumstances can also be a reason not to report cases.

Despite of various business and site locations, Wärtsilä does not systematically analyze the incidents afterwards or use any tracking system to locate people sent abroad. The current reporting happens with e-mails and phone calls. In some cases, there are either details missing or no official record about an incident that many people remember. The problems are solved individually. That is why suggestions, presented independently in e-mails, don't become part of the development.

Almost all cases that have been reported to the security organization have the same basic information. They contain details about the date and timing, location and the immediate result of the case. Some cases, mostly crime-related security deviations, contain information about the number of people involved and the changes that had to be done directly after the incident. Cases where the security deviation is caused by the situation, there is often background data of why and how the situation has developed like this. A very important factor is to analyze what is most likely to happen, if the situation doesn't stop. In few cases, the analysis of the situation-related security deviation is so thorough that employees can predict how different endings of the situation influence Wärtsilä. In order to develop personnel safety during a situation, the data of silent signals and possible turns of events are valuable to notice. Most of the case information is in e-mails. It is clear that in some of these mails, the importance of silent signals and the possible problems of fast changes in the situation have

been noticed in advance. On the other hand, there are cases where even the basic information is missing. It is clear that the person who analyzes and responds to this data, must know the organization, sites and different types of site locations. In general, if there is only little information, the analysis and categorizing is done by studying the result of a case.

The mails and notes are mostly written in order to give immediate situation update for the security organization of Wärtsilä. Some of these mails are clearly sent with the purpose of getting official instructions and support. Site managers mainly write these mails because of the nature of their responsibilities. The mails are sent mainly during or after an incident. There are only one or two cases there the information of a possible situation has crossed the reporting limit in advance. These possible situations are mainly caused by upcoming elections. An example of this situation is Sudan where presidential and parliamentary election takes place in 2010. There are mails about the possible outcome and consequences. These mails are sent many months before the election dates.

In the insurance reports, the information is based on the quantity of a specific compensations and treatments that the insurance company provided. It is also possible to divide the cases by the yearly situation. The insurance reports include the information about the amount of financial compensation but that is excluded in this thesis. Because the insurance reports give organized and systematic data about the cases, it is possible to follow the trends during the time of the review. By collecting the data from the insurance products, it is possible to characterize the groups of employees that are connected to the incidents. In other words, it is possible to find out if the incident has happened during a short business trip or during a longer-lasting posting.

## 5 The roles of different stakeholders in securing personnel safety and security

The benefits of risk management are wide. They have an effect on both many individual issues and large, complex groups. The purpose of this project is not to focus on risk management and its definitions. Instead, it is important to realize how safety and security can be developed by using risk management as a tool. In order to control and react to the risks, they naturally must first be found. Risk management is the tool to develop and control the safety and security situation.

There are twelve sections in the corporate security chart by Miettinen (2002, 12-13). Although personnel safety is only one section of the chart, it has an effect on many other operations. Vice-versa, many other sections, e.g. property and office security and travelling safety, are closely related to the personnel safety and security. To cover all functions, the security organization can't focus on only one part of the company safety and security. If the focus is on

physical protection of the premises, work-related accidents and preparedness to random dangers might not get enough attention. The same theory applies to other sectors of the safety and security of the company. In Wärtsilä's case, this means that securing one area of the personnel safety and security can lead to problems in other sections. It is also possible that securing one area of the whole operations eventually decreases personnel safety and security.

It is crucial to consider organization safety and security management as one package. It has a role through the entire process. When risk management is steady and open, it is also a communication and development channel between employees and the board. By being part of the foundation, it is also a reason if something happens Sulasalmi and Latva-Ranta (2003, 8.) This theory about direct and indirect reasons is better analyzed later on. Risk management is part of the process before something happens and of course during a situation. In order to act in the right way, updated information should be available. In critical cases, there must be enough discretionary and authority to act. Risk management is a natural part of analyzing cases afterwards. It has the role to develop safety and security in all levels.

Risk management is also risk assessment. Wärtsilä does risk assessment through audit reports. These reports evaluate safety and security threats that can be found from sites. Koller (1999, 9-10) presents different factors that risk assessment can be connected to. He lists health and safety, environment, transportation, construction, legal and insurance issues as elements that must be noticed. Perhaps the most essential models in Wärtsilä's personnel safety and security are the political and environmental health and safety models. The political approach is connected to the conflict process theory that classifies reasons behind conflicts. The purpose is to evaluate other countries and situations in them. By using these models, it is possible to calculate health, environment, and safety risks all over the world. The purpose of all this, is to be prepared for various situations. The combination gives an opportunity to maintain the effectiveness and ability to act in challenging situations.

### 5.1 Role of the insurance company

Wärtsilä has numerous stakeholders working at sites and outside them. It would be possible to approach the personnel safety and security issues from the point of view of co-operation with subcontractors and service providers. That, however, is not part of the main purpose of this thesis. Although subcontractors operate in the same work environment, it is almost impossible to name all of them. That is part of the reason, why all subcontractors are excluded from both case studies. Instead, when Wärtsilä and its subsidiaries continue developing safety and security from inside out, the roles of the security organization and the insurance company are important.

Considering the importance of continuity and viability, insurance companies play a big role in securing operations. According to the internet page of Economy Watch (2010), the simple role of the insurance company is to offer protection against future damage or losses. This however, doesn't mean that a company, after buying an insurance, can ignore all safety and security related matters. Because of the medical record law, it is not possible to add cases of sickness to the first case study. The insurance company collects the information about illnesses and Wärtsilä's role in this co-operation is to reduce the cases in various possible ways (for example guiding and instructing). The information that the insurance company is able to give, is mostly related to financial losses, usage of different insurance solutions and regional reporting. In order to achieve the objectives of the case studies, the cases of financial loss must be considered also as personnel risks. A good example of this, are car accidents. All bigger car accidents are usually a threat to physical safety of a person, even if they are mainly considered as financial matters. Especially losses that come from work-related accidents, can be financially compensated. Organized and systematic reporting can help analyzing and decreasing cases. A relevant decrease of incidents can lower the insurance payments.

## 5.2 Roles of employees

It is natural that in many cases, the employees and their actions are a big part of the outcomes of cases. There are numerous situations where Wärtsilä and the subsidiaries send people for short, work-related business trips around the world. The duration of these trips varies a lot, and that makes it harder to secure and instruct people. The safety and security related input that business trip employees need, includes preparing before travelling and even after the assignment. According to Hernesmaa (2010, 33-35), there should be a risk assessment and training before travelling. The practical arrangements must be planned and secured in advance. Hernesmaa (2010, 34) reminds that personnel safety and security, while working abroad, is a foundation for all operations. It defines where and how the physical business can be implemented. Hernesmaa (2010, 35) writes that there should be connection between an employee and the company. This connection should be available during the whole trip. This includes the ability to locate employees if there are any problems. This connection is vital especially in difficult situations where communication and logistical support are limited. The fact that the company is prepared to act successfully in difficult situations, doesn't only apply when talking about employees. It also includes taking care of their family members in case of emergency. Miettinen (2002, 249-254) talks partly about the same things as Hernesmaa (2010, 33-35). He highlights the importance of preparedness, which includes, for example, collecting details about operation locations. He mentions planning and preparedness as part of all situations. In a case of travelling, this means acting before, during and after a business trip.



The subsidiaries send ex-patriots to work abroad. The postings last some months or even years. Ex-patriots are a big part of operations and they are one of the main subjects of the case studies. These employees are an interesting group of people because in some cases they are traveling with a family. The security of employees concerns also spouses and children. In order to secure their safety, there should be available information about the situation at site and in the near environment. Some of the incidents in the first case study clearly include the whole family and not just a single employee. That must be noticed at least when considering and implementing an evacuation. The situations of political (or any other) restlessness cause increased level of risk also for the families.

After that, there are local employees that Wärtsilä recruits during a construction work. Local employees are not directly part of the case studies but they can't be totally ignored. There are cases where recruitment of local people has led to problems in the end. Clearly different work cultures can cause safety and security threats during the construction. The bigger problems, however, may occur when the employees are not needed for work at the site anymore. Fixed-term employment can cause individual unemployment. On a wider scale, it can affect the whole community (for example a village). If the situation becomes unbearable, the attitude towards Wärtsilä might not be so positive. In the worst cases, a tense situation leads into violence. This is why it is so important to have good connections with local communities and people.

The reason to analyze the roles of different stakeholders, is to understand how they are connected to each other. In addition, it helps to understand how they directly influence the operations and the safety and security situation. Employees are often the first group of people who suffer if there are safety and security problems. They are also the group that makes it possible to keep the operations going. That is the reason why the personnel safety and security is so important. The role of the security organization is to support and develop personnel security. The role of the insurance company is to secure the financial balance, and through that, it is a part of securing all operations.

## 6 Literature and theoretical framework

The theoretical framework of this thesis approaches the safety and security related cases and problems from the point of view of reasons and reaction. The reaction can be an anticipated act or a momentary dodge to get the situation under control. The reaction is connected to the reasons and the details of the situation. The main purpose of the theoretical approach is to clarify the wider reasons behind cases. The cases can then be categorized by their reasons or consequences. No matter what type of categorizing is chosen, some kind of analysis is important in order to classify them and respond. The theoretical approach includes all operators

and factors that Rissa (2005, 26-27) lists as hallmarks of safe international operations. He categorizes the main points into seven sections. All these categories are related to personnel safety and security, e.g. management, health and safety, staffing, work environment, personnel and training.

Even the best risk assessment or planning is useless, unless the development and implementation reach the employees. This is why safety and security training is needed. In addition to training, individual expertise and knowledge make it able to act successfully in difficult situations. Roper, Grau and Fischer (2006, 67-68) say that safety and security training should have an influence on two things. First, it should influence on the choices that the employees do. The goal is to get people make choices that have a positive effect on safety and security. Secondly, it should influence the effort that the employees give for the safe work operations. An individual goal of every employee should be to do good work, instead of just work. Both goals are about the right decisions making in the daily work. One of the problems in the safety and security development is that, in many cases people connect safety and security to problems (Roper et al. 2006, 67-71.) The development should include all employees and the process should give everyone a chance to participate. The motivation is the key element in success. There should be a reason to use the safe working methods. In addition to that, the environment should support the motivation.

#### 6.1 Risk Management and reaction to the personnel safety and security threats

There are four different risk management ways to react to a discovered risk, outlines Miettinen (2002, 29-30). Removing the risk totally, can be expensive, difficult and hard to implement. That is why a company doesn't always even try to eliminate the risk. There are three other risk management ways to choose from (Miettinen 2002, 29-30.) Like according to this theory, Wärtsilä can remove risks to a certain point, but not all risks can be avoided. A total avoidance of risks would end all high-risk operations. Because of the type of business, total avoidance is rarely a worthy option for Wärtsilä. The avoidance comes in to the picture if a specific region is considered as hostile environment for Wärtsilä. In those cases, the benefits don't match with the risks. In practice, that means avoiding those business places and closing down sites before something serious happens.

According to Miettinen (2002, 29-30), reducing risks has the purpose of lowering the possibility and seriousness of the consequences of incidents. When the risk occurs, the damages stay as small as possible. Like most international companies, Wärtsilä transfers risks by contracts and agreements. In order to investigate the costs of work-related accidents, there is an agreement with the insurance company. This is probably why it is easier to receive organized data from the insurance claims. The fourth risk management method that Miettinen (2002, 30)

introduces, is to accept the risk. This practice should be selected if the consequences are financially low enough. For example, natural disasters are highly expensive and difficult to predict. That is why there is no point to be prepared for them with technology. Suominen (2003, 97-105) presents the same division, although he divides risk management ways into five: avoiding, decreasing, sharing, removing and accepting.

The risk assessment and risk management come into practice, for example, through audit reports. These reports include safety and security situation related issues at sites. They are an extremely important part of reducing direct and indirect causes of accidents. The reports include the idea of the importance of safe work environments. They also include an update about the whole safety and security situation. They include notes from safety and security plans, and they take stand on the importance of safety meetings and systematic accident reporting. The condition of physical protection and the electronic equipments are also on the checklist. By doing audit reports, it is possible to notice most threatening risks and reasons that cause them. The development ideas and orders are directly from the risk management methods that Miettinen (2002, 30) presents. The reaction to a risk should be effective and financially wise. The efficiency comes from those things. It is a branch of the business in general and part of personnel safety and security.

In his writing, Berger (1999, 17) notes that at some point a growing company can't rely upon contract based security services. He says that these services are not able to cover the required part of the operations on the required level. Instead, there should be specific protection plans for large companies. This is true at Wärtsilä, even though they operate in various smaller units. A tailored protection serves the needs better. A specific protection is also relatively easier to control and change if necessary. This way the daily protection can be edged together with preparedness and emergency plans.

Two of the categories in this thesis analyze different security deviations. These deviations are caused by crimes and situations. In his work, Reason (1997, 65-66) approaches exceptional security cases through a specific model. In the presentation, the quality and the quantity of the cases vary. That defines different ways to approach problems. This theory can be connected to all operations and deviations that Wärtsilä faces. According to Reason (1997, 65-66), if there are few easily resolved cases, the solutions should be routine, repetitive, well structured and predictable. In practice, this means that the solution to a problem is pre-programmed with rules and procedures. The company faces these problems every now and then but the consequences are not severe. This way of thinking goes hand in hand with Väyrynen (2003), since it is based on the basic reasons that influence in the background. If there are many easy and exceptional cases, Reason (1997, 66) changes the routine to non-routine tasks. He does the modification even though the cases are relatively simple to analyze. The

normally prescriptive reaction gets a discretionary tone if that's necessary in order to control the situation.

If there are still only few cases but the level of impact increases, Reason (1999, 66) keeps routine as the key element of risk management work. Now those few, easily resolved cases are equated to the cases that occur rarely but are difficult to resolve. The difference between them is that in the second possibility, the problems can be vague and poorly conceptualized. This always increases stakes. In the second situation, rules and procedures require discretionary performance from individual employees. At a site, this might mean a serious work-related accident or other case that is related to that. These cases only occur from time to time but they need a special attention.

The last category of cases that Reason (1999, 66) exams, are the frequent and hard to resolve problems. They don't follow a routine which makes it difficult to react. In addition, the starting points of the situations are unpredictable. Because of that, the rules and procedures don't apply. Most of the action must be done by individuals whose performance is discretionary (Reason 1999, 66.) At sites, this could mean, for example, political tension that turns into violence. The circumstances are always different because of the nature of restlessness, the location and the region.

This four-field model can be used to analyze the best ways to create the base for risk management. It also helps to categorize security deviations in a way that the actions during the situation are as effective as possible. The reaction is particularly essential in serious security deviations. The deviations can be caused by situations or crimes but the reaction to them must be clear. Of course there is a difference between a concrete problems and abstract situations. A physical crime is a concrete problem that can be handled directly. Before restlessness turns into violence, the situation can be full of silent signals that must be noticed. The expertise of individuals and the ability to adapt to various circumstances is valuable for the safety and security of the personnel. The expertise also effects on the possibility to read silent signals before an incident.

## 6.2 Reflecting the personnel safety and security situation to the type of business

Wärtsilä is an industrial company, which makes it connected to development and natural resources. In many cases, the company represents western economy and increasing power production. Some of these factors can be considered as personnel related business type risks. The influence of these factors varies in different regions and that must be remembered in safety and security planning. The business type, e.g. construction, itself brings threats to operations. The threats are not place-specific and they occur at all sites (not just Wärtsilä).

The type of business defines the structure of the personnel. In addition to the common threats, there is a factor of complex work community at many construction sites.

According to Institute of Risk Management IRM (2002, 3), there are strategic, financial and operational risks for a company. In addition to these main risks, there are some other risks, e.g. the risks of political and economic instability as well as environmental risks. According to IRM (2002, 3), there are internally and externally driven factors. Site operations are part of the main business, which makes it possible to implement the strategic objectives in the daily work. In operational risks, these externally driven elements come from local regulations, culture and the composition of the board. In order to cope at the location, the company should have good relations to these stakeholders. Knowledge of different cultures is usually the key to operate successfully. These factors are externally driven as they come from outside the company. The externally driven factors can also bring threats for the company. In Wärtsilä's case, this means, for example, restlessness and crimes against Wärtsilä. Although it is very important to investigate externally driven factors, internally driven factors must not be ignored. In the operation environment, the internally driven factors come from inside the company. The factors include, for example, the elements of the supply chain and continuity as well as recruitment of workers. They may seem individual things that only effect on the operations of the business but in fact, they can create risks for numerous parts of the personnel safety and security (Institute of Risk Management 2002.)

In the same chart, IRM (2002, 3) brings up so-called random risks that also have a direct connection to the personnel safety and security. Random risks, such as environmental events and actions of stakeholders, are externally driven elements. It seems that it is possible to be prepared to face these factors by making sure that the agreements are well made. The safe contracts include the connection to right stakeholders as well as usage of updated and qualified operation plans. An extra element is that the so-called right connections can change because of political situations. The internally driven arbitrary risks include the control of public access and securing premises and properties. The employees must be protected from the risks that come from different directions. Not all personnel risks come from outside the site fence. The company must make sure that the relations between Wärtsilä employees and other workers are in good shape. Safety of the employees might also mean protecting employees from the company operations. This happens, for example, when evacuation plans or other safety plans are implemented in order to prevent more serious danger. The action might feel financially oversized at that moment, and if the workers are against it, decision can be hard to make. By making the decision based on safety and security, the company protects employees from multiform risks coming from outside and inside the fence (Institute of Risk Management 2002, 3.)

In view of the thesis and its objectives, it is important to pay attention to operational risks. In Wärtsilä, these risks occur, for example, as thefts and malfunctions of machines. In the worst cases, thefts change into burglaries and robberies, which endanger the employees. It is also important to remember that operational risks rarely occur alone. They are related to other threats and conflicts. The type of business may cause specific risks but it also partly defines the risk tolerance capacity of the company. If the risks are still too high after improvements and short-term development, the situation becomes unbearable. This doesn't mean that all operations must be shut down. In this situation, people who work in risk management are given the task to choose a proper way to act.

### 6.3 Conflict process theory

Not all security deviations are caused by crimes. There are also those cases that are related to the situation. According to Vuoristo (1997, 28-30), conflicts are disagreements caused by individual people, interests or issues. In cases where the conflict is caused by a disagreement of interests or issues, there is a dimension of political geography. In Wärtsilä, this might mean differences between the company, government of the location country, the political opposition and local people. In addition, the situation can't be shifted into black and white theory because the main situation can be a result of different point of views and different ways to analyze and create estimations. The cause of a conflict can differ as well as how the parties react to the cause. The reaction of the parties can be the issue that causes safety and security threats to the personnel. The externally driven factors of IRM report (2002, 3) are partly connected to geopolitical conflicts, as the way they occur comes from outside the company.

Vuoristo (1997, 28-30) explains that there will be a conflict of interest when two or more parties pursue the same thing. If one party achieves this goal (material or immaterial matter), the advantage brings disadvantage to the others. In power plant business, this might mean disagreements about natural resources and infrastructure. The problem in a conflict of interest is that the parties see the situations, advantages and disadvantages in different ways. When exploring the reasons behind the situations, it is clear that culture plays a big role in the matter. In the first case study, there are examples of situation-related security deviations, which are directly connected to the conflict process theory. Vuoristo (1997, 28-30) writes that the other conflict, a case conflict, comes when everyone reaches for the same goal but the methods are different. In practice, this could mean, for example, developing a society in a low-income country. The opinions about the best ways to develop the community differ from each other and that can cause conflicts.

In addition to conflicts of interests and case conflicts, there are conflicts caused by disagreements about people and their actions. According to Vuoristo (1997, 28-30), these conflicts are

mainly caused by individual people. Yet, it is worth mentioning that some of the case study examples include the factor of people-connected tension. The roots of the conflicts are in different religious and cultural backgrounds or in a specific nationality. There are cases where only the members of a certain nationality and religion have been in danger. In these cases, the conflict can start from the other side of the world and end up threatening Wärtsilä employees in a completely different region. The key to get ready for these conflicts is to follow the news and the common political and religious situation. The conflict of interest and the case conflict are presented in a more simple way in the next picture.

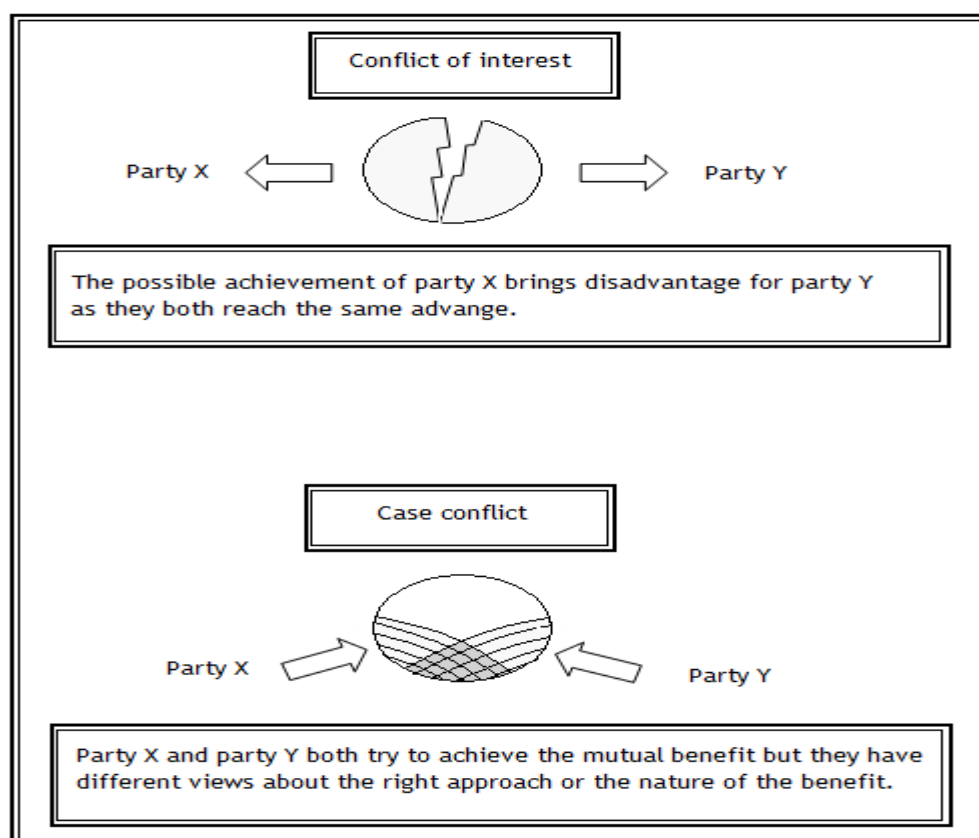


Figure 4: The conflict process theory. Vuoristo (2007, 28-30)

In the publication of National council for crime prevention, Kontula (1996, 10-15) defines different exceptional circumstances that create a possibility for crimes, for example, during a situation-related security deviation. Kontula (1996, 10-15) reminds that even small deviations and crises can have an effect on the temporary crime situation inside a region. At the top of his list are wars and post-war situations. Maybe closer to the first case study of this thesis, are national political crises, rebellion against government and serious economic crises. Deep economic crises threat economic system and cause shortage of food, energy and goods. Naturally, not all crises are caused by people. Natural disasters and major accidents also form

these circumstances. Most of these situations include a threat of physical violence, which can have political, religious or ideological objectives. The deviations that Kontula (1996, 10-15) lists are mostly extreme cases but they do occur during the first case study, in the category of situation-related security deviations.

In the first case study, the process of different conflicts becomes clear through situation-related security deviations. There are cases, where the reason of a tense situation is caused by an individual incident or event. A murder of an opposite leader is an example of this. The frustration is not pointed towards international companies but that doesn't mean that it will not disturb operations. When two (or more) parties try to reach for the same advantage, there will be a conflict of interests (Vuoristo 1997, 28-30). In those cases, an international company might have to stand unwillingly between two sides. In order to secure people and operations, the key point is to have good relations to different parties. If something happens, there should be proper plans to move away from the situation and a possibility to negotiate.

#### 6.4 Process of incidents and reasons behind them

The risks that the business type creates were analyzed in chapter 6.2. That is why this specific factor is excluded from the following approach. According to the TOT report by The Federation of Accident Insurance Institutions (2000), there are four separate elements that decrease the personnel safety and security. According to the report, the first accident factor is caused by malfunctions of machines and other technical instruments. The factors can also be found from operational procedures and performance of the employees. The influence of environment is registered on the list as well. All work-related accidents that are analyzed in this thesis, can be linked to these factors. The factors can have an immediate effect or they can be contributing factors, which eventually lead to accidents. TOT reports include statistics only from Finland but in the document, there is a theory of investigation model that is not site-specific. It can be used in various places. All the models have the purpose of reducing risks.

In order to analyze how crimes influence the personnel safety and security, they should be considered as separate risks. They can be a result of operations but the more important detail is that they often come from outside the company. While TOT report (2002) investigates the immediate causes of the personnel safety and security threats presented above, Amin (2009) talks about the contributing factors that boost crime against companies. His example is from Latin America as he used World Bank Group Enterprise Surveys data from Latin American countries to describe the situation. He found out that well-off companies are more likely to be victims of crimes than small companies are. He also writes that according to the Enterprise Surveys, large cities are more opportune to crime than smaller towns or cities. It is interest-



ing to notice that the absolute size of the city is not as relevant as the relative size compared to other cities in a certain country. Amin (2009) reminds that in order to get to the source of the problems, there should be more reliable data available. This is the case outside Latin America as well. Despite of the lack of data, Amin (2009) raises two main causes of crimes in big cities. According to him, the first factor is that the level of anonymity is higher in large cities. This makes it easier for criminals to act and hide whenever necessary. Secondly, large cities often have higher number of wealthier individuals. That can be considered as a factor that attracts criminals. The factors that Amin (2009) presents in his writing, may not cause immediate increase of crime rates but they create an environment for crimes. That is just one example of why risk assessment should always be included to the operations.

In this case, reasons start a process that eventually leads to an incident. When the risk level raises enough, there will be an accident or other incident. In the publication of Sulasalmi and Latva-Ranta (2003), Väyrynen (2003, 8) refers to the model of reasons behind incidents. The model specifies reasons before accidents. At first, there are basic reasons that influence in the background. The basic reasons are connected to the company board and management. They include all planning, safety and security politics, environmental issues, decisions and personal factors. All these reasons become demons if they don't support safety and security. They create a base for all actions inside the company. According to Väyrynen (2003, 8), safe and effective work requires an observation of both material and immaterial factors. Individual expertise of employees and actions during work are immaterial factors. They are as important as material factors such as work environment and technology.

This model can be transferred to Wärtsilä without bigger changes. The background and the base for all operations come from the issues present in the previous paragraph. The model includes security policies that Wärtsilä demands worldwide and announcements that the subsidiaries give. The protocols can also be implemented because of law or required standards. Secondly, they can be done because of internal interests, company image and future plans. The most important part of these background factors is that they improve organizational safety and security only if the whole management is committed to it. Considering the role of instructions, one of the biggest and most radical safety and security actions might be the evacuation of all the non-local employees. Evacuation and the decision of that should be written down in the company politics. In that way, the safety and security policies support reaction at sites, justify certain solutions and clarify responsibilities.

After the so-called foundation, there are indirect and direct reasons that are both closely related to the accident itself. Väyrynen (2003, 8) divides indirect reasons into two categories. The first one is any dangerous activity at the work place. The second one is a situation of dangerous circumstances. Together or independently, they can produce a safety and security

risk that only needs one direct element in order to make damage. After the indirect reason that creates the situation, there are direct reasons that are a part of the accident. Väyrynen (2003, 8) takes unplanned release of energy and/or dangerous substance as an example of a direct reason.

When studying the cases at Wärtsilä's subsidiaries, it is obvious that both the type of activity and circumstances play a big role in accidents and security deviations. On a big scale, Wärtsilä operates all over the world, including low-income and developing countries. Depending on the location, the circumstances often play even a bigger role than dangerous activities. It is not always easy to analyze these factors or the level of risk they create. Relatively simple task can turn into a dangerous situation if the employee doesn't have the required skills. In many cases, a situation-related security deviation is processed from restlessness in the area. It can be very difficult to be prepared to something that is still on the level of feeling and has not occurred as an action against anyone. Disregard, thoughtlessness and ignorance are all classical indirect reasons that lead to problems. Over confidence and lack of perception as well as awareness can be added to the same list. These reasons apply to work-related accidents and crime-related security deviations. Many of these reasons are unintentionally created, e.g. lack of awareness in a high-risk part of a city. Although there may be direct reasons for problems, those just mentioned reasons create the biggest part of the situations.

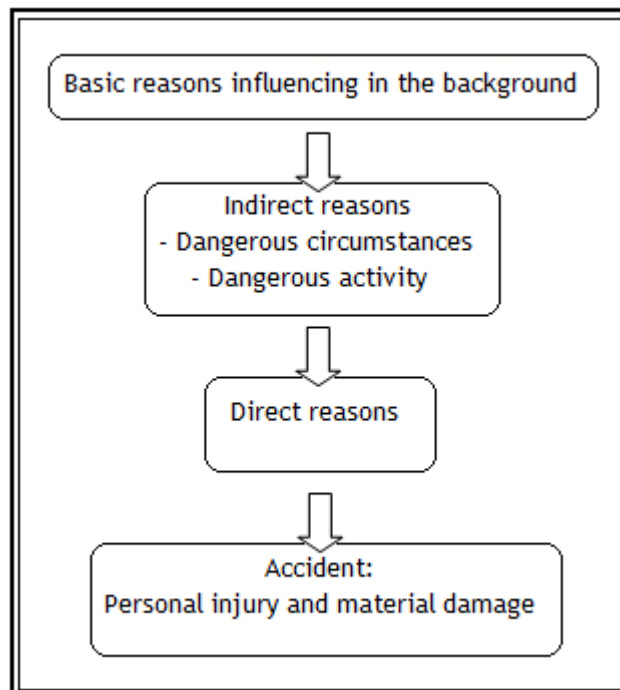


Figure 5: The chart of reasons behind accidents. Väyrynen (2003, 8)

The last part of the model is a reminder of direct reasons. When coming to direct reasons, the influence of the performance of individual people increases. They are usually the closest factor to the victim or the target. There are numerous amounts of work-related accidents that can be categorized to direct reasons. All fallings are direct reasons for accidents. It is a crucial part of risk assessment to study if an accident was a result of procedures or the environment (indirect reasons). Therefore, all reasons are connected to each other. In a way, the previous reason creates a base for the next one. The prevention of work-related accidents should start from the very top of the company. Radical prevention needs the support of the management. In order to commit the personnel, the board must be motivated and committed to develop safety and security. It is possible to reduce the amount of direct and indirect reasons if the basic reasons are properly handled and processed.

#### 6.5 Physical protection and environmental design in personnel safety and security

As it was said earlier, different sectors of the company safety and security are connected to each other. Through the interviews and especially through the first case study, it became clear that physical protection and knowing the environment are key elements in the overall safety and security. Miettinen (2002, 94-99) talks about the layered protection, which is one of the most important elements in the protection of property and premises. He starts with the protection of the premises, which means protecting the outer edges of the premises. In Wärtsilä's case, it includes the whole site and the area that belongs to its customer. The protection is normally arranged by using fences and walls. If this is impossible or financially unwise, the protection lies on the next levels of the protection. In those cases, the protection is based on the levels of protection of the outer surface of the buildings, protection of certain spaces and protection of specific objects. The protection of the outer surface of buildings means securing the immunity of the buildings and structures. It can be considered as the most important part of the protection because it is the level that mainly controls the access to the buildings. If the protection of the premises fails to work, there is still a chance to stop the event before any physical damage. The protection of the outer surface includes securing all sections that can be used to enter the building and a failure in it, usually means immediate damages and direct threats. Miettinen (2002, 94-99) reminds that this kind of protection can be implemented with mechanic or electronic solutions. In first case study, it becomes clear that physical immunity of the premises and structures is vital for the daily operations and during security deviations. This protection doesn't apply only inside a site but also in the accommodation locations of the employees. A safe environment is directly connected to the well-being of employees and continuity of operations.

The next level of protection is the protection of a certain space. This space can be a single room or a bigger part of a factory. According to Miettinen (2003, 94-99), the protection level

of different spaces can vary according to the significance of the protected operation. The last level of protection that Miettinen (2003, 94-99) presents is the protection of a specific target. This target is usually located inside a protected space. In Wärtsilä's case, the two first levels of protection can mainly be used to protect employees and the framework of the site. The two last levels are for more detailed protection and can be used against thefts and securing the key functions.

The physical control and security are highly important, in order to secure the premises and the operations. Physical structures are a clear example of preparedness but Crowe (2000, 39-40) approaches this issue from another direction. He introduces the Three D-approach, which is a way to implement CPTED (Crime Prevention Through Environmental Design). Like in physical protection, a large part of crime prevention is also part of the safety and security of the personnel. Crime prevention can of course be done in many ways. Because of the importance of the protection of the premises, the element of operating environment is a natural part of the total protection. It is important to become aware of that because of the demanding site environments. The Three D-approach highlights the significance of designation, definition and design. Designation takes into account the purpose of the space (in this case the site). In Wärtsilä, this may not be the problem because the point of many projects is to build something new. Instead, the two other elements provide support to risk management, physical protection and personnel safety and security.

In Wärtsilä's case, the definition makes sure that the site is defined properly. The premises and the owner must be marked clearly. When working across the world, even different cultures might have an influence on this. According to Crowe (2000, 39-40), different social and cultural definitions can have an effect on how a certain space is understood and used. The third element is design, which is about how well the physical structure supports the intended functions and operations. Although the theory stresses the importance of clear messages, there must be a balance between that and certain invisibility. This balance becomes clearer when comparing Crowe's way to see CPTED with the situational crime prevention that Schneider and Kitchen (2007, 15-29) write about in their publication. Schneider et al. (2007, 15-29) list the factors that have either a controlling or an increasing influence on crimes. These factors are the risk to get caught, needed effort, potential reward, level of provocation and the possible consequences. The same factors are also presented by Gill (1998, 143-152) who collected answers from a research that studied the reasons behind individual crimes. The research was specialized on cases where one target had been robbed more than once. The answers can clearly be categorized into controlling or increasing factors. With the right actions, it is possible to use these factors against crimes. Through all this, the environmental design, physical protection and crime prevention become part of securing the personnel safety and security.

## 7 A case study 1: The personnel safety and security incidents reported to Wärtsilä

The next part introduces cases that occurred at Wärtsilä's European subsidiaries during 2005-2010. The section starts with the work-related accidents. There are some statistics outside the examined company but they are mostly there to create a better image of the situation at Wärtsilä. Two last sections are about the crime and situation-related security deviations. Because of confidentiality, details and numerical quantity of all cases are screened out. In the case study, the categories introduced by Rissa (2005, 26-27), occur in practice. Especially the meanings of work environment, supervision and training are strong. Many of the cases (especially accidents and cases of lost property) are also in the insurance claim reports. However, the objective is to analyze the reporting situation from the point of view of the corporate security organization.

The analyzed cases are divided into three categories. The first category is formed from work-related accidents and that's why it is closely connected to occupational safety. In this thesis, work-related accidents are all those accidents that have happened inside the site premises. It also includes car accidents and flight accidents because they are part of travelling and work-related assignments. Home-connected accidents are screened out. This separation was done because the number of threatening factors as well as the amount of possible cases would increase so much. This first category is closely related to emergency plans and preparedness for medical evacuation. It includes the importance of training and instructions that should cover the most important parts from all expected situations. The difficulty in this approach is the fact that there are countless amount of different threats and risk levels. Work-related accidents cover about 27 % of all reported cases.

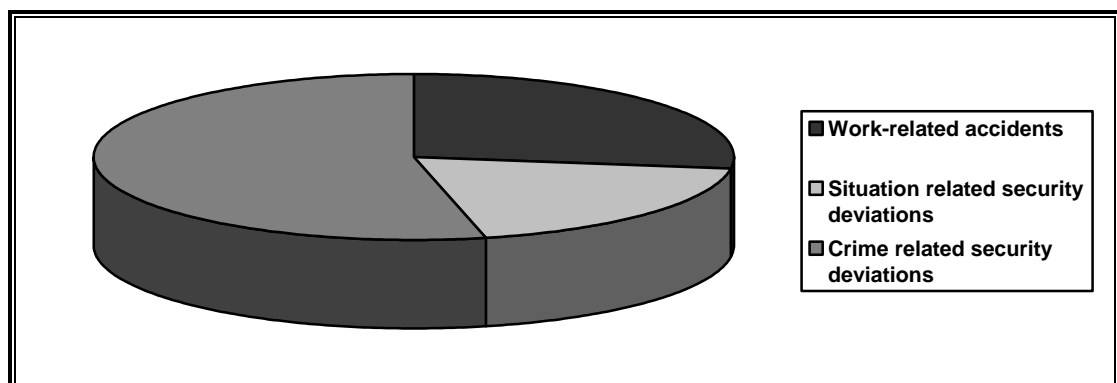


Figure 6: The division of case categories. Suominen (2010)

Categories number two and three are about different security deviations. Because it is important to analyze both crime-caused and non crime-caused threats, they are separated into two different categories. First, there is a category of individual security deviations. These cases are not caused by crimes or there are crimes but they are not pointed deliberately towards Wärtsilä. These situation-related security deviations cover about 19 % of all reported cases. Examples of these cases are movements of opposition and government organized forces, official curfews and unofficial roadblocks. Crime-related security deviations are analyzed separately. They are in the third category. In this thesis, they are the cases, where crimes are intentionally targeted against Wärtsilä. The last category represents about 53 % of the total amount of cases.

In addition, the locations of the cases give information. Later on, the cases are examined through the categories but it might be useful to mention something about the reporting locations. In order to connect geographical regions to Wärtsilä's operating locations, it is natural to separate Europe, Africa, Asia, South America and North America. This separation is based on the continents and cultural borders. In situation-related security deviations, most of the cases (about 59%) are reported from Africa. When looking at all the crime-related security deviations, the main locations are South America (around 34%) and Europe (around 24%). It is important to remember that although South America and Europe are side by side on this list, the nature of crimes varies a lot between those regions. These differences are analyzed more thoroughly later on. Overall, the regional division of the reported cases is in balance. When looking at the figure 6, it becomes obvious that North America has a very small role in the reported cases. Other than that, all regions are well represented. This might be a cultural matter or matter of reporting. The situation of the regional reporting comes up in the second case study as well. Through that, it is possible to compare the sources of the reports and the situation inside different areas.

By using the same categorizing in this case study, the biggest amount of work-related accidents is reported from Asia, although, because of medical record law, information of many locations is not available. The situation where all reported cases are put in together is presented below. The biggest amount of all cases is reported from Africa and South-America. There is a group of so-called unidentified cases and they represent large percentage of all cases. These cases are mainly work-related accidents and that is why they are protected by the medical record law. This means that the details (e.g. the location) are not available outside the insurance company. Although, not all possible cases are included to the thesis, the chart gives an example of the percentage, which the cases cover. It also shows where the cases are mainly reported. The regional division can be connected to the main market areas where Wärtsilä operates. The larger market areas mean more operations and that means an

increasing amount of employees. When the amount of employees increases, the level of risks and possibility of incidents increases as well.

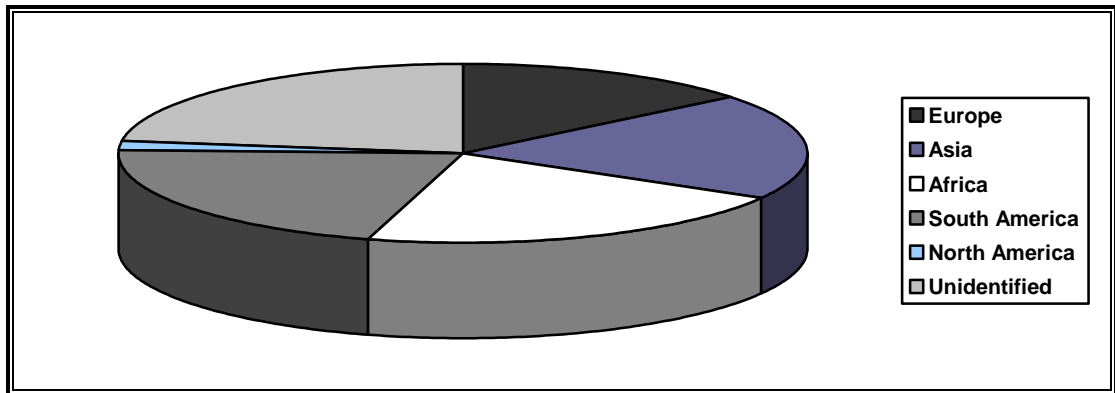


Figure 7: The regional division of the case study material. Suominen (2010)

Only the cases that have influenced the employees of Wärtsilä's subsidiaries are analyzed. Wärtsilä has many subcontractors but there is no reliable way to receive information about them. This means that even if something striking happened close to a site but it has not been reported, the case is not analyzed. The initiative must come from a site and from people who work at a site. In other words, only cases that have crossed the level of reporting are counted in. It is sure that even when studying the subsidiaries, there are incidents that suffer lack of information. In those cases, it is important to analyze what information is missing. The other question is that, does the lack of information have an effect on the personnel safety and security. By discovering what information Wärtsilä needs, the analyzing gets a purpose. The next step after that is to use the information in development.

To analyze the causes more successfully, one part of the theoretical framework is a conflict process theory. It brings a geopolitical approach to the subject. According to this theory, the creator of a conflict is always a disagreement about a person, an interest or an issue. Most likely, conflicts of interest and case conflicts can be found when analyzing the reasons behind security deviations. Also the reasons, basic, indirect and direct are connected to Wärtsilä as they create the base for all cases. Some of the reasons have an immediate influence on them. In reporting, it is important to have information that makes it possible to choose the right measures. If the situation is reported before a conflict, the reaction can be preventive. If the situation is on during the reporting, the first reaction should be to ensure the minimum amount of victims. This is like a dodge that gives a possibility to discover a longer-lasting solution. That is why preventive reporting and monitoring of the situations are so vital. This applies mostly in situation-related security deviations.

## 7.1 Work-related accidents

The category of work-related accidents is formed from everything that happens inside the site premises. In addition, because of the nature of living abroad and business travelling, also car accidents, drownings and flight accidents are included. Naturally, they are not just work-related accidents but they are connected to international operations. The reason why car accidents and drownings are not in the category of security deviation is the scale of individual cases. These example cases are rarely related to a regional, situation-related security or targeted crimes. In Finland, according to Statistics Finland (2006), there were over 146 000 work-related accidents in 2006. The definition of a work-related accident is following. It is a case, in which the sick leave has been at least 4 days. According to those statistics, in Finland, 71 people died at work in 2006. These numbers don't reveal the situation at Wärtsilä but they refer to the situation of the locations where the sites are. The same direct reasons for accidents can be found from individual cases at Wärtsilä, as well as the official statistics about Finland. Because of the objective of the thesis, all accidents are included. The defining does not exclude accidents that caused only minor damage for the employees. In other words, the duration of the possible sick leave is not a limiting factor.

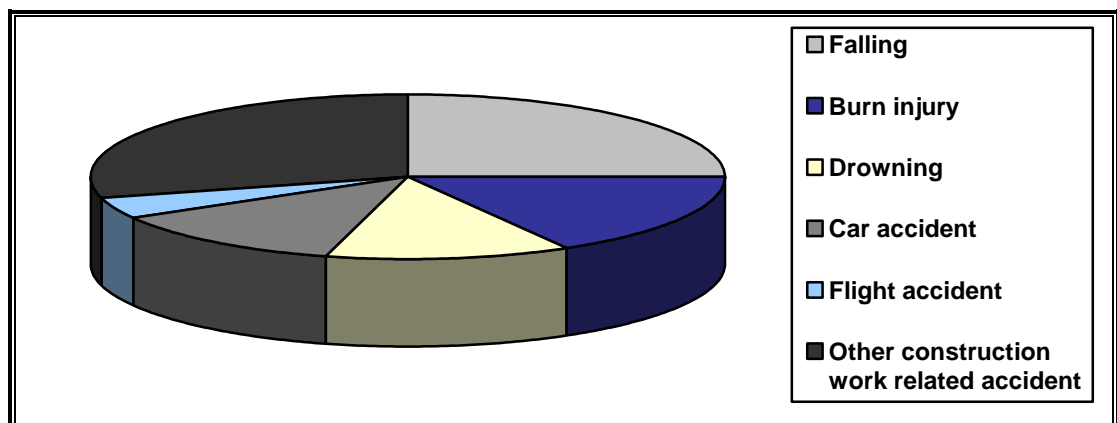


Figure 8: The division of work-related accidents. Suominen (2010)

Work-related accidents are mainly reported to insurance claim reports because of the financial compensation. There are only few cases reported through unofficial e-mails. Those few cases are reported directly to the security organization. This may be the case, because of the details or because the reasons of the cases are not clear. There is no point separating all different accident types because there are so many of them. For example, the amount of different types of fallings and slips is numerous. To achieve some categorizing, the very important point is to recognize the main parts of the cases.



The case study shows that a large amount of the reported accidents needed professional medical care. The problem in many cases is that the sites are not located in cities or close to bigger service providing centers. The distances can be long and the deficient infrastructure makes transportation harder and slower. In some cases, hospital services must be acquired from hundreds of kilometers from the location of an accident or even from another country. These examples are mainly reported from Africa and Asia. After the immediate threat, medical care can be acquired from special hospitals, which are located elsewhere. It is clear that sometimes even the immediate aid is challenging to organize. The most common work-related accidents are sorted out as following.

The chart about work-related accidents shows that the biggest amount of accidents can't be specified to any of the larger categories. It would not be wise, considering the outlined scale of the whole thesis. The category is formed from near-miss situations and small, daily accidents that don't necessarily end up to claim reports. The more serious accidents can be added to the insurance reporting system but even if they are reported, the details are not available because of the medical record law. The real percentage of cases can be essentially higher than the ratio of the number that the chart shows. Perhaps the more accurate percentage about the amount of cases can be found when looking at the injuries, caused by different types of fallings. When looking at the details of the cases, it becomes clear that these accidents happen usually in two ways. Either a person falls down from a temporary rack, or falls into something because of lack of warning signs and awareness. Warning signs and the condition of racks are part of the safety and security audit reports and the reported cases only highlight the importance of those reports. The highlighting reaches also to the cases where a malfunction or a wrong procedure has caused burn injuries. These cases can happen during a construction but also during the repairing services that Wärtasilä provides. The difficult part of burn injuries, is that they often need professional care and special medical attention. This can be hard to find in some distant site locations. Especially work-related accidents, e.g. fallings and burn injuries, can be connected to Väyrynen's (2003, 8) theory about indirect and direct reasons. The situation has the basic reasons, e.g. safety policies, but it also needs direct and indirect reasons in order to happen. Again, indirect reasons are caused by dangerous activities and dangerous circumstances (Väyrynen 2003, 8).

There is also a category, made out of flight accidents. This element is almost impossible to influence during the accident. For example, risk management can be part of choosing the proper airline company but if something happens, there is not much to do before the authorities start the investigations and assistance. The attention should be directed to the emergency operations after an accident. There should be a valid plan how to help employees who survives from these kinds of accidents. The plan should include both practical assistant and psychological help. Car accidents have many similar factors with flight accidents. The differ-

ence is that the employees can be trained to avoid car accidents and they can be instructed to act in the right way if something happens. The purpose of training and guiding is to motivate employees to give proper effort for safety and security as well as to make right choices concerning the matter (Roper et al. 2006, 67-68). If this theory can be implemented into practice, it increases the level of safety and security. It also helps the future awareness to develop. By making decisions about the right procedures, the company policy can be used to avoid accidents. An example of this is the rule about driving a car. In some locations, all transportation happens with a local driver. This helps adapting to the local traffic and helps resolving problem cases. Sometimes a car accident is not an actual accident. There is a possibility of kidnapping and robbery but that is usually connected to the location and its crime culture. When looking at the reporting of car accidents, it is important to inform the insurance company as well. The case study shows that in some cases the physical symptoms from accidents don't occur immediately but after few days. The report for the insurance company is very important because of future medical care and possible financial compensation.

The final category of the work-related accidents is about drownings. This category differs from other categories because of the serious results of the cases. When looking at the drownings, two elements are clear. When travelling by boat (of other), rescue equipments should be included to the instructions and in practice. People should also know how to use them. The other issue is the fact that it can be dangerous to swim in places that are not controlled by authorities. The cause of a drowning can be a suddenly occurring sickness but also the conditions, e.g. strong currents and physical condition of a person (sober/drunken and physical strength). The conditions play a significant role in the results. The key factors to reduce work-related accidents are training and guiding, like Roper et al. (2006) explained. The security policy must also be followed in the daily work. This applies also in cases of drownings because the result tells about a failure in procedures, awareness and planning.

In the model, introduced by Kjellén (2000, 87-89), there are three different measures to reduce occupational accidents. This model is based on implementation and maintenance of passive and active barriers, which prevent accidents. According to Kjellén (2000, 87-89), these methods are technical, organizational and social/individual measures. Inside a site, physical protection is a technical measure, along with safe environments and limited danger zones. Clearly organizational measures include all planning and development. In case of work-related accidents, this means, for example, formation of emergency plans and safety rules. The last way to hold on to the barriers, is a combination of social and individual measures, which mean education and training but also safety campaigns and feedback concerning safe and unsafe working manners.

## 7.2 Crime-related security deviations

The security deviations are divided into two categories. In the first category, there are cases that include a crime or crimes against Wärtsilä. It is possible to search reasons to these incidents from the internally and externally driven factors that Institute of Risk Management presents (2002, 3). Maybe the more proper way is to look at the conflict process theory by Vuoristo (1997, 28-30). The theory includes conflicts of interests and case conflicts. These differences can cause unhappiness and anger, which occurs as direct actions against property or people. In order to maintain good relations with the locals, there must be some co-operation even outside the site. There are examples where Wärtsilä has built health centers to areas where it operates. This provides health care for local workers as well as for the local people. It also boosts the development and acts as a quickly reachable first aid center in case of accidents and illnesses. On the other side, there are reasons that cause unhappiness and frustration among local people. A difference of interests can arise when Wärtsilä's operations somehow affect the local environment or infrastructure. An example of an environment change is a noise that may disturb people. An example of an infrastructure related problem might be a new road that comes too close to a neighborhood or a dust that come from the street during a dry season. All these problems should be settled together with a regional government and local communities.

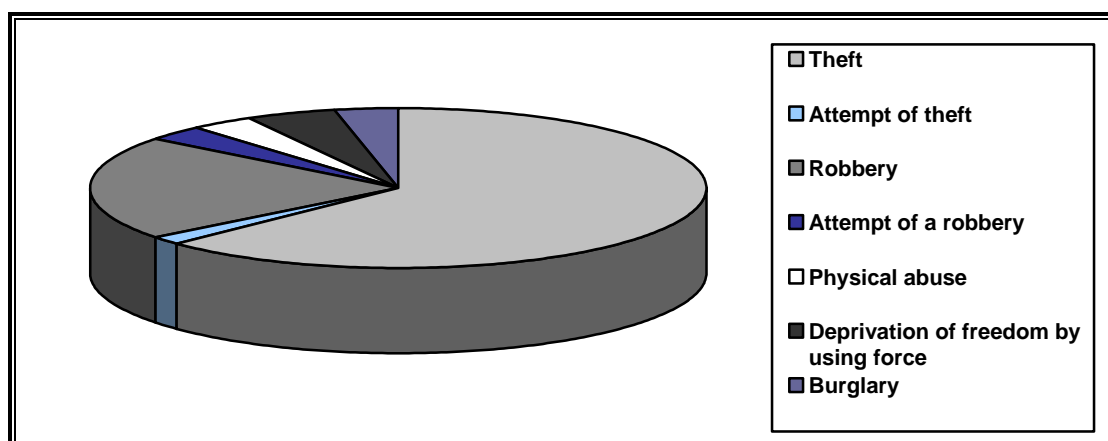


Figure 9: The division of crime-related security deviations. Suominen (2010)

After searching all possible information, crime-related security deviations cover about 73% of all security deviations. These deviations include cases of thefts, robberies, burglaries and physical abuses. There are naturally also cases that are combinations of all those crimes. Those crimes are directly pointed at Wärtsilä. Yet, another security deviation could be added to this category. There are roadblock cases in which a group of people has denied entering to a certain area or using a certain road. It is hard to verify the reasons and objectives behind

these cases and that is why they are in the other category, which includes situation-related security deviations.

Thefts form the biggest amount of crime-related security deviations. According to the details of the theft cases, there is often also an unauthorized access involved. Despite of the reporting systems offered by the insurance company, there is not much information about the details of the incidents. In some cases, is it not even clear if the lost property was stolen or lost by an employee. Usually in those cases, the value of the article has been relatively low.

The amount of theft cases is about 64 % of all crime-related security deviations. In this case, a theft simply means taking someone's property without permit. In this category, there are X cases where property has been reported stolen. There are four additional cases but they can't be connected to a specific country because of the current information. If the cases are observed by regions, South America (28 %) and Europe (36 %) are at the top of the list of thefts. Together, these two areas definitely form the biggest amount of the total number. They rule over 64% of the theft cases. There are multiple cases where a victim has reported an electronic device as the stolen property. The reason why thefts are reported so frequently is most likely the fact that the insurance company covers lost property. Because of that, financial compensation is possible. Crime-related security deviations, e.g. thefts, are connected to Crowe's (2000, 39-40) model of Crime Prevention Through Environmental Design (CPTED). By becoming aware of the environment, the crime prevention can be done through designation, definition and design as he lists.

While most of the reported small thefts in Europe and South America are done without violence, the power relationship changes in robberies. South America stays on this list, although, the style of stealing changes. This change is partly related to Amin's (2009) article about how crime rates are connected to locations. Robbery, in this case, means a crime where other person's property is taken by using violence or threat of violence. After relatively small thefts, the biggest category consists of robberies. The amount of reported robberies is 21% of all crime-related security deviations. The high reporting number is probably influenced by the fact that a robbery endangers physical immunity and life. In these cases, there are three levels of reasons as well. Even if the basic reasons are taken into account, there is a chance of indirect and direct reasons. Most likely, in this case, indirect reasons mean negligence toward right procedures and instructions.

When divided by areas, most robberies take place in South America. It is interesting that in addition to the robberies reported, there are also reports of attempt of robberies. When comparing amount of robberies and attempted robberies, it could be possible to discover a pattern or reasons why robberies do not always succeed. It is clear that robbers are after a

bigger profit than pickpockets are. That is why they have a completely different approach to the situation. More concerning is that in some cases, instead of value of goods, the primary target is a person. In robberies, there are cases of both planned and unplanned attacks. Most of the cases happened outside a site, many of them on a road. There are also cases where the target was the accommodation of expatriates. In order to reduce the amount of robberies and attempted robberies, the physical protection and safe procedures must be used and improved constantly. Schneider et al. (2007, 15-29) write partly about the same thing. The controlling and increasing factors of crimes are not only connected to Crowe's (2000, 39-40) Three D-approach but also to Miettinen's (2002, 94-99) writing about physical protection. There are things that can be done in prevention of robberies as well as things that can be done to secure acting under a threat. When protecting the premises and the accommodations, there can be emergency buttons that allow calling for help with a single function. The important point is to place these buttons so that they are available at all times and the key people can use them. For example, it is not accurate to locate all buttons inside the apartments. The guards are normally outside and they would not have any access to use the emergency buttons. An early alarm shortens the response time and makes it harder to implement the crime. Of course not all robberies happen inside the premises. It is also important to realize those other locations, for example, particular parts of a city or traffic. The key points are first to avoid these situations and then to know the right way to act if something happens.

The next category is directly connected to the physical protection of the premises and structures that Miettinen (2002, 94-95) presents in his writing. The amount of cases with unauthorized entry is low because of the side influences that unauthorized entries bring. In that category, there are only cases where there has not been threat to personnel at the same time. Most of the unauthorized entry cases end up becoming robberies or attempts, if there are other people involved. There are actual cases where unauthorized entry has led to robbery and straight contact between employees and a burglar. While breaking an entrance is connected to premises and creates an instant threat to employees, kidnapping and deprivation of freedom cases are a bit different. There are also cases in which individual freedom of a person has been deprived temporarily. During this thesis, there was additional information about kidnappings of other than Wärtsilä employees. A kidnapping, as well as most physical threats, must be considered as increased level of risk even if they are not directly pointed towards Wärtsilä. The actual kidnapping cases are normally planned in advance. It is not unprecedented that an employee has been followed before a robbery or a kidnapping. The following of an employee can start even from the airport and it can last for days before the actual crime takes place. This is a practical example of a situation that Hernesmaa (2010, 33-35) urges to avoid through planning and secured actions. In this case study, the incidents cannot be considered as kidnappings. However, there have been illegal, temporary detentions and deprivations. The last element in crime-related security deviations is a physical abuse. There

are some similarities between physical abuses and robberies. The amount of those cases can be decreased by right procedures (such as avoiding entering certain areas and external appearance) and awareness of the immediate environment. In some places even that doesn't secure physical immunity. If the possible situation can't be avoided, the protection should be planned and well-organized.

### 7.3 Situation-related security deviations

After studying the nature of all cases, it was natural to create a category of cases with situation-related security deviations. They cover over  $\frac{1}{4}$  of all security deviations. In these cases, the possible illegalities are not pointed directly against Wärtsilä but they still crossed the reporting level. So-called common restlessness is the first reason for reporting. From all situation-related security deviations, unclassified restlessness covers 77% of the cases. Over half of those cases took place somewhere in Africa. Most likely because of the political situation and actions of the authorities, there was no restlessness report from Europe and North America.

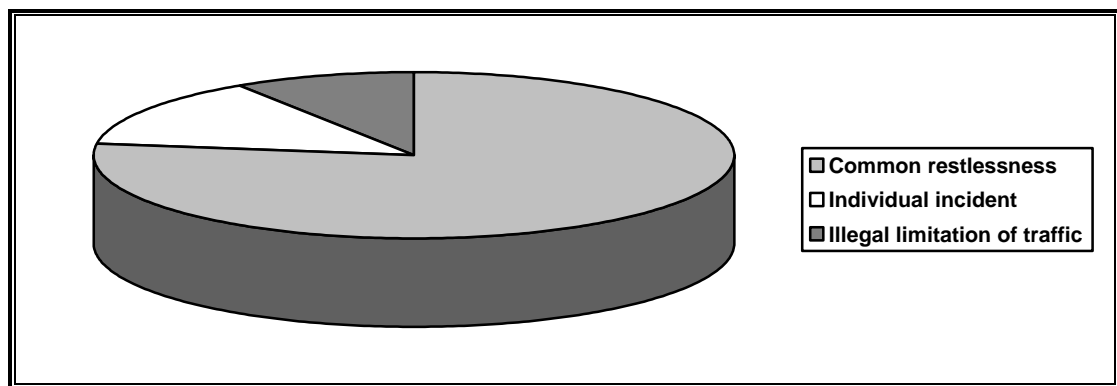


Figure 10: The division of situation-related security deviations. Suominen (2010)

The state of restlessness can be a result of political (including geopolitical) situation. When analyzing restlessness, there were six different forms of how a certain situation creates a risk. The first one is violent resistance against government. The resistance is normally caused by the opposition or other non-government supported group. Radical opinions can simmer among rebels and minorities for years before occurring as violence towards authority and public property. Even if the violence is targeted towards national authorities, it is possible that the construction site is also in danger, let alone the employees who live inside the direct danger area. The risk level rises, if an international company has close relations with an unpopular government. To avoid restlessness, government gets prepared. This, on the other hand, can cause more anxiety among those who do not agree. The way that controls the situation, but also has an effect on business, is (in many countries) the authority of re-organized security

and military forces. For companies, this might mean, for example, curfews or other restrictions in transportation. In some countries, public assemblies are illegal because of martial or emergency laws but other than that, it is legal to hold public meetings. The possibly threatening matter is that sometimes violence and other crimes come as a by-product. Because other crimes often follow assemblies in critical and tense situations, they are also a threat for companies and employees. The restlessness can be a result of an illegal assembly and it is partly natural that individual crimes occur during a restless situation. No matter what the result is, these security deviations are connected to conflict process theory that Vuoristo (1997, 28-30) handles. The conflict process theory takes stand on the reasons of conflicts. It also analyzes how different parties operate during the process.

There have been incidents, which influenced Wärtsilä, even though; they were not targeted deliberately towards it. In some cases, Wärtsilä operates in the same areas with other international companies. This means that Wärtsilä accommodates its employees and expats to hotels where many foreigners stay. The risks come into practice during individual incidents, e.g. random shootings. Without proper details, it is difficult, maybe even impossible, to analyze reasons behind these individual shootings. Therefore, it is also difficult to estimate the real level of risk that those incidents bring. The threats and the risks come closer, when an illegal act is clearly intended for another foreign company that operates in the same region. Whether it is targeted to Wärtsilä or not, terrorist attacks are always difficult to estimate because of their background, implementation, the extent of destruction, site selection and the wide range of possible victims. An immediate reaction to a terrorist attack can be evacuation of all expats or closing the site completely. On the other hand, it might not influence the site operations in any visible ways. An updated analysis about the level of risks towards Wärtsilä, is one of the key elements in evaluating situation-related security deviations. That includes predicting the lifespan of the situation and possible outcomes that may occur. It is also important to remember that the actual amount of security deviations can be a lot higher in real life than in the reports. The conflict process theory, introduced by Vuoristo (1997, 28-30), can be connected to this category as well. Where Vuoristo concentrates on the background situations, Reason (1997, 65-66) handles the ways to react to the deviations. For example, terrorist attacks are relatively rare but in some cases very difficult to cope with. That kind of deviation needs an approach where individual expertise and discretionary actions control the situation. Those deviations also include the side products that Kontula (1996, 10-15) writes about, when he explains how a single situation can cause higher crime rates in large areas.

Receiving reliable information during these cases can be difficult. According to the reported cases, the information comes from local employees, authorities and media. One way to analyze the situation independently is to follow how local the business responds to the changes

before and during a situation. This can be defined by following how smaller firms continue operating and which of them close the business temporary. If 100% of all local business is closed, the situation should be considered very serious. If 80% of all business, run by a specific minority group, is closed, it can be a sign about religious or political disagreements. During those situations, the threat of violence is targeted against these minority groups. Situation-related security deviations should be considered as a situation without a front line. Either the reliable information comes from all directions or it is not available at all. The other problem during these situations is how to distribute information to employees if the situation changes radically. Again, the possibility to cope with the situation is connected to emergency planning, which includes plans that can be formulated according to the situation.

## 8 Consequences of the cases and conclusions of the first case study

To highlight the importance of the safety and security of the personnel, it is natural to mention the various consequences that come along. The consequences are divided into two categories, immediate and later revealed. The immediate consequences often need an immediate reaction from the site manager or from the security organization. The consequences differ from the well-being of employees and operational problems to possibly serious financial losses. Constant security problems can affect the well-being of employees. It creates an unsafe work environment and an uncertain feeling for those who work there. This applies to the employees of the subsidiaries, subcontractors and other stakeholders. Of course, the purpose is to secure the safety and security of all employees. In addition, there must be a plan for the so-called key people who have special expertise and authority that is needed at sites. This is also the part, where financial losses and importance of good company image come up as a natural part of risk assessment. It is a matter of financial losses as well as company image. In the long run, the consequences of continuous safety and security problems can influence agreements and slow down the development. The increase of insurance payments is only one example of the later emerging consequences. It can have an effect on new agreements, while at the same time it undermines the mental and physical wellbeing of employees.

The immediate consequences, concerning operations, are most likely delays and uncertainty in continuity. Later on, this leads to missing deadlines. It is clear that operational problems can cause threats in the safety and security of the personnel and vice-versa. One security problem can cause cumulative problems if it is not corrected soon enough. A serious failure in physical protection or operations can leave the premises and structures without proper protection. This brings up the theory that Väyrynen (2003, 8) introduced about the basic, direct and indirect reasons that end up influencing the situation. A problem in one area can cause a failure of a much bigger set. This applies especially in emergency planning and evacuation. In addition, all reporting concerning security deviations and other cases, take time and it is time



away from other tasks. This reporting should be considered as long-term developing and that is why time-consuming parts must be tolerated as long as there is a point in them. The case does not have to have a special security deviation in order to cause consequences. Taking care of a work-related accidents take time and resources as well. The level of complexity increases if the site is located in a difficult environment or region. Constant work-related accidents and unsafe work environment can also decrease work motivation and increase the amount of sick days. It is easy to notice that all operations and circumstances are somehow related to each other. In the end, these factors define the overall possibility to success financially.

According to this case study, the biggest amount of accident related cases is reported from Asia. The biggest amount of situation-related security deviations comes from Africa and the highest amount of crime-related security deviations is reported from South America. When looking at each individual category, the most frequent reasons for accidents are fallings, burn injuries and other construction work related accidents. In the category of crime-related security deviations, the largest amount of cases is reported as thefts. Finally, in the category of situation-related security deviations the most frequent reason for reporting is common restlessness that is caused by the political situation or disagreements in economy or religion. It is clear that in some cases Wärtsilä is not directly connected to the situations or the processes of the situations. In those cases, Wärtsilä must follow the direction of the situation and act preventively and reactively. If Wärtsilä is a direct part of the situation, it must do preventive actions to secure operations and people as well as maintain co-operation with other parties.

## 9 Case study 2: The safety and security incidents reported to the insurance company

The insurance company has a systematic reporting system where all reported cases can be found. Because of the medical record law, all the details are excluded and cases are analyzed as groups. The insurance claim reports provide information about cases of sickness, accident related cases, cases of cancellation or interruption of a business trip and cases of lost property. This categorizing is presented in figure 11. The second case study and the analysis are based on different variations and combinations of this information. The second case study has four categories according to the type of damage that was covered. The categories are analyzed by their regional appearance and the trends that they form during the time of the review. The review of the insurance reports covers the time between 2007 and 2010. The time of the review is shorter than in the first case study, but the quantitative amount of cases is a lot higher. Because of the timing of this thesis, the information from November 2010 and December 2010 is excluded. When comparing different years, this matter can influence the ratio of numbers in even situations. Figure 11 shows the various possibilities to analyze the cases, by sorting out the cases according to different combinations. The division can be done

according to the type of cases, the time of the incident or by the insurance solution that was used. In addition, the categories can be further divided by regions and situations inside regions. This type of data gives the opportunity to make numerous variations. In order to reach the objectives of the thesis, one category includes an analysis from only two or three basic perspectives.

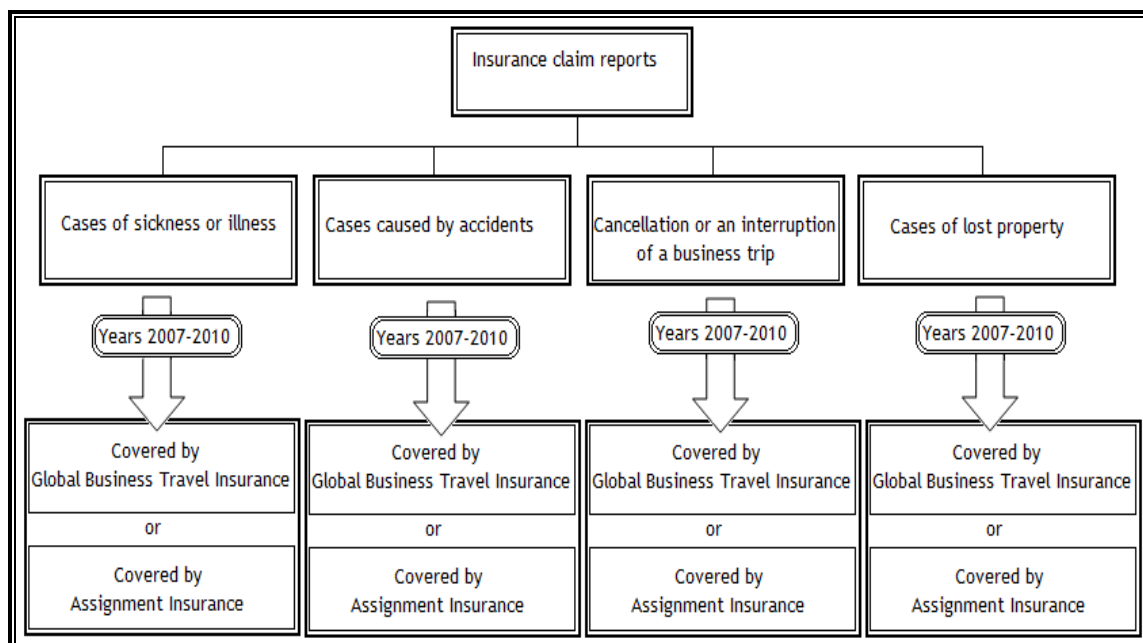


Figure 11: The variations of the insurance claim reports. Suominen (2010)

The categorizing differs from the classification of the first case study, because the information is different in many ways. There are no details about the process of the incidents. Because of this, it is impossible to know what caused those incidents and how the financial loss occurred. Those causes are better presented in the first case study, where the reporting happened between the site managers and the security organization of Wärtsilä Corporation. The other relevant difference between the first and the second case study is the way that the reporting is scheduled compared to the direct incident. In the first case study, especially in security deviations, the reporting took place even before the situation or the indirect incident ended. In those cases, the security organization is able to support the preventive and the reactive actions. All the cases of the second case study are reported after the incident.

Large part of the situation-related security deviations is excluded, because those incidents are mainly not covered by any of the insurances. For example, restlessness can cause tension but it is not connected to the insurances unless something concrete happens. The situation-related security deviations are connected only to the insurance that covers cancellation or interruption of a business trip. However, it is not possible to separate the reasons behind

those cases of cancellation and interruption. The reason to use the insurance can be an evacuation but it can also be a delayed flight or administrative matters. This is explained more thoroughly at the beginning of that specific category. Crime-related security deviations are better presented in the reports of the insurance company. They are handled as financial loss of property and goods. Unlike the first case study, the insurance company reports do not specify the reasons of compensations. This information is not available. On the other hand, it gives a wider scale of the cases and more accurate details of the timing. It is also possible to get additional information by looking at the insurance solutions that were used. One of the categories in the first case study was formed from work-related accidents. These cases are also presented in the second case study. In this case study, they are divided into cases of sickness and accident caused cases.

### 9.1 Trends and the nature of all the reported insurance cases

In the first case study, the objective was to get an update of the reporting situation. In the second case study, it is possible to follow the trends and study how the situation in individual categories has changed. In this thesis, the cases are presented with percentages instead of numerical presentation. There is a chart (figure 12) about the yearly division of all categories. If all those figures are added in, the cases of sickness cover 66% all reported cases during 2007-2010. Cases of lost property cover 24% of the cases and reported accidents cover 8% of all cases. The biggest amount of reported cases is from 2009. That is the situation in November 2010. In numerically tight situations, the power relationship can change when two last months of 2010 are included. In most charts, the analysis is done from the point of view of a category, not from the point of view of the annual variation.

In figure 12, there is a chart about the division of all the insurance cases during 2007-2010. Starting from the left corner, the amount of cases of sickness shows the trend that continues through the whole chart. The same pattern repeats itself in many of the future charts. It shows that the numerical amount of insurance reports was the highest in 2009. The cases of sickness rule the biggest part of all cases. During the whole time of review, the percentage of cases of sickness stays between 63%-74% of all cases. The highest percentage occurs in 2010, when cases of sickness cover 74% of all reported cases. Quantitatively the highest point is ranked in 2009. The cases of lost property get the highest quantitative point also in 2009. The highest percentage of cases of lost property, takes place in 2007. It is the same year when the numerical amount the sickness related cases is the lowest. To understand the trend that these cases represent, it is natural to have a look at the rate of variation in both percentage points and quantitative amount of cases. The cases of cancellation and interruption have the smallest variation in percentage points and in the number of cases. The relative variation is

only two percentage points during the time of the review. The biggest variation of percentage points (14 pp) is in the category of financial loss of property.

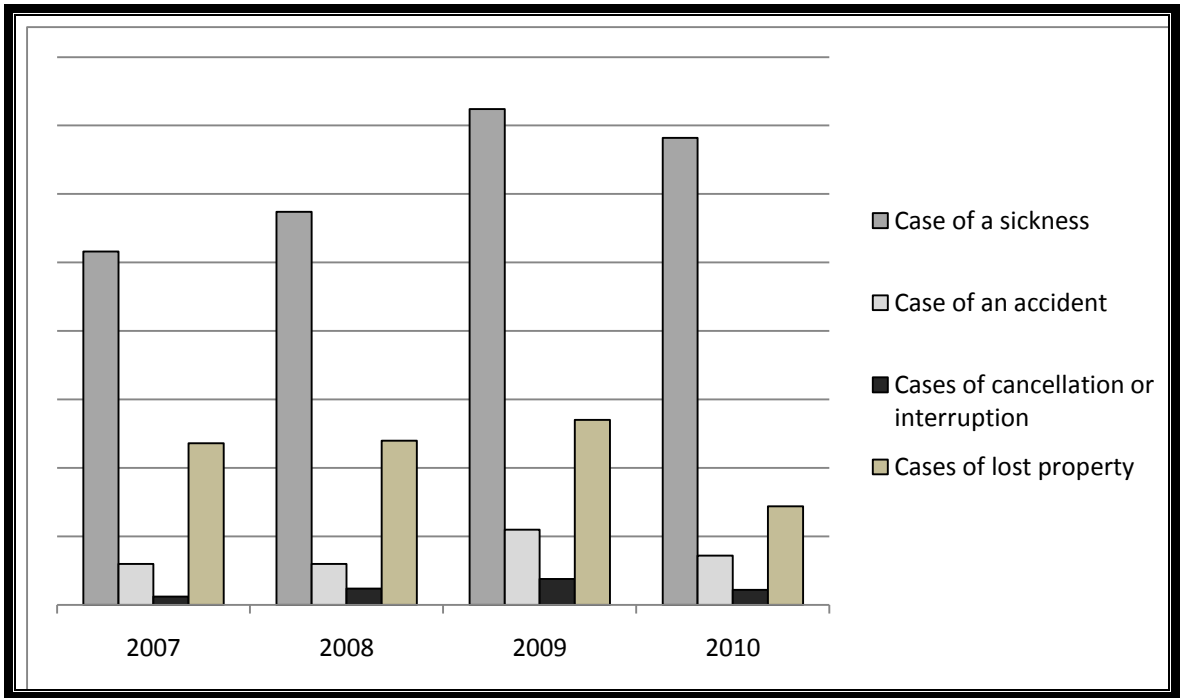


Figure 12: Total amount of all insurance cases during 2007-2010. Suominen (2010)

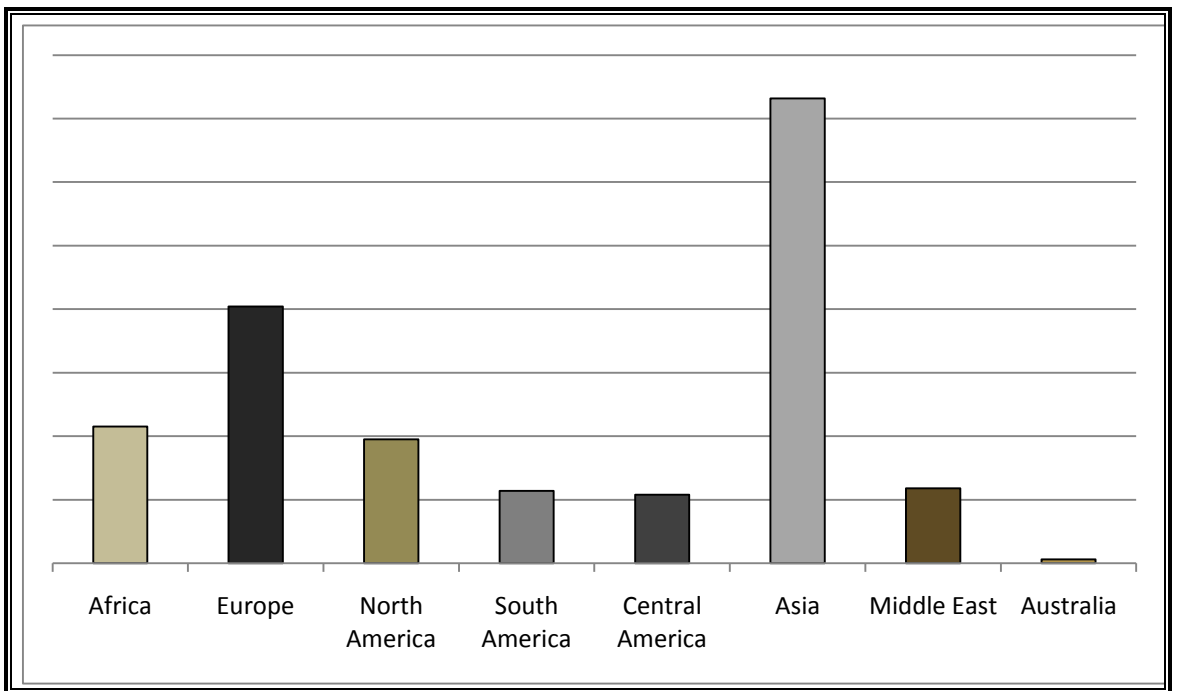


Figure 13: Regional reporting of all insurance claims 2007-2010. Suominen (2010)

One of the problems in the first case study, was the fact that many of the cases were difficult to locate. The amount of unidentified locations was relatively high. When looking at the percentages in that category (case study 1), the highest amount of cases was reported from Africa and South America, although, Asia and Europe were not far behind. This is the case in reports collected from Wärtsilä Corporation. When looking at the insurance reports, the information changes a lot. It is clear that percentually Asia stands out (in figure 13). About 37% of all cases were reported from there. This is the case, even though the Middle East is separated to another category. Europe has the second place in this chart, as over 20% of all cases were reported inside the region. Even if South America and Central America were in the same category, they don't reach the top percentages of Asia and Europe. The main market areas of Wärtsilä Finland are Europe, Asia and America. The case reports from those places support this fact. The other market areas vary between different subsidiaries.

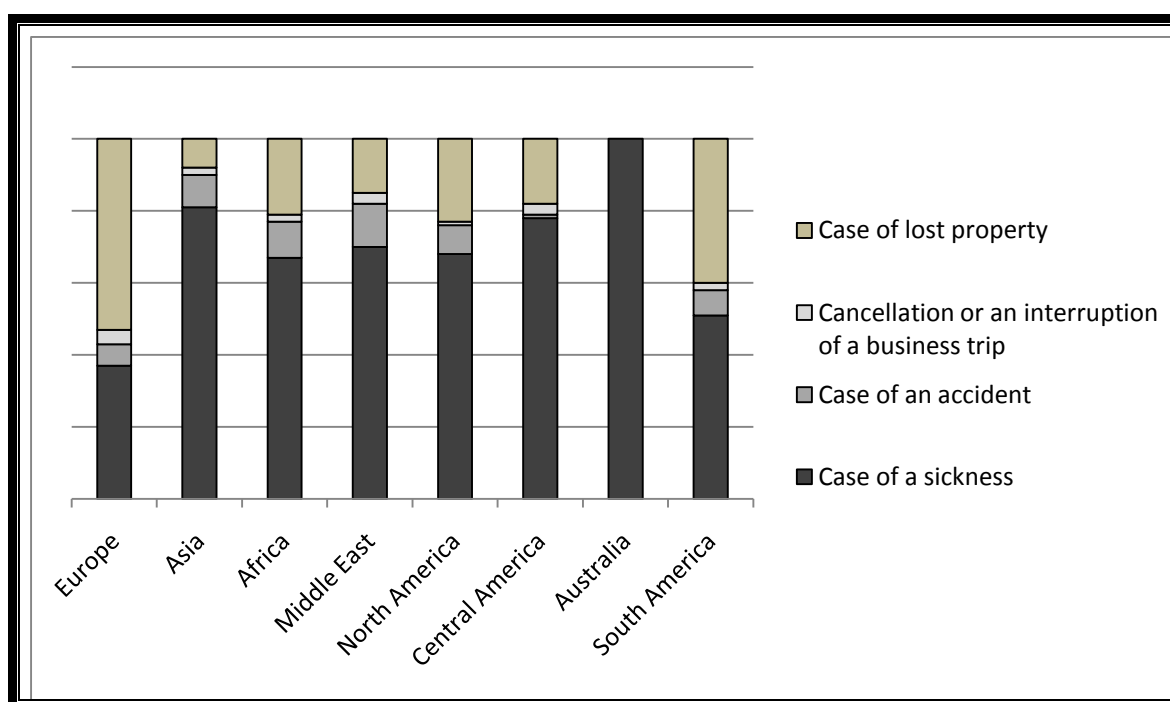


Figure 14: The total division of regions and the reasons of reporting. Suominen (2010)

It is also possible to analyze the cases by dividing them simultaneously according to the region and type of reporting reason. Figure 14 makes it easier to understand to power relationships in that separation. All the four categories (cases of sickness, cases of accidents, cancellation of a trip and cases of lost property) include written statistics about figure 14. In the categories, the analysis is about a certain reporting reason. Figure 14 gives an opportunity to study the situation inside individual regions. The situation inside regions (not compared to other regions) is analyzed more in each category. Despite of that, figure 14 clearly shows that the

cases of lost property have the biggest role in Europe and cases of sickness are on the second place. In all other regions, the cases of sickness have the largest percentage.

The next information that the insurance claim reports give, is the type of insurance was used to cover the damage. There are two possibilities. The first one is so-called Global Travel Insurance. This insurance is used to cover short-term travelling such as small business trips. It can be expanded to cover vacation days if are connected to a business journey. The insurance covers, for example, medical care of injuries and sicknesses without a maximum limit. It is possible to connect, for example, kidnapping, catastrophe and evacuation insurance to it. In other words, Global Business Travel Insurance cases represent incidents that happened during short business trips and not during longer postings. The other solution is so-called Assignment Insurance. It is used to cover long-term postings and employees who work abroad for a longer period. It also covers physical injury without a maximum limit and provides compensation in those cases. For example, health care can be included to this type of insurance.

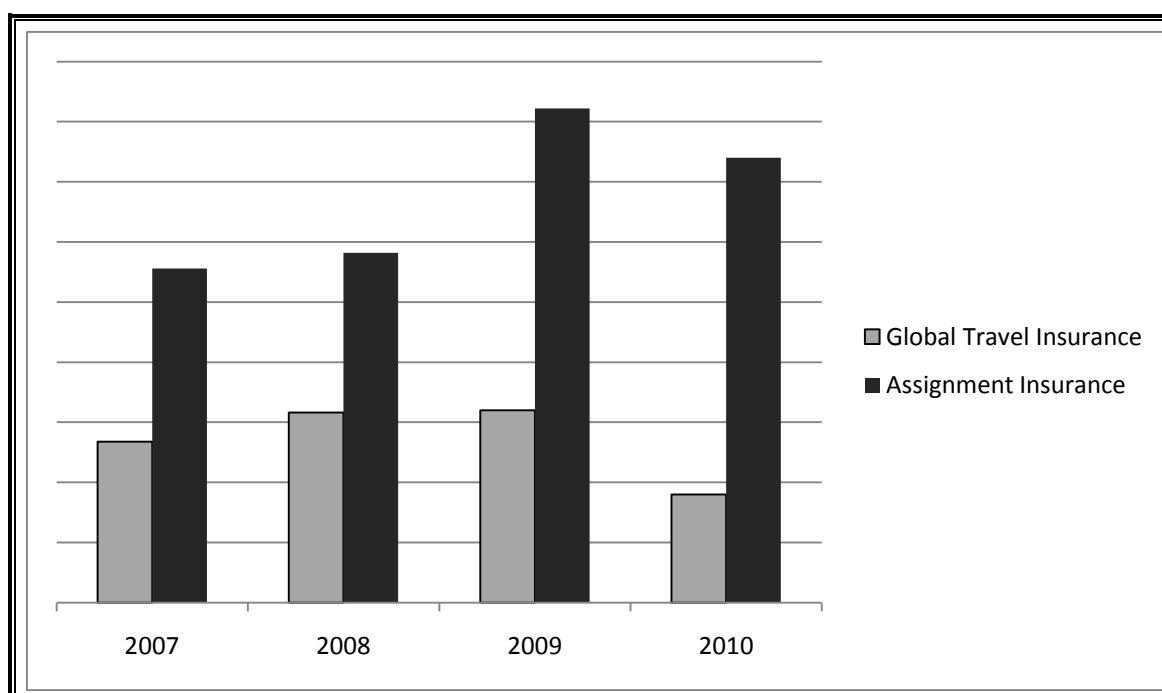


Figure: 15 Usage of different insurance solutions in 2007-2010. Suominen (2010)

When looking at figure 15, it is easier to analyze the variation of those two solutions. It is clear that the Assignment Insurance is used to cover most of the incidents. This usually means that the majority of incidents happen for those who spend a lot of time at sites and construction locations. The more concerning point is the amount of incidents during short-term travelling. In 2008, the insurance for short-term travelling was used in 35% of all cases. Although, in 2010 the percentage drops close to  $\frac{1}{4}$ , the number is still relatively high. During 2007-2010,

the percentual amount of short-term travelling insurance (Global Travel Insurance) covered cases is over 20%. It is possible to lower these numbers by giving training and guidance for the employees. The importance of following company policies and instructions is clear. In addition, the prevention of direct and indirect reasons is relevant, like Väyrynen (2003, 8) reminds.

## 9.2 Cases of sickness

The definition of cases of sickness is that those incidents caused physical damage. Those damages and injuries were treated with medical care. The cases can be categorized in various methods, but this thesis presents two ways. The first one is the separation in the usage of the insurance solutions. This division was chosen because it gives very different information that was presented in the first case study. The division is created between the short-term travel insurance (Global Travel Insurance) and the long-term travel insurance (Assignment Insurance). The category is also analyzed according to the regional reporting from eight different areas. In order to describe the situation and the substance inside regions, the highlights are pointed out as well. In those parts, the purpose is to analyze the role of cases of sickness inside one area.

In figure 15 (in chapter 9.1), the difference between Global Business Travel Insurance and the Assignment Insurance was not as big as it is in figure 16. The situation changes when talking about only the cases of sicknesses. The short-term travelling insurance (Global Business Travel) was used in about 9% of all the cases that the chart shows. The percentual variation of the Global Business Travel covered cases is small. It almost follows the same trend as the usage of Assignment Insurance. The difference is that the Global Business Travel covered cases (short-term travelling) reach the highest number in 2008 and decreases after that. The Assignment Insurance covered cases reach the top number in 2009 and 2010. The important stage in the Assignment Insurance covered cases is the change between year 2008 and 2009. In that point, both the quantitative number and the percentual amount of cases increase strongly, unlike in the Global Business Travel covered cases. There is a possibility that by dividing the cases of this category again, the new data would give information about the type of medical care that was given. This however, is not possible with the current information. The numerical amount of Assignment Insurance covered cases is probably so high, because the medical care includes routine and non-urgent health care, in addition to the emergency and suddenly needed medical care. The planned health care for expatriates naturally increases the numerical amount of the Assignment Insurance covered cases. That is why the attention should be directed to the cases that occur during short-term travelling. During those assignments, the employee is often in a new environment. That brings the question about the lack

of safety and security information, preparedness and awareness towards local threats. Simple failures in procedures and individual performance increase the amount of medical care cases.

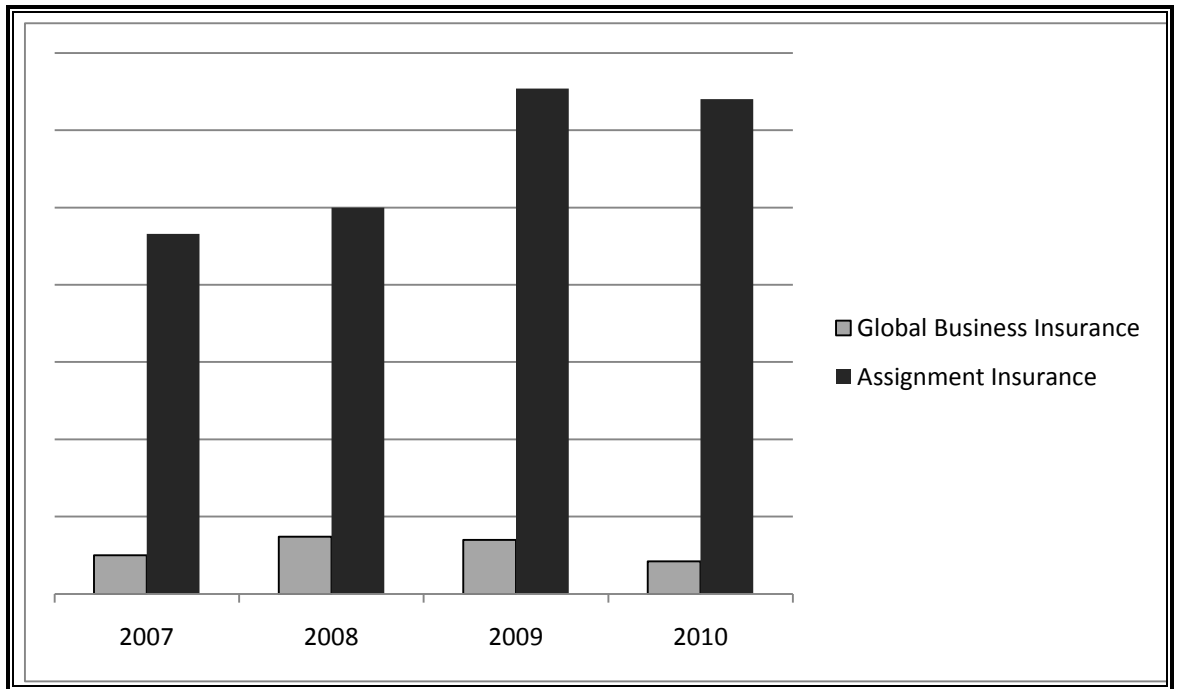


Figure 16: Usage of insurance solutions in cases of sickness. Suominen (2010)

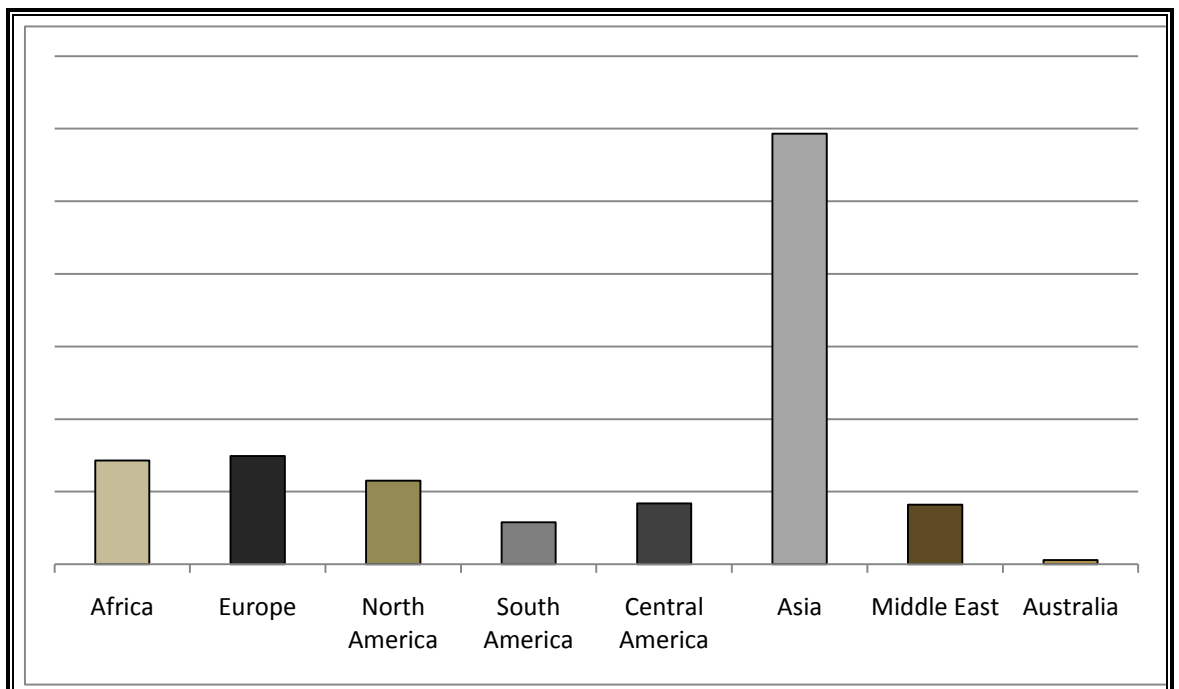


Figure 17: Regional reporting of the cases of sickness. Suominen (2010)



The separation of regional reporting is so important, that all cases of sickness are analyzed as one individual category. Even when looking at the category separately from the other categories, the role of Asia is obvious. If all these cases are put in together, the percentual amount of Asia is around 48%. It is difficult to compare this information to the data that Wärtisilä's security organization has, because these cases don't include work-related accidents. The comparing is more relevant later on, when analyzing the clearly accidental incidents. If the chart would separate different regions and types of incidents inside them, it would show that cases of sickness form the biggest group in Asia (81%), Central America (78%), the Middle East (70%), North America (68%), Africa (67%), and South America (51%). The only region where cases of sickness don't get the top percentage is Europe. In Europe, the category is the second highest after cases of lost property. Now that the cases of sickness are analyzed according to the regions, Asia rules even if the percentages from Africa, Europe and Americas are added up.

### 9.3 Cases of accidents

The cases of this category can be considered as work-related accidents because of the definition of the insurance and the practical occurring of the incidents. Like is the previous category, also in the accident category, the Assignment Insurance is mainly used to cover the damage. In the category of cases of sickness, the short-term travel insurances covered around 20% of the cases. When talking about the accidents, the number is around 15%.

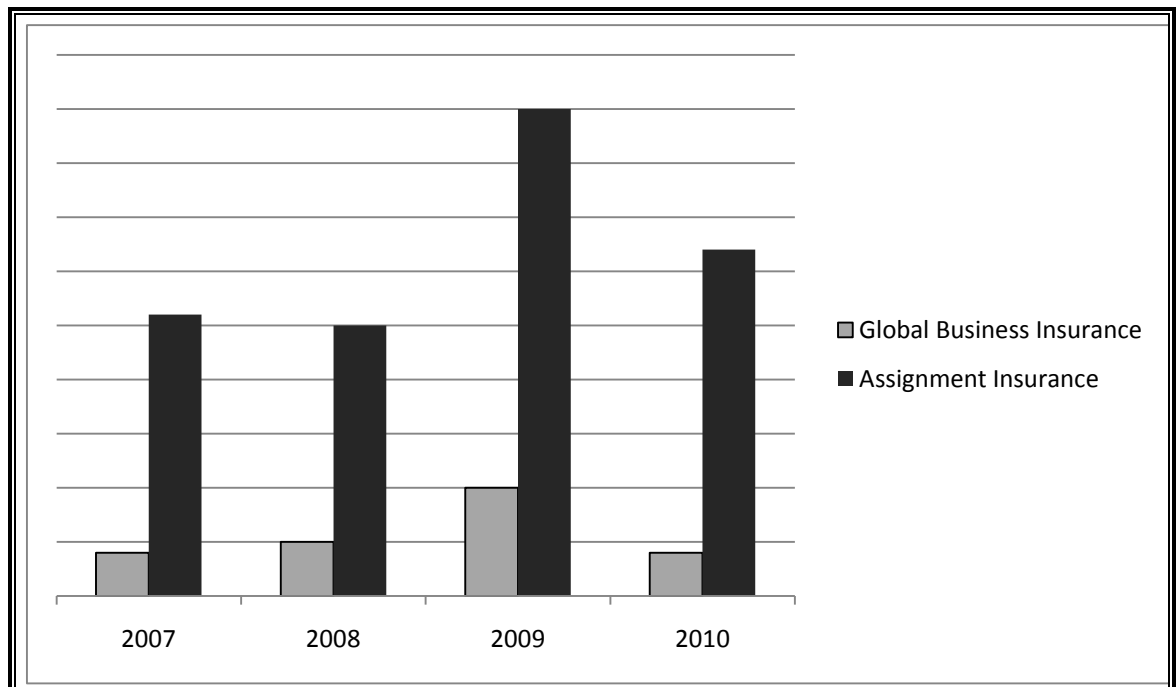


Figure 18: Usage of insurance solutions in cases of accident. Suominen (2010)

The highest individual amount of cases is reported in 2009, although, the total variation is not significant. This category is directly connected to the first case study and the theoretical framework of the thesis. Väyrynen's (2003, 8) theory about reasons behind accidents comes into practice in these cases. The theory, by Roper et al. (2006, 67-71), about motivation of the employees, can be related to these safety and security problems as well.

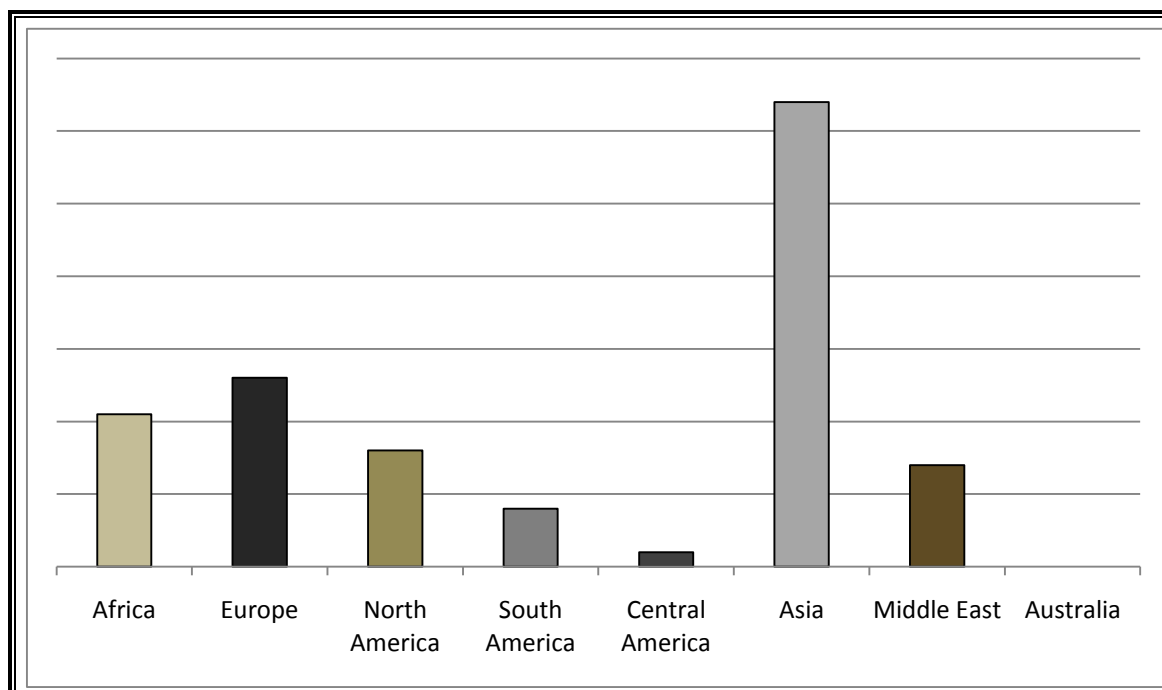


Figure 19: Regional reporting about all the reported accidents. Suominen (2010)

Like in the previous category (cases of sickness), the main reporting region of accidents is Asia. It delivered around 42% of all accident related claim reports. If Europe (17%), Africa (14%) and North America (11%) are put in together as one group, they reach about the same percentual quantity. Inside the regions, the accidents play percentually the biggest role in the Middle East, where they cover 12% of all the cases. In other regions, the variation is 1%-10%, although, the concrete numerical amount of cases can be higher. Actually, when looking at the concrete figures of accidents, only South America and North America are listed below the Middle East. This means that the actual number of reports is low compared to the other regions, but relatively high within the Middle East.

In the first case study, the accident reports came also mainly from Asia. The qualitative data of the first case study showed that the accidents are usually fallings, burn injuries or other construction work related incidents, car accidents and occasionally drownings. The issue that was mentioned several times in the information of the first case study is the medical care. Some of the accidents need profession medical care immediately after the direct incident. If

that kind of incident happens during a short-term business trip, the case usually also contains an interruption of a trip. The medical care can be challenging to organize in distant locations and the recovery times can be long. As it was said in the first case study, in some locations the medical care is arranged outside the area of the operations or even from another country. This whole category is directly connected to the first case study and the theoretical framework of the thesis. Väyrynen's (2003, 8) theory about reasons behind accidents comes into practice in these cases. The theory, by Roper et al. (2006, 67-71), about motivation of the employees, can be related to these safety and security problems as well.

#### 9.4 Cases of cancellation or interruption of travelling

When looking at the cases of cancellation or an interruption of a business trip, it is important to remember that not all cases are necessarily a threat to the safety and security of the personnel. In addition, the cases can go hand in hand with, for example, accidents. In those cases, the incident is reported as an accident but also as an interruption. The cancellation or an interruption can be caused by internal or external factors, like Institute of Risk Management IRM (2002, 3) lists. An employee can face the incident directly or be in a place where an incident is probable. This means that a cancellation or an interruption can be a preventive measure or a reaction to an incident. The cases are analyzed according to the usage of insurance solutions as well as according to the regional reporting. This category was not directly analyzed in the first case study. The cases of accidents and situation-related security deviations are closely connected to this category, as they sometimes require evacuation or an interruption of a work task. This category shows in practice, how one case can have multiform and complex consequences. This creates various connections between the different categories and statistics of the cases. Therefore, an individual incident can turn into a larger combination of administrative and practical factors.

Compared to the previous charts, the roles of two different insurance solutions change. This change is possible to see in figure 20. Partly the same pattern continues to show up but the trend differs from previous charts. There were many reported cases in 2009. That is why the amount of the cases is so clear in all charts. One key point in figure 20 is that between 2009 and 2010, the decrease of Assignment Insurances is obvious while the amount of cases covered by Global Business Insurances stays pretty much the same. The result is that, for the first time, the amount of cases covered by the short-term travel insurance (Global Business Insurance) exceeds the amount of the long-term travel insurance solutions. When all the cases are in the same group, the percentual amount of cases covered by Global Business Insurance is around 40%. However, in 2010 the individual number is about 63% of the annual ratio. This shows statistically how the power relationship changes.

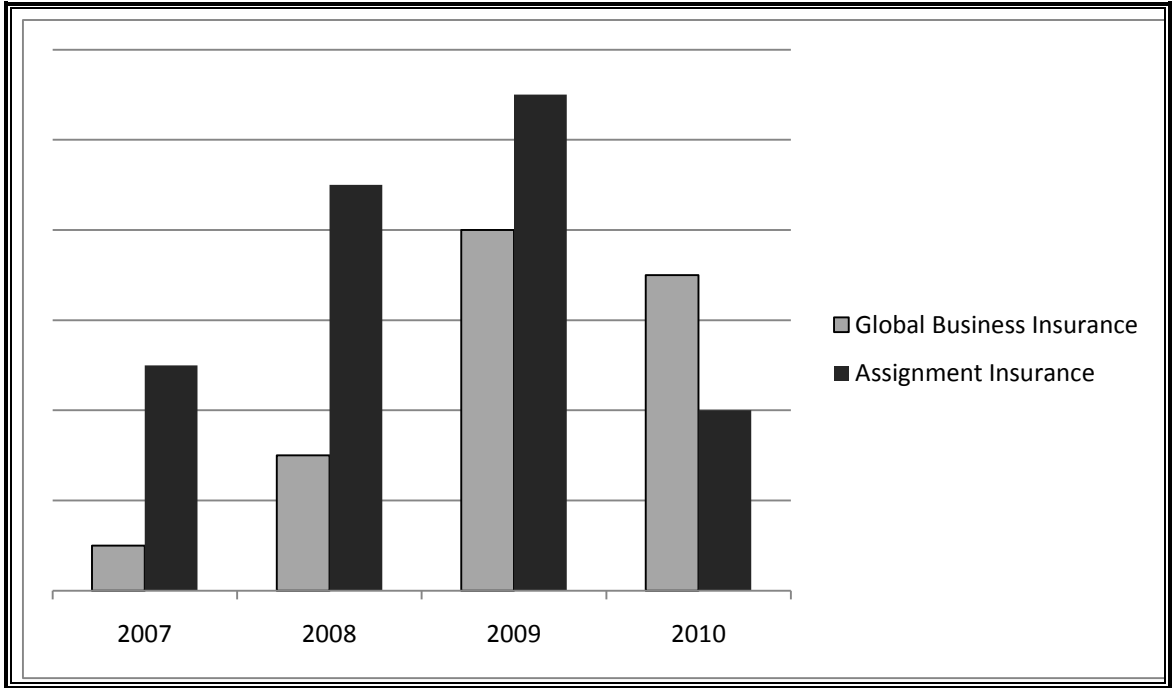


Figure 20: Usage of insurance solutions in cases of cancellation. Suominen (2010)

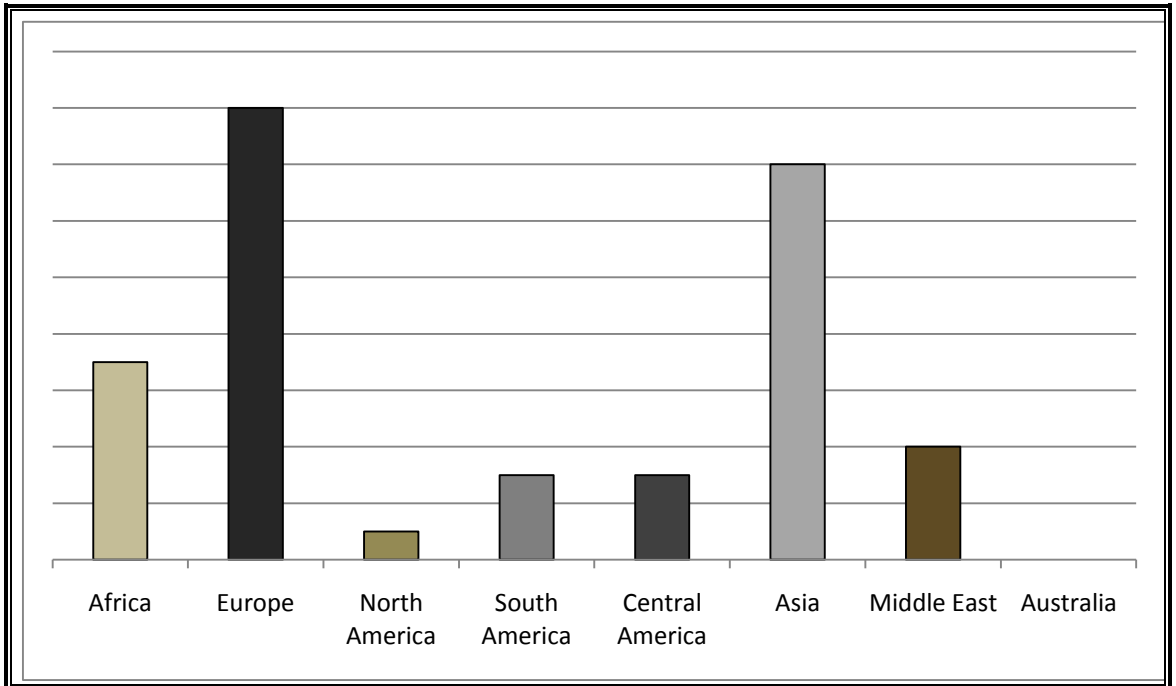


Figure 21: Regional reporting of all cancellations and interruptions. Suominen (2010)

There is a change also in the regional reporting. The biggest part of the reports does not come from Asia (29%) but from Europe (33%). Africa delivered the third highest amount of reports, 15% of all cancellation related incidents. The variation of the other regions stays inside six percentage points. When looking at individual regions, it is difficult to say where

cancellation cases represent the biggest role. The percentual variation is so small. Overall, the cancellation cases have relatively small role in all regions. Percentually, it has the smallest role in North America (1%), South America (3%), Europe (4%), Asia (2%) and Africa (2%) and the Middle East (3%). The smallest numerical frequent is in North America. Maybe one of the reasons for the leading numbers of Europe is the location. The simple fact is that Wäertsilä headquarters is located in Europe. If the employees are transferred inside Europe, the wasted time and money of cancellations are probably lower than when crossing cultural and political borders. The quantity of regional operations is part of this.

### 9.5 Cases of lost of property

This category is almost the same as the one in the first case study. It has a lot in common with the category of crime-related security deviations. That category included, for example, thefts, robberies, unauthorized entries and burglaries. The difference between the first case study and second case study, is that in the last one, the compensation is not only limited to crimes but it covers human errors as well. In the first case study, the majority of the crime-related related cases are reported from South America. Later on, the second case study shows that from the total amount of the insurance reports of this category, the role of South America is not dominant. In fact, South America is almost even with Africa and North America, which both have lowers report rates than Europe and Asia. The percentual amount of European reports is difficult to overcome, since it rules such a big amount of the total category.

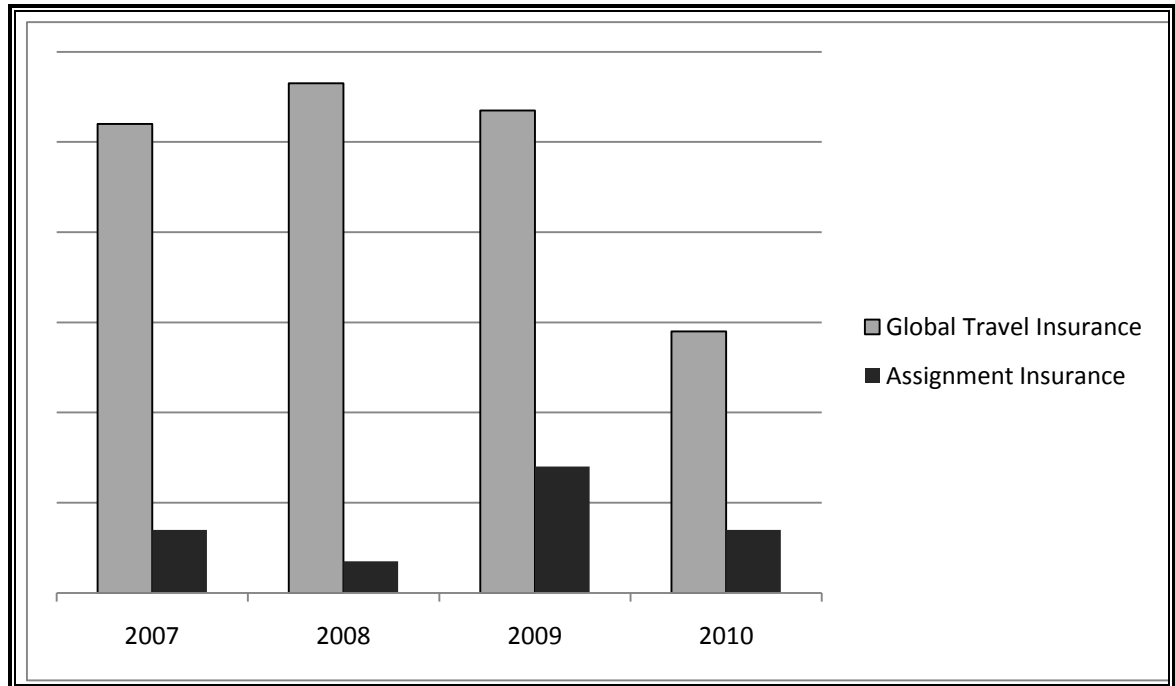


Figure 22: Usage of insurance solutions in cases of lost property. Suominen (2010)

In the categories of sicknesses and accidents, the amount of cases covered by the Assignment Insurance is high. In the cases where compensation was paid because of cancellation of a trip, the Global Travel Insurance number was higher in only one section. When looking at figure 22, the Global Travel Insurance rules the majority of the chart. When all these cases are add in together, the Global Travel Insurance covered 86% of all cases. The difference between those amount is smallest in 2009 (58 pp) and 2010 (60 pp). The difference is clearly largest in 2008, when the percentual amount of Global Travel Insurance covered cases is 88% of that year´s total figure. After that, the amount of Assignment Insurance covered cases decreases and the amount the Global Travel Insurance covered cases increases. This balances the situation a little bit. The first conclusion is that those who are on a short-term business trip are more likely to lose property and material.

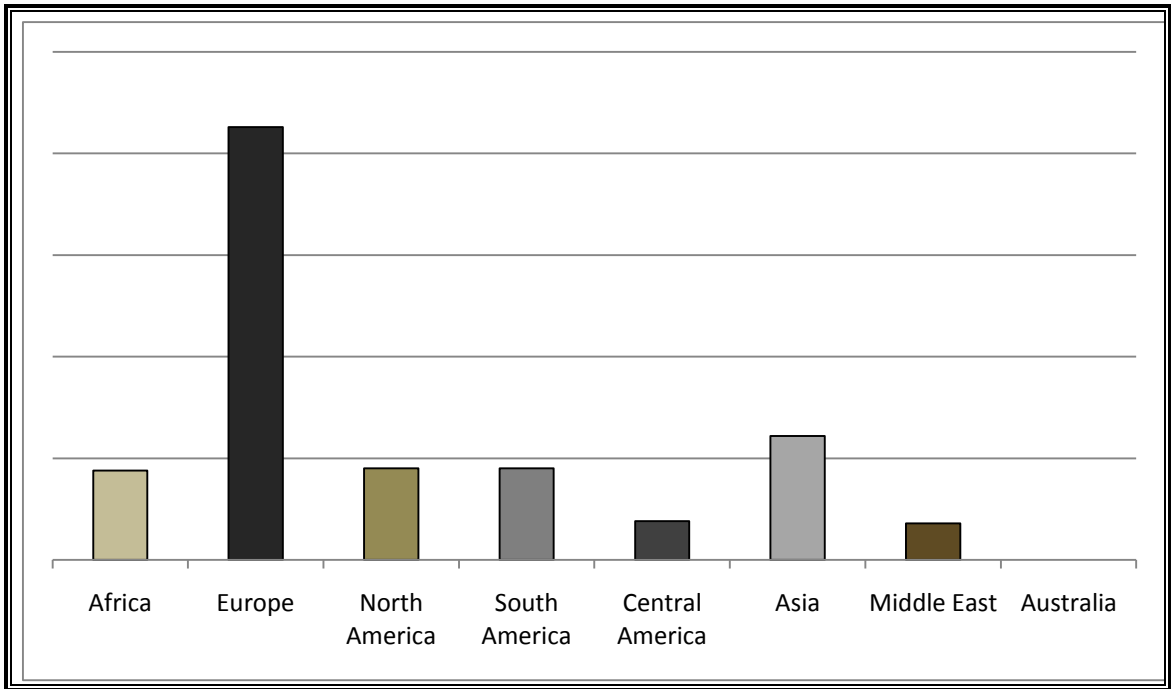


Figure 23: Regional reporting of the cases of financial loss. Suominen (2010)

When looking at the situation from the perspective of the regional division, Europe stands out. From all the reported cases of lost property, Europe has the role of 48%. In previous charts, the role of the Middle East, Central America, North America and Africa has usually been relatively low. In this chart, those regions are percentually close to each other. All of them and the remaining regions (excluding Australia) are within 9 percentage points. This means that, after Europe the all others are quite even with the percentages. The weight of lost property in Europe is so significant, that it is the number one reporting reason in Europe. About 53% of report coming from Europe, are connected to lost property and goods. That number exceeds

the percentual amount of sickness related cases, which is the number one reason in all other regions. The number of lost property has a significant role also in South America, although, the sickness related cases are the number one reporting reason. In South America, 40% of all cases are reported to the category of lost property. In Africa, North America and Central America, the percentual figure varies from 18% to 23%. In Asia, the cases of lost property have only a small role percentually, even though, the numerical amount is the second highest compared to other regions. This situation is also presented in figure 23.

## 10 Consequences of the cases and conclusions of the second case study

Like in the first case study, the consequences of the second case study can be divided into immediate and later revealed consequences. They are pretty much the same, as in case study one, because the incidents and their influence on employees does not change. The incidents immediately cause financial loss and extra work for other employees. After a while, continuous safety and security problems and incidents create an unsafe work environment, which lowers the level of motivation and effectiveness. It can also have an influence on the insurance payments and the company image. The difference between those two case studies is that the second one is able to give information about the direction of the situations. This direction becomes a trend that was mentioned several times during the second case study. When looking at all the cases in the same class, the biggest part belongs to cases related to medical care of sicknesses. The highest amount of reports comes from Asia. Europe is the second one on that list. When it comes to insurance solutions, most of the cases are covered by the long-term travel insurance (Assignment Insurance).

The second case study shows that the biggest reason for insurance claims, are physical sickness related cases. In practice, these cases occur as different illnesses and infectious diseases. These cases can have many internally and externally driven reasons. The process of an incident can be connected to the region and the location. These cases represent world widely 66% of all reported insurance claims. Percentually and numerically, the highest amount of these reports comes from Asia. These cases are the most frequent reason for reporting everywhere, except in Europe. The biggest role these cases have in Asia and Central America. Most of the cases in this category are covered by the long-term travel insurance (Assignment Insurance). The same insurance is usually used to cover the reported accidents. Most of the accident reports come from Asia as well. Percentually, accidents have the biggest role in the Middle East. Although, even in the Middle East, the numerical amount of accident reports is lower than the amount of reported sicknesses and cases of lost property. The concrete report numbers of accidents in the Middle East are lower than in Europe, North America, Asia and Africa. Despite of that, in percentages, these cases have relatively high role within the Middle East.

For the first time, the amount of short-term (Global Travel Insurance) covered cases are more frequent, when looking at the cases of cancellation or an interruption of a business trip. In the chart, this situation takes place in 2010, when the power relationship changes in the whole category. Other than that, the amount of long-term travel (Assignment Insurance) covered cases is still higher. Regionally, the biggest amount of cases is reported from Europe. The second place goes to Asia. The role of these cases varies just a little bit, when different regional situations are compared to each other. The power relationship of different insurances changes completely, in the category of lost property. The short-term travel insurance becomes the more commonly used insurance. The biggest amount of lost property cases is reported from Europe. The fact that this category has the biggest role also inside Europe, tells about the importance of the situation. The category has a significant role also in South America, although, it does not reach the biggest role.

## 11 Evaluation of the thesis and the process

It was said in the introduction, that the way to measure the success of the thesis, is to analyze the level of update and its value for Wärtsilä. The thesis collects the cases but it can't directly influence the safety and security situation or the policies that improve the matter. In the first case study, the amount of cases in crime-related security deviations and situation-related security deviations was decent. Even if all cases are not included, the chart gives a proper picture of the relation between different cases. Maybe the thesis even brings some of the discovered cases to common awareness inside the company. The total amount of work-related accident cases could have been bigger, in order to reach more specific results. Despite of that, all reported cases give examples of different types of cases. Through that, it is possible to analyze how they influence the operations in practice. The second case study made it possible to handle large amounts of cases. Therefore, the statistics is more reliable and following trends became possible. The insurance reports also allowed to included statistic about cases of medical care required sicknesses. The quality of the second case study would have been higher if there had been more time to analyze the data. The real value of the thesis increases if Wärtsilä has the opportunity to develop the personnel safety and security based on the findings. Another way to increase the total value of the study, is to analyze the cases that are protected by the medical record law. This, however, needs close co-operation with the insurance company.

The theoretical framework covers mainly theories about the reasons behind accidents and different ways of risk management. There are both private and public sector sources added to the literature review. The theory can be connected to the case study quite directly. If the only objective of the thesis had been the case study, the details of the subject could have



been analyzed more systematically. Because of the combination of the practical part and theoretical approach, the case study gets a more scientific framework. If the case study had been part of an internal survey, the context would have had a more practical approach. In that case, also the consequences would have had a bigger interest to development as well as towards the safety and security policies. The process of the thesis follows the required pattern that Laurea University of Applied Sciences inquires. The role of direct developing and development suggestions could have been bigger. On the other hand, the objective was to map out the current safety and security situation and internal reporting. The developing is included through the whole thesis but practical development suggestions are excluded.

The personal objectives of the writer, according to the abstract, were decently achieved. It became clear that collecting data can be difficult. In practice, that meant leaving some of the cases outside the case study. Process of the thesis developed both theoretical knowledge and understanding of how large companies operate. The subject also brought more awareness about the sites and construction environment.

## 12 Conclusions

One objective of this thesis was to update the current situation of the personnel safety and security of the subsidiaries of Wärtsilä. By doing that, it is possible to study what safety and security threats can be found concerning the personnel. The other objective of the thesis was to follow the possible trends and the situations that the insurance claim reports represent. The security organization of Wärtsilä Corporation has no systematic reporting system and that is why not all the security related incidents are in the records. The systematic and organized data comes from the insurance company's claim report system. In order to receive reliable statistic, there should be a program that is dedicated to receive reports from sites and other units. The data must be collected in such a clear way that the process is possible to repeat in all cases. It would be effective to get ready-made numbers so that the whole picture stays legible. In addition, there could be certain critical points that bring the most serious incidents directly to the awareness of the management. The seriousness of an incident could be evaluated by showing the direct losses and injuries in the personnel. To increase the possibility of being noticed, there could be a function in the reporting system that automatically brings individual incidents to everyone's attention. This last idea already happens by using mail, but when it is brought through a program, it will be stored in the database.

All properly done reporting will help stepping in and increasing the personnel safety and security. By doing long-term data collection, it is possible to, not only follow the situation, but also decrease the level of risk. The main question is how and where the reliable information comes and how to detect the facts that make the information critical. The other question

about sharing information is how to increase communication by creating information nets and software to track people. The answer to first question can be hard to discover. The talent to read the situation comes through experience and skills. Those factors make it possible to create reliable information contacts. During the thesis, it became clear that even if Wärtsilä operates in two or more locations inside a country or a region, there isn't much information co-operation between these sites. In order to receive information, for example, about restlessness in a region, it might be useful for the site management to know their colleagues in the same area. By creating these information networks, it is possible to compare the gathered information and adjust plans if necessary. A tracking system to locate individual employees approaches partly the same problem by using technology. This system would not only be to improve co-operation but to keep track on people while they are in different locations. This information would help in possibly difficult situations such as evacuations. Even if the situation does not drift to evacuation, the information would bring up the names of the people who might have more accurate information and experience of the state of affairs.

When analyzing the safety and security threats in case study one, it becomes clear that the region of a site defines the amount of crime-related security deviations. There are security deviations in most sites but often the serious physical crimes targeted towards Wärtsilä take place outside Europe and North America. Security deviations, caused by movements of the governmental forces and opposition groups, mainly occur in Asia, Africa and in some parts of South America. In order to cope with these crime-related security deviation, there must be an ongoing communication channel between all parties. This is how differences of interests and issues can be avoided. Like it was said earlier, the safety and security data collection should be used for developing risk management of the company. The current situation doesn't allow this because of the lack of systematic collection, classification and analyzing. In addition, the communication between sites in the same region might be useful to improve. The first case study focused on different safety and security threats and how they occur in practice. Especially concerning the situation-related security deviations, this objective was reasonable and important for the future development. There are numerous different security deviations and work-related accidents but they usually follow the same pattern when it comes to reasons and systematic risk assessment of the situation. The theoretical framework focused on the reasons behind conflicts and how different sectors of safety and security are connected at Wärtsilä. There is a clear connection between some of the theories and the presented cases.

The second case study is based on the report of the insurance company. This gives statistically more data, which is better organized and wherefor easier to categorize. Like it was said during the second case study, the biggest amount of reports comes from Asia. The second largest amount comes from Europe. The cases that included medical care of a sickness,

was the leading category in 7/8 of the regions. Only in Europe, the cases of lost property gets a higher frequency. According to the statistics about the used insurances, the largest quantitative of incidents happen for employees with longer-lasting postings. If it was possible to compare the actual figures to the amount of individual business trips and postings, the power relationship could change. The highest amount of report is from 2009 (situation in Nov. 2010). This trend can be explained with the increased amount of operations and more systematic reporting by the employees. In some separated charts, the difference between the figures of 2009 and 2010 is so small that by the end of the year, the ratio can change.

In the end, the decision to screen out all possibly mental health related accidents made it easier to categorize and define cases. The cases of medical care inquired sicknesses is screened out because of the role of the security organization. This category is presented through the insurance claim reports. Also the decision to leave all stakeholders and other than the employees of European subsidiaries outside the target group, made the defining more simple. The result is a situation analysis and two case studies about the international operations of the European subsidiaries of Wärtsilä Finland, with the approach of the safety and security of the personnel.

## Sources

- Amin, M. 2009. Crime, Security and Firms in Latin America. Enterprise note No. 2. World Bank Group. Referred 28<sup>th</sup> of July 2010. <http://www.enterprisesurveys.org/Documents/EnterpriseNotes/Note2.pdf>
- Berger, D. L. 1999. Industrial Security. 2nd edition. Woburn: Butterworth-Heinemann.
- Crowe, T. D. 2000. Crime Prevention Through Environmental Design. 2. edition. Woburn: Butterworth-Heinemann.
- Economy Watch. 2010. What is Insurance? The Meaning of Insurance (Insurance Definition). Referred 13<sup>th</sup> of October 2010. <http://www.economywatch.com/insurance-overview/meaning-insurance.html>
- Gill, M. 1998. Crime at work: Increasing the risk for offenders, vol 2. Leicester: Perpetuity Press.
- Hernesmaa, H. 2010. Kansainvälinen henkilöturvallisuus. Suomen Turvallisuusvuosikirja 2010-2011. Referred 15<sup>th</sup> June 2010. <http://www.turvallisuusvuosikirja.fi/>
- Hirsjärvi, S., Remes, P., Sajavaara, P. 2007. Tutki ja kirjoita. 13<sup>th</sup> edition. Helsinki: Tammi.
- Holopainen, M & Pulkkinen, P. 2003. Tilastolliset menetelmät. Helsinki: WSOY.
- IF P&C Insurance Company. Referred 8<sup>th</sup> November 2010. <http://www.if-insurance.com/web/industrial/Pages/default.aspx>
- Institute of Risk Management. 2002. Referred 3<sup>rd</sup> August 2010. <http://www.businesslink.gov.uk/bdotg/action/detail?itemId=1074405311&type=RESOURCES>
- Kjellén, U. 2000. Prevention of Accidents Through Experience Feedback. London: Taylor & Francis.
- Koller, G. 1999. Risk Assessment and Decision Making in Business and Industry. Boca Raton: CRC Press.
- Kontula, O. 1996. Poikkeusolojen rikollisuus. Referred 1<sup>st</sup> October 2010. <http://www.rikosentorjunta.fi/Satellite?blobtable=MungoBlobs&blobcol=urldata&SSURlaptype=BlobServer&SSURlcontainer=Default&SSURlsession=false&blobkey=id&blobheadervalue1=in line; filename=qmmlpd.pdf&SSURlsscontext=Satellite Server&blobwhere=1205736499541 &blobheadername1=Content-Disposition&ssbinary=true&blobheader=application/pdf>
- Managing Risk. Referred 3<sup>rd</sup> August 2010. <http://www.businesslink.gov.uk/bdotg/action/detail?itemId=1074405311&type=RESOURCES>
- Miettinen, J. E. 2002. Yritysturvallisuuden käsikirja. Helsinki: Kauppakaari.
- Reason, J. 1997. Managing the Risks of Organizational Accidents. Burlington: Ashgate Publishing Limited.
- Rissa, K. 2005. Ulkomaantöön riskit hallintaan. Jyväskylä: Työturvallisuuskeskus.
- Roper, C. A., Gran, J. A., Fischer, L. F. 2006. Security Education, Awareness and Training. Burlington: Elsevier Butterworth-Heinemann.
- Schneider, R. H & Kitchen, T. 2007. Crime Prevention and the Built Environment. New York: Routledge.

Sosiaali-terveysalan tutkimus- ja kehittämiskeskus. 1999. Tautiluokitus ICD-10. Systemaattinen osa. 2nd edition. Turenki: Turengin tekstipalvelu.

Sulasalmi, M & Latva-Ranta, J (toim.) 2003. Turvallisuusjohtaminen teollisuuden toimintayrityksessä, Lähtökohtia ja kenttäkokemuksia. Helsinki: Painopörssi.

Suominen, A. 2003. Riskienhallinta. Helsinki: WSOY.

Tapaturmavakuutuslaitosten liitto, Sosiaali- ja terveysministeriö Työsuojeluosasto, Työsuojelurahasto, VTT Automaatio. 2000. TOT-raportit vuosilta 1985-1998. Rakentaminen. Raporttien analyysi ja johtopäätökset. Torjuntastrategia. Toimenpiteet vastaavien työtapaturmien estämiseksi. Turenki: Jaarli Oy.

Tilastokeskus. 2008. Työtapaturmat Suomessa vuonna 2006. Referred 15<sup>th</sup> September 2010. [http://www.stat.fi/til/ttap/2006/ttap\\_2006\\_2008-11-26\\_tie\\_001\\_fi.html](http://www.stat.fi/til/ttap/2006/ttap_2006_2008-11-26_tie_001_fi.html)

Valli, R. 2001. Johdatus tilastolliseen tutkimukseen. Jyväskylä: PS-Kustannus.

Vuoristo, K. 1997. Poliittinen maantiede. Helsinki: WSOY.

Welcome to Wärtsilä Finland. 2010. Internal presentation.

Wärtsilä Corporation. 2010. Corporate Presentation 2010. Internal presentation.

Wärtsilä Finland. 2010. Laatu-, ympäristö- ja työterveys- ja turvallisuuspolitiikka. Referred 16<sup>th</sup> September 2010.

<http://www.wartsila.com/Wartsila/local/finland/docs/locals/finland/Corp-policy-Finland2009.pdf>

## Table of figures

Figure 1: The process of the thesis. Suominen (2010).....	8
Figure 2: The business segments of Wärtsilä Corporation. Wärtsilä (2010) .....	9
Figure 3: Operations at Wärtsilä Finland. Wärtsilä (2010).....	11
Figure 4: The conflict process theory. Vuoristo (2007, 28-30).....	22
Figure 5: The chart of reasons behind accidents. Väyrynen (2003, 8) .....	25
Figure 6: The division of case categories. Suominen (2010) .....	28
Figure 7: The regional division of the case study material. Suominen (2010) .....	30
Figure 8: The division of work-related accidents. Suominen (2010) .....	31
Figure 9: The division of crime-related security deviations. Suominen (2010) .....	34
Figure 10: The division of situation-related security deviations. Suominen (2010) .....	37
Figure 11: The variations of the insurance claim reports. Suominen (2010) .....	41
Figure 12: Total amount of all insurance cases during 2007-2010. Suominen (2010) ....	43
Figure 13: Regional reporting of all insurance claims 2007-2010. Suominen (2010) .....	43
Figure 14: The total division of regions and the reasons of reporting. Suominen (2010)	44
Figure: 15 Usage of different insurance solutions in 2007-2010. Suominen (2010) .....	45
Figure 16: Usage of insurance solutions in cases of sickness. Suominen (2010) .....	47
Figure 17: Regional reporting of the cases of sickness. Suominen (2010) .....	47
Figure 18: Usage of insurance solutions in cases of accident. Suominen (2010).....	48
Figure 19: Regional reporting about all the reported accidents. Suominen (2010) .....	49
Figure 20: Usage of insurance solutions in cases of cancellation. Suominen (2010) .....	51
Figure 21: Regional reporting of all cancellations and interruptions. Suominen (2010)	51
Figure 22: Usage of insurance solutions in cases of lost property. Suominen (2010) ....	52
Figure 23: Regional reporting of the cases of financial loss. Suominen (2010) .....	53