



Environmental Statement 2011



We are committed to do whatever
we can to save tomorrow

Index

Introduction	3
Carbon Footprint	4
Process Overview	5
Consumption	7
Waste Management	7
Environmental Plans	9
Environmental Targets 2011	12
Conclusion	13

Introduction

What is global warming? This is a fair question, as much is written and said about "global warming". The term is often misused and people tend to ask questions like, '**do you believe in global warming?**' It is difficult to know where to start when answering, What is Global Warming? This is because there are other hidden questions buried in the original one. Many people when asking:

- are greenhouse gases building up in the atmosphere?
- is the warming something they should be concerned about?

The short answer to all those questions is YES!

'What is Global Warming', is only part of the story and it doesn't tell us when this might happen. What we do know is that global warming has occurred in the past, and ***it is also happening right now.***

Our Earth is heating up, and heating up quickly.



The atmosphere surrounding the earth is mainly composed of Nitrogen (about seventy eight percent, and Oxygen (twenty one percent) with water vapour and various trace gases making up the rest. There are quite a few trace gases, such as; Argon, Carbon Dioxide, Neon, Helium, Methane, Hydrogen, Nitrous Oxide and Ozone. These gases, are often called green house gases because during the day the earth soaks up heat, and these gases act like a greenhouse trapping in the heat. Some of the heat is radiated back out into space, and if wasn't for these gases the earth would freeze over during the night. The issue of course is the increase in greenhouse gases, which is trapping in more heat, and ***causing a***

rise in global temperature.

Human activities result in emissions of four principal greenhouse gases: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O) and the halocarbons (a group of gases containing fluorine, chlorine and bromine). All these gases have what is known as – ***Global Warming Potential, or GWP*** with some much higher than others.

Ok... We see how these gases have increased proportionally in our atmosphere, but perhaps most of the people is thinking, so what? To explain why these gases are termed greenhouse gases, we need to understand that during the day the earth absorbs heat from the sun, although much of this is radiated back out into space. The atmosphere surrounding our earth contains these gases, and acts like a blanket keeping some of the heat in. If there weren't an atmospheric 'blanket' life may be impossible on Earth because everything would freeze at night, like some of the other planets or our moon.

This is where it gets a bit frightening!
Carbon Footprint

We all have a '*carbon footprint*', which is a measure of the amount of carbon dioxide or CO₂ emitted through the combustion of fossil fuels. This is directly related to the amount of natural resources consumed, and is increasingly used or referred to as a measure of environmental impact.



Based on science from the IPCC 4th Report, and consistent with observed increases in global temperature, there have been:

- decreases in the length of river and lake ice seasons.
- worldwide reduction in glacial mass and extent in the 20th century.
- melting of the Greenland Ice Sheet has recently become apparent.
- snow cover has decreased in many Northern Hemisphere regions.
- sea ice thickness and extent have decreased in the Arctic in all seasons.
- the oceans are warming
- sea level is rising due to thermal expansion of the oceans and melting of land ice.

The rapid rise in global temperature is unmatched in the last million years. Normally, and when the Earth has warmed after an ice age, it is a gradual process taking about 5,000 years.

We believe in Global Warming and we are concerned about its negative impact on the environment.

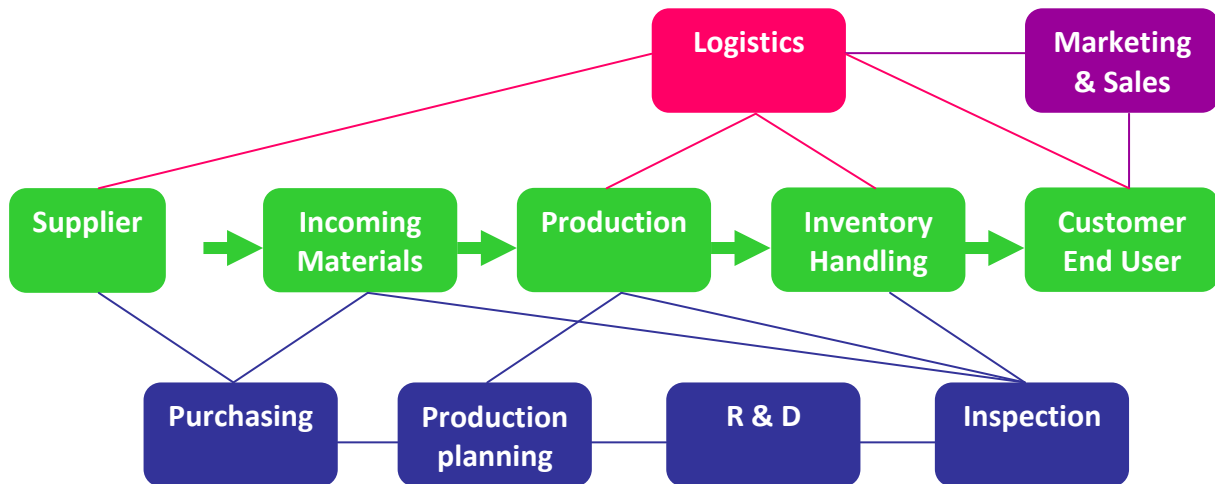
Energy saving is the most important topic we have targeted. The reasons are on one hand our care for the environment and climate and on the other increasing energy costs.

This environmental statement had been written to declare our energy saving programme, environmental performance and goals.

In this statement we give you an overview of the results and achievements of our work and point you out in which fields we intend to improve our environmental performance.

We expect that we will have a reduction of CO₂ emissions by 15% in total, compared to the baseline of 2010, independent from the respective produced number of cabinets.

Process Overview



Tekso develops and manufactures commercial refrigerated display cabinets which are cooled by different types of refrigerating systems.

The main components of our products are made of steel, copper, aluminium, plastics and glass. The accessories consist of electrical equipment and assembly parts. Our development activities are concentrated on energy savings and environment.

Supermarkets contribute both directly and indirectly to global warming. Directly, greenhouse gas emissions occur through the leakage of HFC refrigerants (such as R404A, R134a, R407C) used in refrigeration systems for display and storage of food. These refrigerants have very high global warming potential. However, supermarkets are also indirectly responsible for producing CO₂ as they are large consumers of electricity, and approximately 50% of this is consumed by refrigeration equipment.

Over the last 20 years, legislation has prohibited the use of ozone-depleting CFC refrigerants however; the use of the HFCs is still legal and commonplace. In recent years natural refrigerants have been proposed as an environmentally friendly solution for the refrigeration industry, these refrigerants which include ammonia, hydrocarbons and carbon dioxide, do not contribute to ozone depletion and have low global warming potentials.

Tekso, as a solution provider, has developed and manufactured refrigerated display cabinets with using CO₂ and propane as refrigerants for recent years.

Supermarkets produce CO₂ as they are large consumers of electricity.

Depending on the application, refrigerated display cabinets have specific electrical components which consume electricity with following rates;

- Lighting 3%
- Evaporator motor fans 18%

- Anti-condensation strip heaters 14%
- Defrost heaters 4%

The consumption of these components are measured under the title of DEC "Direct Electrical Energy Consumption".

- Refrigeration compressors 49%
- Condenser motor fans 12%

Those components have energy consumption of conventional as refrigeration system necessary to operate the refrigerated display cabinets and examined under the title of REC "Refrigeration Electrical Energy Consumption".

Tekso, as a solution provider, has developed and manufactured energy saving refrigerated display cabinets with using low energy T5 and LED lighting fixtures, pre-programmed energy saving motor fans, electrically operated expansion valves in order to minimize energy consumptions called DEC.

The main production processes are conventional metal processing, polyurethane injection and assembly. The metal processing include pre-production of individual components made of steel.



Consumption

Absolute Figures of 2010

Production Material

Steel	2225 t
Aluminium	268 t
Copper	135 t
Plastics	22 t
Powder Coat	45 t
HFC Refrigerant	0,35 t
Isocyanate	90 t

Poliol HCFC R141b	16 t
Poliol CO2	21 t
Poliol M Pentane	24 t

HC Solvent Naphtha	12 t
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Energy

Electricity	919287 kWh
Natural Gas	207720 m ³
Propane	1150 m ³
Fuel	

Diesel Fuel-Vehicles	151150 l
Diesel Fuel-Forklift	6500 l

Chemical	
Poliol HCFC R141b	16 t
Poliol CO2	21 t
Poliol M Pentane	24 t

CO2 Emissions

0,5883 kg.CO2/kWh	~ 541 t
1,9318 kg.CO2/m ³	~ 401 t
0,02614 kg.CO2/m ³	~ 0,03 t

2,6813 kg.CO2/l	~ 405 t
2,6813 kg.CO2/l	~ 18 t

6,3 kg.CO2/kg	~ 101 t
0,01 kg.CO2/kg	~ 0,21 t
0,11 kg.CO2/kg	~ 2,64 t

CO2 Total ~ 1469 t

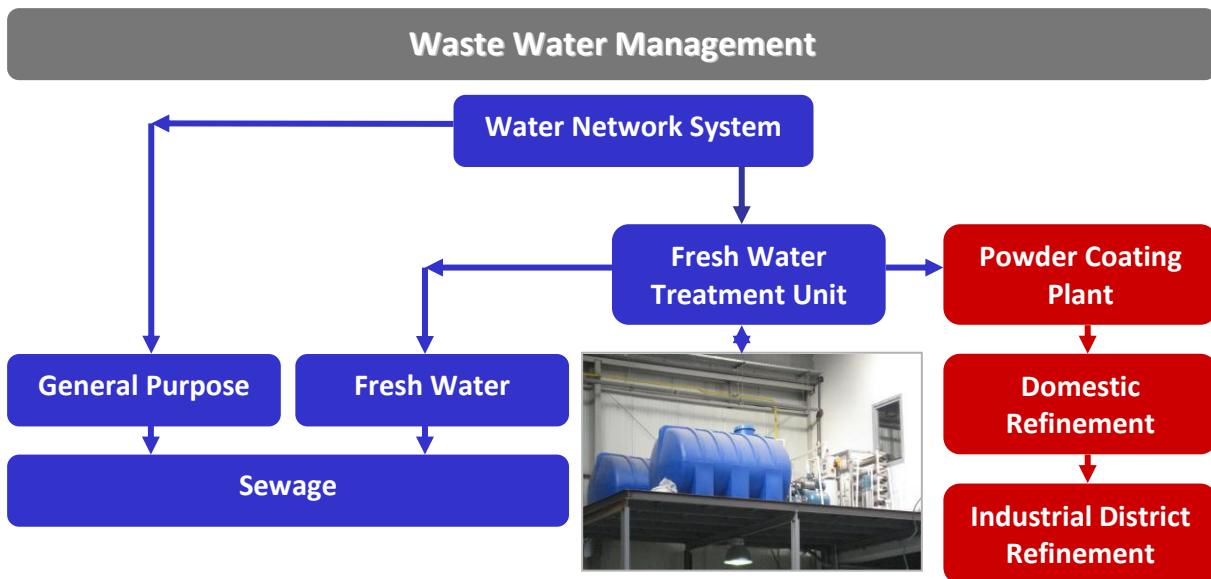
Fresh Water

Fresh Water	7035 m ³
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Waste Management

Waste which are generated in different processes at Tekso is classified on four different categories;

- Non Hazardous Wastes for Disposal
- Hazardous Wastes for Disposal
- Non Hazardous Wastes for Recycling
- Hazardous Wastes for Recycling



- **Non Hazardous Wastes for Disposal**

Waste Water

Non hazardous waste water is collected separately, both in the production area and offices. The volume of waste is directly related to the number of employees.

- **Hazardous Wastes for Disposal**

Waste Water

Hazardous waste water which contains iron phosphate and degreasing additives, is collected separately from non hazardous waste water in the production area. The volume of waste is directly related to the production capacity.

Chemicals

Hazardous wastes such as empty silicone cartridges, isocyanate and polioli barrels, polyurethane foams and powder coatings, are collected separately from non hazardous wastes in related production areas.

This waste is sent to a specialized treatment facility. The volume of waste is directly related to the number of finished products.

Powder Coatings	4150 kgs
Silicone Cartridges	75 kgs
Isocyanate Barrels	2788 kgs
Polioli Barrels	2168 kgs

- **Non Hazardous Wastes for Recycling**

Metal Scraps

Metal scraps are collected separately from related production areas for recycling. The volume of waste is directly related to the numbers of finished products.

332 tons of metal scraps have been collected in 2010 (15% of total purchased and used steel)

Office Materials

It is called commercial waste and collected separately, both in production area and offices.

Packing Materials

Among the packing materials at Tekso there are cardboard, wood, plastic foils and styrofoam.

The waste packing materials are collected by civil government for recycling. Office and packing materials waste is approximately *1 ton a year* at Tekso.

- **Hazardous Wastes for Recycling**

The category combines all hazardous wastes not mentioned above. This possibly can be oil water sludges, leftovers from cleaning agents or solvents, packing material with hazardous leftovers, electronic waste. The volume of waste is not related to production volume.

Environmental Performance

We will follow up our environmental performance on the following activities:

activity	environmental impact	2011 environmental plan
Administration		
Personnel Transportation		
Coach buses are assigned to our employees with several routes	CO2 emissions and air pollution through exhaust gases Mineral oils Noise pollution	The existing routes will be re-organized Old and fuel guzzling vehicles will be out of services
Business Trips		
Business trips of our employees by car or aircraft	CO2 emissions and air pollution through exhaust gases Mineral oils Noise pollution	More using of telephone and video conferences, less business trips
Administration		
Office activities using paper, electrical office equipments and energy	Energy consumption, global warming Waste generations including hazardous waste (toners, ink cartridges, etc)	Less print out, less waste generations and energy
Test Laboratory, R&D		
Diverse refrigerated cabinets are performed with using HFC refrigerants	Small hazard to ozone layer due to little amounts of HFC R404A refrigerant Energy consumption, global warming Raw material waste for R&D studies	Waste refrigerant is only for refrigerated display cabinets with capillary tube expansion No refrigerant waste for refrigerated display cabinets with thermal expansion valves CO2 test booster system will be applied in 2011.



Material Handling

Transportation of materials and products is supplied with diesel powered forklifts, transpallets and electric lift trucks.



CO2 emissions and air pollution through exhaust gases

Mineral oils
Noise pollution



More electric lift trucks, less CO2 emissions and air pollution

Lower noise pollution
Lighter and modular shelving and hauling systems

Manufacturing

Pre-production of cabinet components (metal processing)

Manufacture of semi-finished materials from galvanized and stainless steel by processing such as cutting, punching, drilling, bending on computerized numerical controlled machineries.

Noise pollution

Better nesting, lower metal scraps from cutting and punching

Oil leaks which are collected

Better planned routine maintenance programs, lower energy consumption and global warming
Personal protective equipments for noise pollution

Mineral oil consumption

Energy consumption, global warming
Waste industrial water soluble solvents used for periodically maintenance
Grease oil
Metal scraps from cutting and punching processes

Polyurethane Processing

Manufacture of polyurethane injected bodies and end panels of refrigerated cabinets.

Preparation of metal internal supports of bodies (cutting, cleaning, taping).



Polyurethane foam leaks which are collected for disposal

Low CO2 emission poliol which contains **n-pentane** blowing agents, is used for all polyurethane processing with 2011.

Waste industrial water soluble solvents used for cleaning

Thanks to polyurethane foam containing pentane, moulding times will be decreased. Low energy and CO2 emission, higher manufacturing capacity

CO2 emissions and global warming

Polyurethane side reinforcements instead of wooden reinforcements to save trees

Energy consumption
Raw material scraps
Wooden side reinforcements of polurethane bodies

Amount of solvents will be limited regarding to plunger cans

Paint shop processing

Powder coating process for manufactured semi-finished and finished materials from steel.

Energy consumption, global warming

Low energy consumption and CO2 emissions thanks to new invested painting plant.

Waste iron phosphate and degreasing additives which are used for pre-paint bathing (refined before sewage)
Wastewater from treatment unit

More velocity, more components to be painted in specific processing time (1.3mt/min. to 2.0 mt/min.)
2% less waste powder coats with new painting cabinet and system



Small amounts of oil fumes being released into atmosphere through exhaust aspiration system
 Waste powder coats (app. 7% of total raw materials)

More efficient drying cabinet
 New ventilation system and air eliminating filters

Welding processes

Diverse welding processes of semi-finished materials from galvanized and stainless steel by using gas metal arc methods.

Noise pollution

Less welding processes thanks to alternative coupling methods and materials

Energy consumption, global warming

Less welding processes, less energy consumption and global warming

Waste cutting fluids which are collected

Less welding processes, less welding gases into atmosphere

Metal scraps from cutting and punching processes

Small amounts of welding gas fumes being released into atmosphere through exhaust aspiration system
 CO2 emissions and global warming (welding gases)

Assembly processes

Preparing and assembling of cabinet components.

Noise pollution

Less energy consumption, more manufacturing capability thanks to new assembly lines



Energy consumption, global warming

Less hazardous consumables

CO2 emissions and global warming (from welding processes on assembly section)

Less waste materials

Waste consumables such as silicone and adhesives which are collected

Only electric lift trucks on assembly lines instead of diesel powered forklifts

Aluminium processes

Diverse cutting, drilling and bending processes of raw materials from aluminium on computerized numerical controlled machineries and special apparatus.

Energy consumption, global warming

Better nesting, lower metal scraps from cutting

Waste cutting fluids which are collected

Better planned routine maintenance programs, lower energy consumption and global warming

Aluminium scraps from cutting processes

Environmental Targets 2010 and 2011

Description	target	timeframe	investment	status
<p><i>Polyurethane Processing</i></p> <p>High pressurized polyurethane system with pentane blowing agent</p>	<p>Reduction of CO2 emissions into atmosphere</p> <p>Reduction of energy and global warming</p> <p>Improvement of moulding times and energy</p>	commenced on 2nd quarter of 2010	430,500 €	<p>System itself and its auxiliaries installation finished.</p> <p>Emergency warning and fire extinguishing systems set up</p> <p>Training programs received</p>
<p><i>Powder Coating Processing</i></p> <p>The existing powder coating system improved with new investments</p>	<p>Low energy and CO2 emissions</p> <p>Healed processing time</p> <p>Less waste powder coats</p>	started up on 2nd quarter of 2010	275,000 €	<p>System auxiliaries, such as automatic and manual painting chambers and infrared drying cabinets installation finished.</p> <p>Training programs received</p> <p>Ventilation system upgraded</p>
<p><i>Water Treatment</i></p> <p>Fresh water treatment unit for fresh and soft drinking water and powder coating processing</p>		started up on 2nd quarter of 2010	10,000 €	
<p><i>Polyurethane Processing</i></p> <p>New assembly line</p>	<p>Reduction of energy and global warming per cabinet</p> <p>Improvement of processing times</p>	completion planned end of February, 2011	70,000 €	<p>Conception and additional investment requirement fully defined</p> <p>Installation started</p>
<p><i>Assembly Line Processing</i></p> <p>New varied assembly lines of cabinets</p>	<p>Reduction of energy and global warming per cabinet</p> <p>Improvement of processing times</p>	completed until end of June, 2011	65,000 €	Conception and additional investment requirement fully defined
<p><i>Testing Laboratory</i></p> <p>CO2 Test Booster System</p>	<p>Double the size of the testing facility in order to have multiple tests at one time.</p>	<p>planned for the end of 2nd qr, 2011</p> <p>planned for the end of 1st qr, 2011</p>	<p>71,500 €</p> <p>27,500 €</p>	Existing laboratory enlarged & upgraded

Conclusion

Our environmental goals are;

- To improve consciousness of environment among our employees
- To encourage our R&D team to use more environmental friendly materials in our future designs
- To create new financial resources for researching activities in order to save energy
- To use more effective of natural resources
- To create new focus on the environmental perspective
- To continuously improve our production processes



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