Systain
Systematic Solutions for Sustainability
Member of the Otto Group

Carbon Footprint Report

2009

Hamburg, 21st of December 2009

Table of Content

1. Introduction

The effect of global warming causes significant disturbances of the global climate such as floods, droughts, rising sea-level, storms, scarcity of water, bad harvests and lost of plants. The International Panel on Climate Change (IPCC) has revealed the scientific significance and proven evidence that the increasing level of carbon emissions by human activity is the major driver of climate change. The IPCC is the nominated United Nations' body for research on this issue.

Consuming fossil fuels such as oil, coal and gas has dramatically risen in the past century with releasing carbon emissions (CO_2) into the atmosphere. Additionally, woods and ecosystems, which absorb CO_2 by the photosynthesis, have been destructed and polluted. The global consumption of energy is continually rising due to the global growth of welfare. Therefore, it is necessary to reduce CO_2-emissions globally in order to avoid major threats to ecosystems and human health. Furthermore, a rapidly rising demand of energy cannot be met by the existing fossil fuels. This development has another economic impact: a rising level of prices for fuels and energy. Scientists and political leaders try to solve this problem by:

- setting up a global framework on reducing carbon emissions,
- promoting a more efficient use of energy,
- expanding renewable energies and
- stimulating the development of new technologies such as low-emission cars.

Companies are faced a growing concern among consumers about what producers and retailers do to reduce carbon emissions and whether they offer products and services with causing less emissions. Additionally, prospected political regulations on carbon emissions, increasing importance of issues related to energy-efficiency among investors and finally the rising prices for energy imply financial risks of companies which do not address this issue within their management at all. Companies, however, that take an active role in corporate environmental responsibility will also benefit for their own business by reducing cost, by managing risk, by setting up management-practices ahead of regulations and above all meeting the demands of their clients.

2. Objectives of the project

Systain Consulting has been assigned to evaluate the carbon emissions of Milteks Tekstil Sanayi Ve Ticaret A.Ş. The evaluation includes the locations Milteks Istanbul, Milteks Ceseka Fatsa and Milteks Ajara/Georgia.

Purposes of Milteks are:

- to have detailed and accurate information with regard to the Carbon footprint and its relation to the sustainability,
- to get the calculated GHG emissions and reduction recommendation,
- to use the obtained information in Milteks sustainability report
- to respond the will of their main customer with regard to subject that Puma would like to create awareness on the topic of sustainability issues that covers the Carbon Footprint.

3. Scope, Data, and Methodology

The carbon footprint indicates the amount of greenhouse gases for a company or a product. The carbon footprint includes all climate-related emissions (GHG). Beside carbon emissions, the carbon footprint includes e.g. methane and nitrous oxide which are further greater greenhouse gas with an even larger impact than CO_2 has.

The carbon footprint evaluation in this report includes the direct emissions at the premises of Milteks garment unit and from transportation for the garment unit. Also the indirect emissions related to the consumption of electricity are included. Therefore, the carbon footprint evaluation covers the so-called emissions of Scope 1 and 2 according to the categories of the Greenhouse Gas Protocol (GHG-Protocol).

The GHG-Protocol is the most widely used international accounting standard for government and companies to understand, quantify and manage greenhouse gas emissions. It has been developed by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD).

The results provide the amount of all greenhouse gas emissions according to the GHG-Protocol. Therefore, the amount of the carbon footprint is given in kilogram/tons CO_2equivalents (CO_2e).

4. Carbon Footprint project study results

4.1. Data Collection and Quality of Data

Milteks was visited in October and November 2009 by Systain in order to introduce into the data evaluation, to clarify the scope and to evaluate potential areas for reducing energy consumption and CO_2-emissions. Data of all consumed energy sources and electricity for the three production units have been provided by Milteks. The data have

been given for a period of 14 months from Sept 2008 to Oct 2009 on a monthly basis. The evaluation, however, covers the data from Nov 2008 to Oct 2009 in order to provide the amount of emissions for a period of one year. The location Milteks Ajara/Georgia is a newly established factory. For this factory, only data from Jan to Oct 2009 were available. The data have been double checked in order to assure data quality. The quality of the data is good, all data are consistent and plausible.

Also emissions related to transportation and business travel are included. These data were based on the travelled miles by airplane or the travelled kilometres by car. Data for transportation were also provided by the distance of the trucks and cars. Average values of fuel consumption have been applied for calculating the emissions that are related to subcontractors. The emissions for transportation include:

- transports between the three factories (by subcontractors)
- Transports in the Istanbul area (factory – customer)
- Bus services for employees (by subcontractors)
- Car fleet
- Business Trips (air travel).

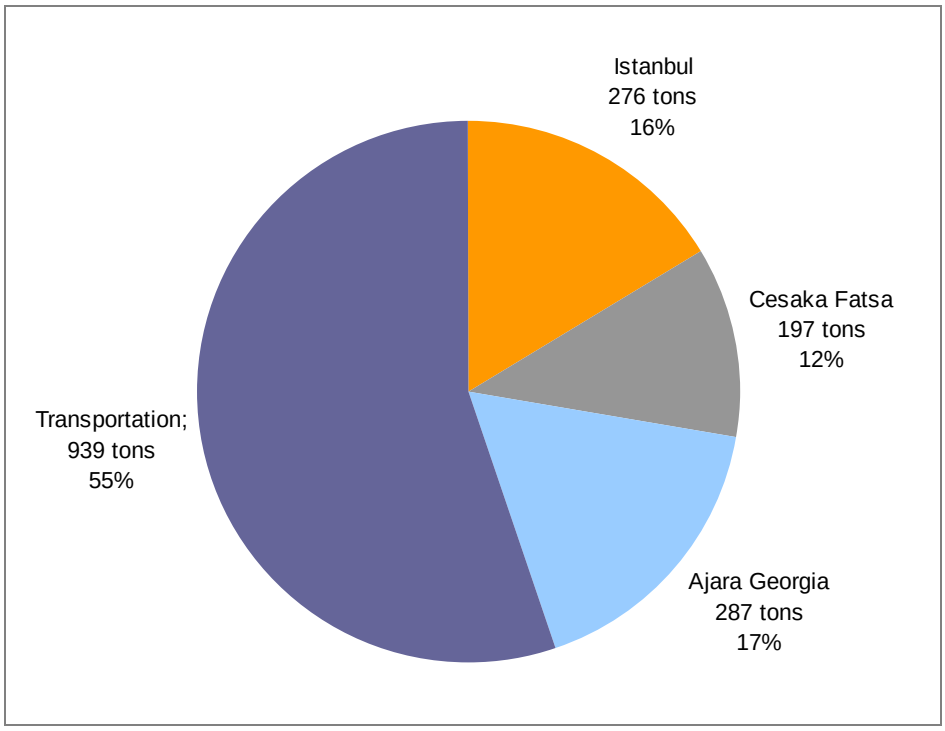
Also these data cover the time-period from Sept 2008 to Oct 2009 whereas 12-month period has been used. The data for the car fleet in Georgia covers the month from Jan to Oct 2009.

4.2. Absolute Carbon Footprint

The absolute carbon footprint of all Milteks garment factories (Istanbul, Fatsa, Ajara/Georgia) in 2009 (12 months Nov 08 – Oct 09) accumulate to an amount of 760 tons CO_2e regarding the production. Including business travel and transportation, the carbon emissions accumulate to an amount of 1.700 tons CO_2e.

The amount of 760 tons is equivalent to the yearly per capita emissions of 212 citizens in Turkey (3.6 tons per year) or 79 citizens in Germany (9.7 tons per year).

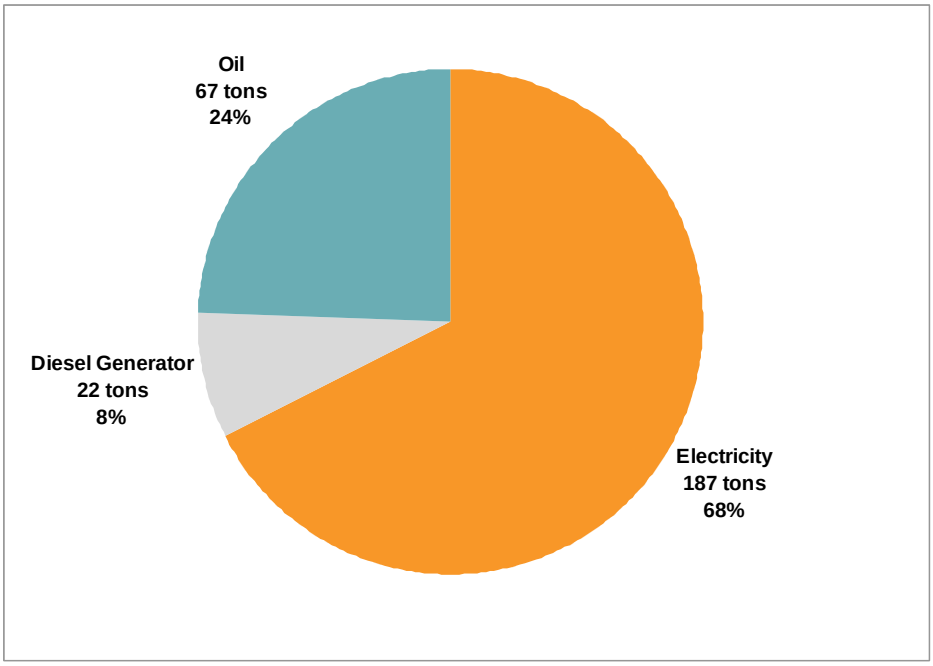
In the past years, various companies include indirect emissions from extraction and processing of energy sources into the calculation of their own carbon footprint. If these upstream-emissions are included, the absolute carbon footprint of all location of Milteks would be 1.000 tons CO_2e in 2009.



Share of CO_2e-emissions Milteks total in 2009

Milteks Istanbul

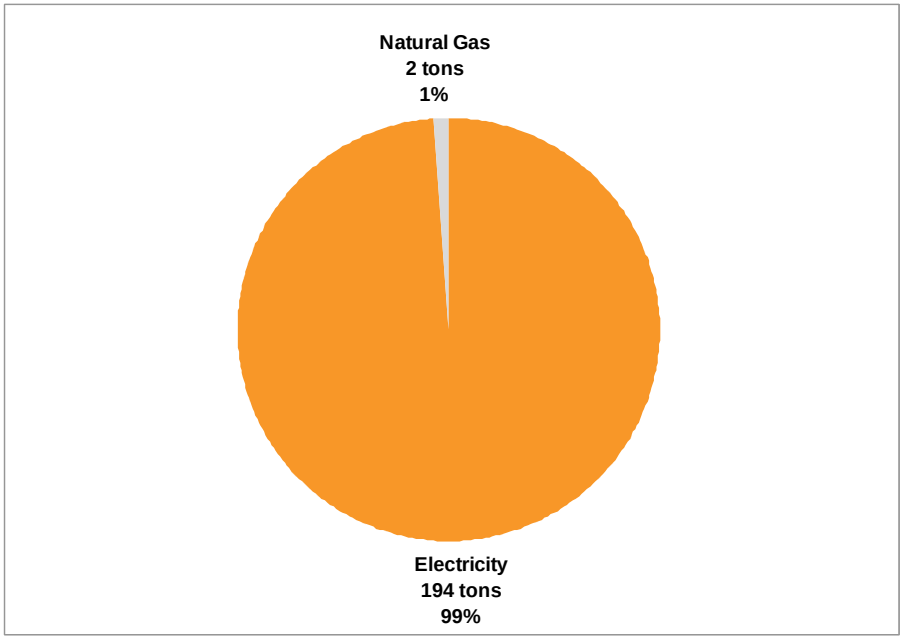
The production at the factory in Istanbul releases 276 tons of CO_2e emissions. More than two thirds of these emissions result from electricity. Heating processes by oil make up 67 tons CO_2e, which are 24% of the total CO_2e emissions. Diesel consumption causes 22 tons CO_2e and less than one tenth of the total emissions.



Share of CO_2e-emissions Milteks Istanbul in 2009

Milteks Ceseka Fatsa

The absolute carbon footprint of the location Fatsa accumulates to an amount of 197 tons of CO_2e emissions. The major part results from electricity. Only 2 tons and a share of 1% are related to natural gas consumption.

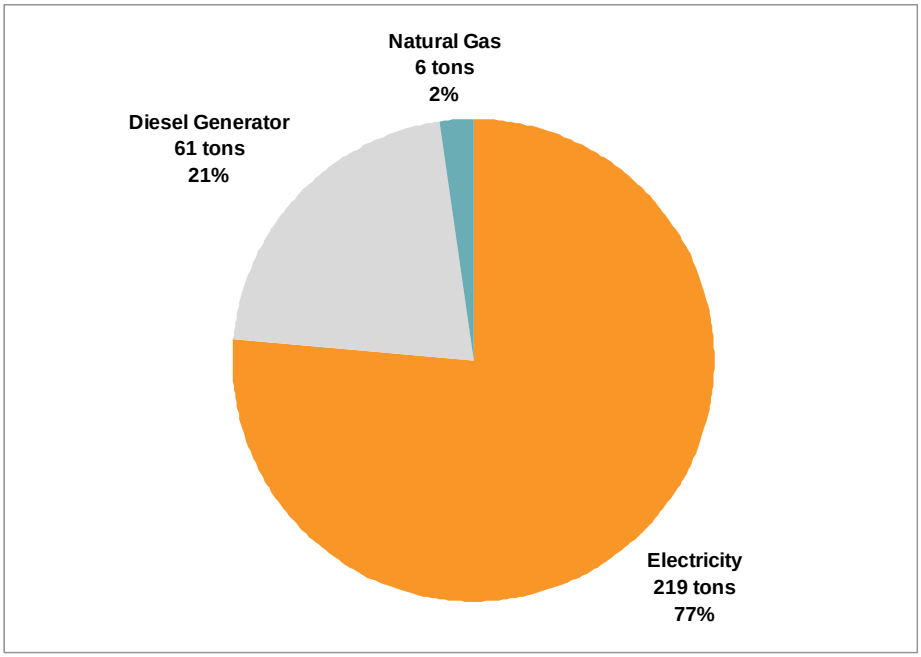


Share of CO_2e-emissions Milteks Cesaka Fatsa in 2009

Since data on water consumption were provided by the factory in Cesaka Fatsa, it was possible to calculate the amount of water consumed per piece: 3.9 Litres per piece.

Milteks Ajara/Georgia

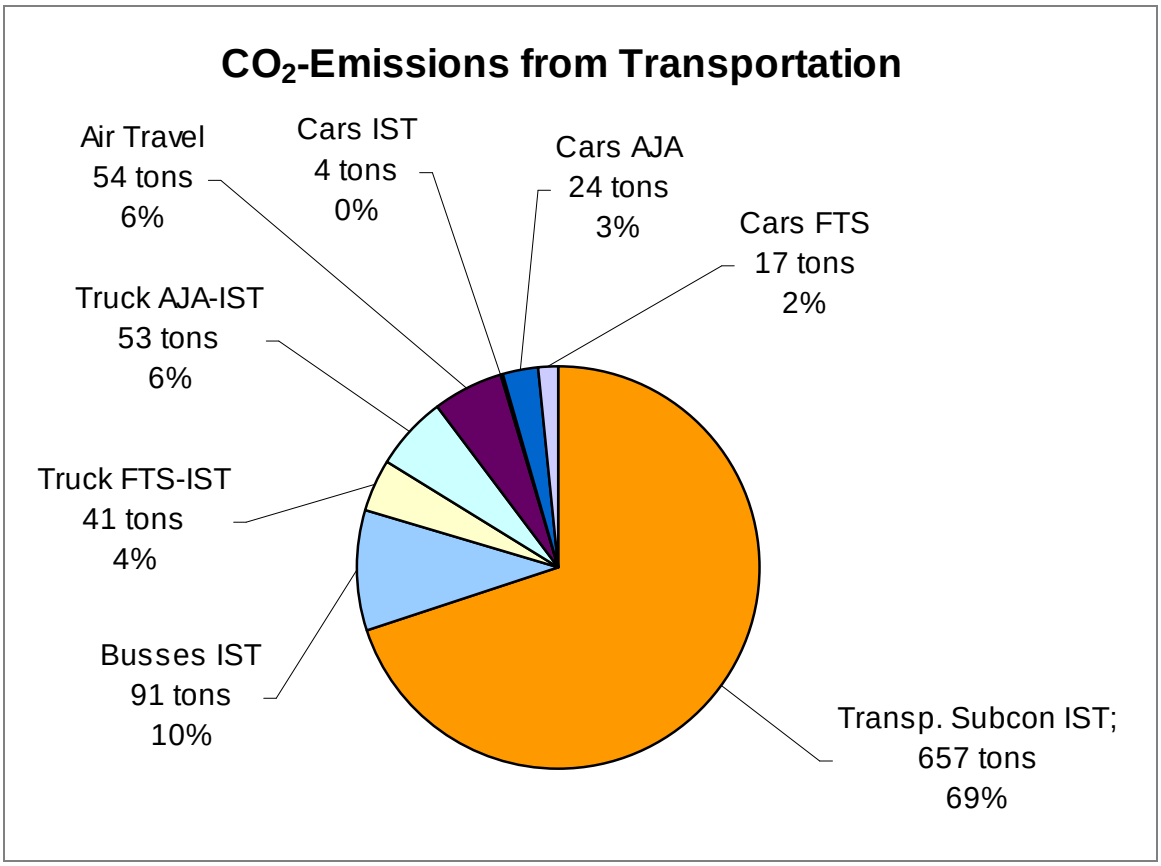
The location Ajara in Georgia causes 287 tons CO_2e emissions for the respective period from January 2009 to October 2009. More than tree quarter of these emissions result from electricity. Diesel consumption for generators causes 61 tons CO_2e which is one fifth of the total emissions. Heating processes by the natural gas-fired boiler accumulate to 6 tons of CO_2e.



Share of CO_2e-emissions Milteks Ajara in Georgia in 2009

Business travel & Transportation

The direct transport emissions of Milteks including the business travel accumulated to an amount of 939.3 tons CO_2e. Most of the emissions are related to the transportation processes within the Istanbul area.



Share of CO_2e-emissions from business travel and transportation in 2009

If upstream emissions and the so-called RFI-factor for particular emissions by air-travel (RFI = Radiative Forcing Index, means that CO2-emissions in the stratosphere have a higher impact than emissions on the ground level) are included, the carbon footprint for the period Nov 2008 to October 2009 accumulates to a total amount of 1.134 tons of CO_2e.

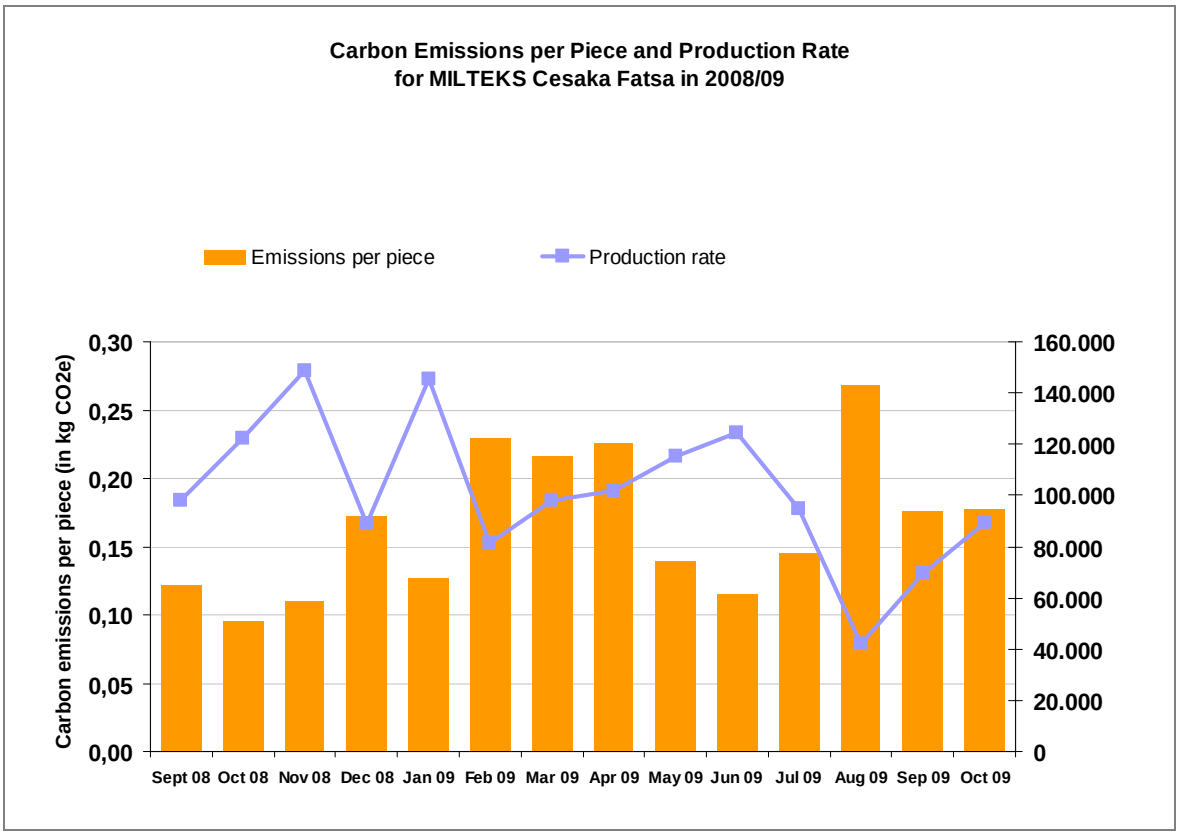
4.3. Relative Carbon Footprint

The carbon footprint per piece for Milteks incl. all energy sources but without considering transport emissions are

- **for Ceseka Fatsa approx. 0.178 kilograms CO_2e**
- **for Ajara/Georgia approx. 0.485 kilograms CO_2e**

Istanbul has not been included since it has primarily administrative functions. Benchmarking this result with the carbon footprint per piece of other garment factories is very difficult due to the different processes. The factory at Cesaka Fatsa has a very low level of emissions compared to other factories, Ajara in Georgia is in the leading middle field. It should be noted that these results contain several uncertainties due to the opening of the factory in Georgia and the modification of the process-structure in the other

factories due to the new facility. Also the varying production rate compared to the previous year has an impact to the results. In a period with higher utilization the level of emissions per piece is supposed to drop. This effect is shown in the picture below which relates the monthly production rate and the emission-level per piece especially if the month having a low production (August 09) compared to months with peak production such as October and November 2008. The carbon footprint per piece varies from 270 grams in August to around 100 grams in October / November. Valuable results for emissions per piece should be possible in the next year when the factory in Georgia is established and the processes in the other factory run regularly.



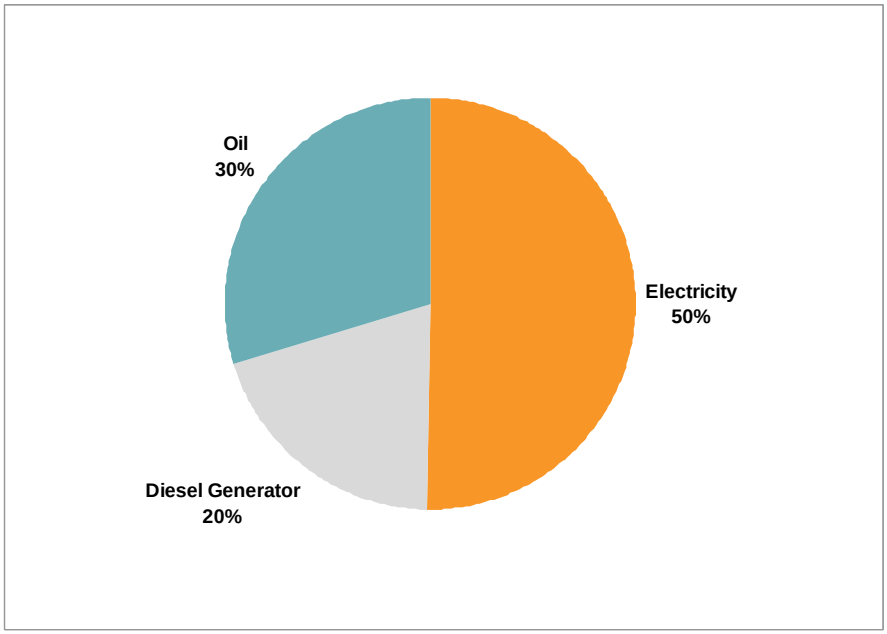
Emission per piece related to the production rate in 2009 for the Milteks-factory in Cesaka Fatsa

4.4. Energy Consumption and Cost

Since carbon emissions are released by the consumption of energy, the issue is also linked to costs for electricity, fuels and energy. Reducing CO_2e-emissions means also reducing energy costs for any company. For that reason, energy costs have been made transparent.

Milteks Istanbul

Milteks Istanbul pays an annual amount of 128.400 YTL for energy. The energy costs per piece accumulate to 0.93 YTL.



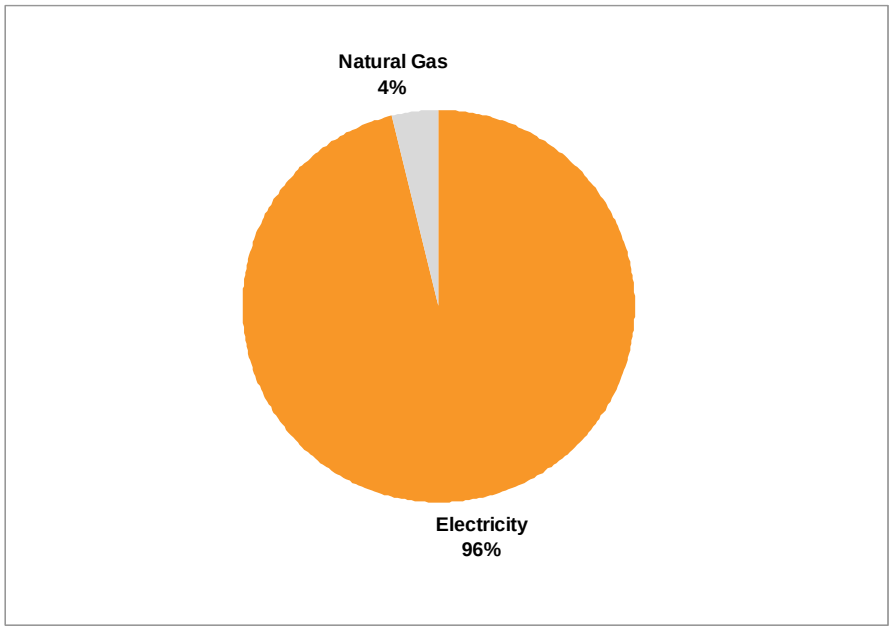
Share of Energy costs Milteks Istanbul in 2009

Reducing 10% of carbon emissions

- of electricity means saving almost 6,500 YTL on costs for electricity
- of Diesel for generator means saving almost 2,600 YTL on costs for Diesel
- of oil means saving 3,800 YTL on costs for oil

Milteks Ceseka Fatsa

Ceseka Fatsa pays an annual amount of 61.600 YTL for energy. The energy costs per piece accumulate to 0.05 YTL.



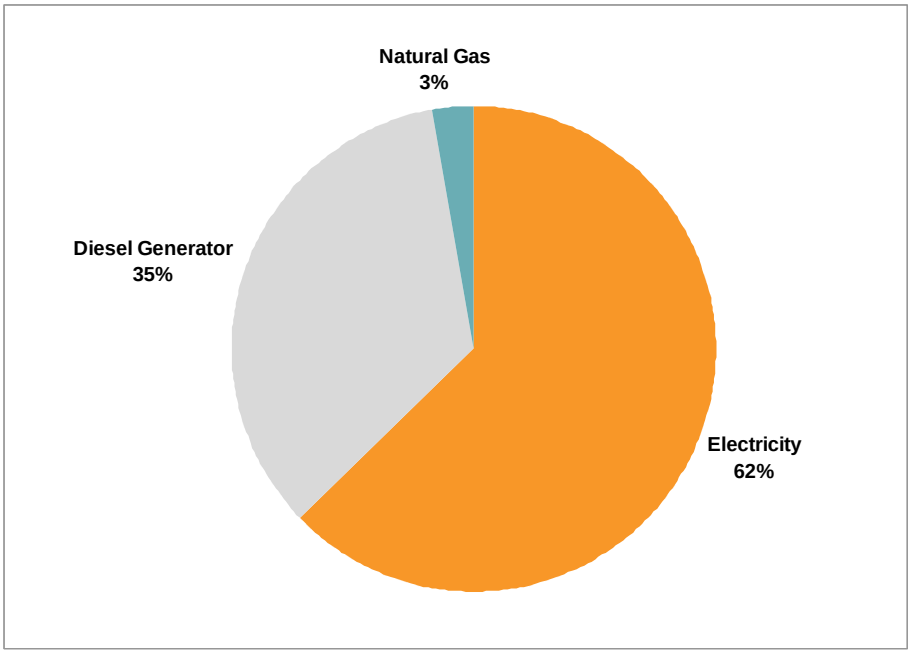
Share of Energy costs Milteks Ceseka Fatsa in 2009

Reducing 10% of carbon emissions

- of electricity means saving almost 6,000 YTL on costs for electricity
- of natural gas means saving almost 250 YTL on costs for gas.

Milteks Ajara Georgia

Milteks Ajara pays an annual amount of 76.300 YTL for energy. The energy costs per piece accumulate to 0.12 YTL.



Share of Energy costs Milteks Ajara in Georgia in 2009

Reducing 10% of carbon emissions

- of electricity means saving almost 4,800 YTL on costs for electricity
- of Diesel for generator means saving almost 2,700 YTL on costs for Diesel
- of natural gas means saving almost 200 YTL on costs for gas

An objective of 10% is a reasonable goal which usually can be achieved with 2-3 years if a permanent improvement process has been run. Note that the assumptions are made on the basis of today's energy price-level and investment costs should be considered.

5. Recommendations

Milteks has a common level of energy consumption and carbon emissions for advanced suppliers. Within the three companies that belong to Milteks Group- İstanbul, Ajara and Ceseka - the best performed one is Ceseka, because of being a new facility it has been organized and structured more efficiently in terms of energy efficiency and also for the productive production purpose. For Ajara as it has been mentioned above being a just new organization that was opened within 2009 the company needs some more time to balance its energy consumption for being able to evaluate in terms of efficient use of energy consumption. The Milteks - Istanbul factory is bound to the existing structure of the building and the premises.

Milteks has already taken various steps on reducing energy consumption. The factory at Cesaka Fatsa has already established an ISO 14,001 certified environmental management system. Even thought the low prices for energy sources at Cesaka - Fatsa, the management evaluates options for optimizing energy consumption. Technical personnel is aware of the topic, and even external technicians were mandated by Milteks to evaluate potentials for reducing energy consumption e.g. for the boiler or lighting. This shows the professional and performance-oriented approach of the Milteks-management. **The existing momentum should be kept and enforced by Milteks in order to strengthen the reduction of energy consumption and thus carbon emissions.** Some measures that may be evaluated in order to improve the level on energy efficiency are suggested in the section below.

Management and processes

As suggested implementing management processes on improving energy efficiency continuously is a key-element in reducing CO_2-emissions. Investment decisions such as purchasing a new washing machine or tubes may be evaluated in terms of their energy consumption in addition to the investment price. Often more efficient devices show higher investment costs but costs drop during usage. Respective personnel need to be enabled to check alternatives which may have higher investment costs but pay off in the medium term.

It is also suggested to initiate some small-scale projects with a short pay-off period in order to check what works best for Milteks. Results should exchanged among the technicians of the three factories (best-practice).

For success of this purpose each of the group company should appoint a person or team that in charge with the issue furthermore they should be controlled by the Milteks - İstanbul as being central office and also to collect the information in one centre.

Lighting

A focus on the lighting is recommended. Measures on T5-tubes or ballasts have already been evaluated at the Cesaka Fatsa factory. Further options may be considered for each Milteks group company:

- Checking where separate light switches are reasonable in order to have the light switched on only where it is needed. With having many unused section this point **has importance mainly for Milteks- İstanbul, to some extend also Cesaka - Fatsa**.
- Checking the use of (low-energy) electronic ballasts for all tubes.
- Arrangement of tubes – an over-lighting has been observed especially in Milteks-İstanbul; alternative options of arranging tubes (or the hanging lamps at Milteks Istanbul) may requires less tubes or / and tubes with less Watt-capacity at the same light conditions**. Relevant mainly for Milteks - İstanbul.**
- Dimming: with electronic ballasts it is possible to dim the light (either manually or – recommended - automatically, that means the light is controlled in order to provide always the same light conditions)

As mentioned, these alternatives should be tested on a small-scale level to derive the appropriateness for Milteks Group Companies.

Heating

It is also recommended to optimize the boiling system incl. the heat recovery:

- Checking the boiler by a specialist once a year for adjustments to reduce energy consumption.
- Re-using of the steam from the ironing section or establishing a steam recovery system. **Relevant for Ajara - Georgia and Milteks – İstanbul**. The heat may be reused in **Cesaka – Fatsa** in a more efficient way by an installed close waste collecting system than the existing one.
- Using the waste heat of the boiler by an heat-exchanger.
- Considering the installation of a low-temperature boiler combined with a second condensate (recovering the heat of the flu) additionally to the primary heat-exchanger.

- Having valves on the main steam pipes for the ironing section in order to hinder heat-losses by blocking the steam from running through all the ironing tables and section.

Transportation

Due to the portion of the overall CO_2e-emissions and the energy costs the logistic processes as well as company-owned cars and trucks by Milteks should be included into a systematic process of improvements. Measures that could be considered are:

- There may be potentials to a particular focus on optimizing logistic processes within the Istanbul area for Milteks – İstanbul. Efforts on enhancing the bundling and coordination of transports are recommended. The rate of the emission and probably also the costs for transportation in Istanbul for the purpose of goods carrying is quite high.
- renewing the truck-fleet, eliminate elder cars of the fleet regarding the company-owned cars
- providing trainings for drivers for efficient driving – a fuel efficient driving can save around 10-20% if practiced continually by the drivers
- installing air-deflecting devices (spoilers) at the trucks to improve aerodynamics (if the trucks run on routes with speed above 50 km/h)
- checking the tire-pressure regularly since a under-pressure of one bar means 30% higher rolling friction of the tire which means an extra fuel-consumption of 5%. Moreover, lower pressure than recommended also causes higher abrasion of the tires
- using fuel-efficient engine oil instead of conventional fuel-oils (if available) – the use of such an oil saves fuel consumption by 5%.

Awareness Raising

Awareness rising is a key element for saving energy and thus carbon emissions. Low-energy lighting has only minor effects if not used properly by the staff. On the other hand, people may have good ideas in their individual work-sphere and work-place. Gratifications may stimulate people to become creative on reducing energy. Training programs related to energy efficiency and the issue of carbon emission among the management and employees are recommended. This also means motivating administrative departments to switch the screen and the computer off when going home. It is also suggested to check where connection plug boards can be installed in the administrative departments. They should be switched off by the administrative personnel at closing time.

Hamburg & Istanbul, 21st of December 2009

Norbert Jungmichel, Serpil, Gürci