



**SLN TEXTILE ADMINISTRATION BUILDING
ENERGY AUDIT REPORT
Executive Summary**

Prepared By:



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1.1.Intent

Altensis has been commissioned by SLN Textile to carry out a Energy audit of SLN TEXTILE Administration building. An energy audit is a comprehensive analysis of the energy usage in the buildings. There is a wide array of recommendations that could improve the performance of the buildings. The intent of this audit is to identify the most beneficial opportunities for improvement based on the company needs.

This report covers a brief summary of energy audit results of the aforementioned building. The building has been measured in accordance with national and international energy audit guidelines. The recommendations made in this report will focus on the most necessary and beneficial opportunities. This may result in omitting improvements that would provide value, but were not determined to be one of the most optimal opportunities.

1.2. Scope

The energy audit scope includes following systems in SLN building:

HVAC Systems

Pressurized air system

Steam generator

Lighting and lighting controls.

1.3 Schedule

Energy Audit process covered in this report was executed from 01.11.2011 to 30.11.2011

1.4. Methodology

Several energy efficiency measurements have been conducted in order to analyse and recommend improvements on the energy performance of these systems.

These measurements include:

- Thermal analysis of systems
- Power Factor Analysis
- Harmonics in electrical circuits
- Energy Usage

Visits to SLN building were made in order to conduct these studies. Different measurements were taken by the audit team, and data gathered from these measurements has been analysed in order to execute a detailed energy audit report.

Advanced energy efficiency measurement and analysis equipment have been used during these audits. All the equipment used during the SLN Building energy audits are calibrated by accredited bodies. Following page displays a comprehensive list of energy audit equipment used in the building.

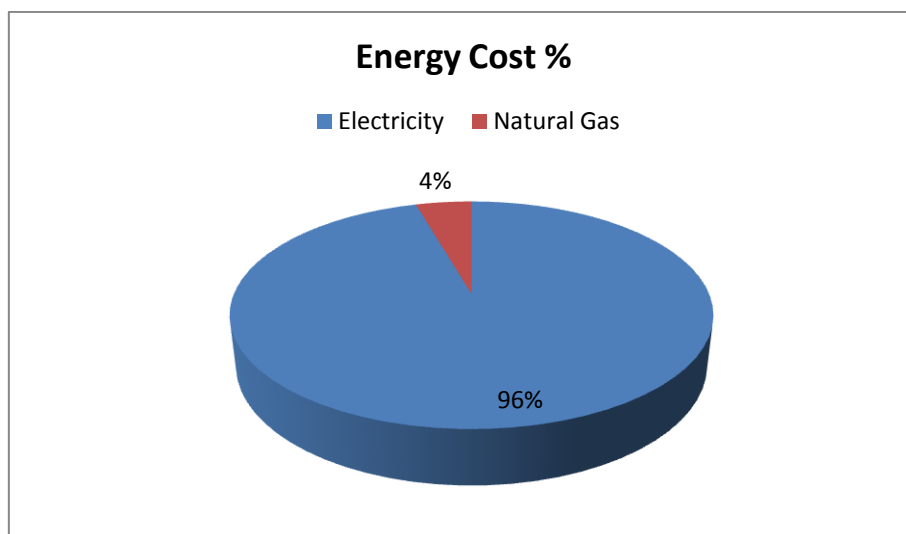
Equipment Name / Model	Seri No	Calibration Data			Point of Use
		Date	Valid For	Accredited Organization	
Fluke Thermal Camera / Ti-9	9030813	02.08.2011	1 Year	Netes	Thermal Losses
Fluke Thermal Camera / Ti-9	11040558	02.08.2011	1 Year	Netes	Thermal Losses
Lutron Thermal Anemometre AM-4204HA	Q559937	02.08.2011	1 Year	Netes	Air Speed
Lutron Thermal Anemometer AM-4204HA	Q552969	02.08.2011	1 Year	Netes	Air Speed
Chauvin Arnoux Power Analyzer CA8332B	178052HMH	02.08.2011	1 Year	Netes	Engine power/ Energy Analysis
Chauvin Arnoux Power Analyzer CA8332B	138249HGH	02.08.2011	1 Year	Netes	Engine power/ Energy Analysis
Chauvin Arnoux Enerji Analizörü CA8332B	-	-	1 Year	Netes	Engine power/ Energy Analysis
Chauvin Arnoux Power Analyzer CA8332B	132016JDH	-	1 Year	Netes	Engine power/ Energy Analysis
Chauvin Arnoux Power Analyzer CA8332B	132019JDH	-	1 Year	Netes	Engine power/ Energy Analysis
Chauvin Arnoux Power Analyzer CA8332B	140563JEH	-	1 Year	Netes	Engine power/ Energy Analysis
Eurotron Flue Gas Analyser Greenline 2000	161251	02.08.2011	1 Year	UMS	Flue Gas
			1 Year		

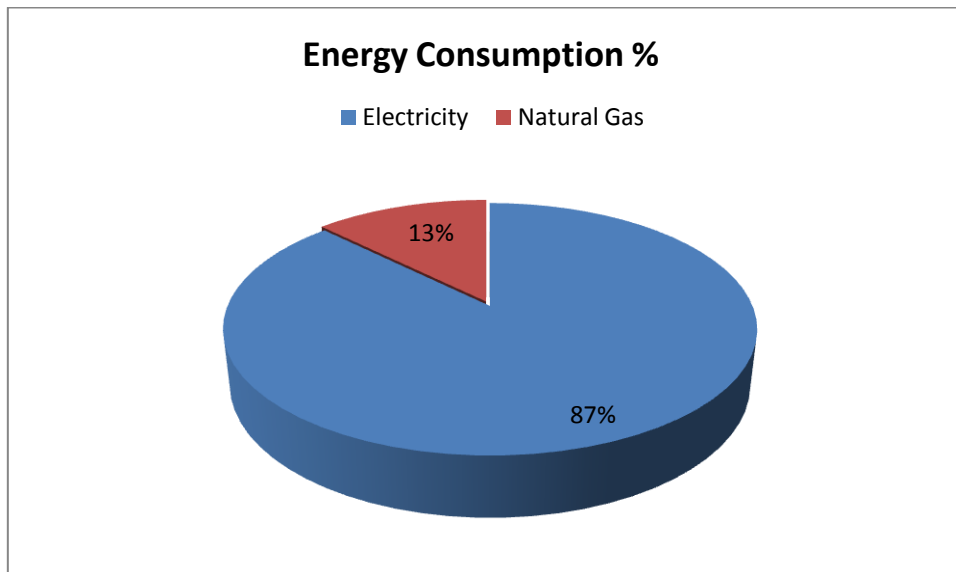
1.5. CURRENT ENERGY USAGE AND COST

Table below displays the amount and the cost of different energy sources currently used in the SLN building:

Energy Type	Consumption				Cost		Unit Cost
	Amount	Unit	TEP	Total%	TL	Total%	TL / TEP
Electricity	381.463,59	kW	32,81	87,4	94.494,70	95,5	2.880,05
Natural Gas	5.745	m ³	4,74	12,6	4.407,00	4,5	929,74
Total			37,55	100	98.901,40	100	2.633,85

Graphics below displays the percentage of different energy types used in the SLN Building (in cost and usage):





1.6. COMMENTS and RECOMMENDATIONS

According to the conducted Energy Audit results, there are several energy saving best practices that could be implemented in SLN Building:

- According to the thermal camera results, Building envelope thermal insulation can be accepted as adequate. However during the site visits, several air leakage points were detected. These weak points may result in serious energy inefficiency issues. In order to locate leakage points and for the thorough analysis and infiltration of building envelope, a **door fan test** is recommended.
- Evaporative cooling integrated to the VRV (Variable Refrigerant Volume) system used for cooling shall result in additional energy savings. Detailed calculations are provided in the table below.
- Thermostat valves should be attached to the radiators inside the building. This way energy used for heating can be controlled and utilised more efficiently.
- Unefficient mechanical ballasts should be replaced with high frequency, electronic ballasts in the lighting systems.

- It is observed that energy consumption of different floors and different process units in the building is not very efficiently monitored. This is one of the important energy management opportunities in existing buildings. A simple but effective energy monitoring system will help monitor the building energy performance in detail and shall provide action points where there is irregularities or unefficiency. Important data could be gathered and trend analyses for the different processes of the building could be conducted accordingly. These actions shall result in serious savings (up to 20 %) in energy consumption.

Table below provides a comprehensive list of Energy Management Options (EMO) and their budget estimates including ROI (return on investment) values.

NO	ÖNERİLER	Energy Source	Energy Savings				Total Savings	Capital Cost	Return On Investment	CO2 Emissions Reduction
			Amount	Unit	TEP/Year	TL/Year	TL/Year	TL	Year	Kg
EMO-1	HEAT RECOVERY OF COMPRESSOR EXHAUST AIR	Natural Gas	1.367	m ³ /year	1,13	1046,09	1046,09	500	0,48	2.650,45
EMO-2	EVAPORATIVE COOLING	Electricity	1.148,40	kWh/year	0,10	196,38	196,38	1000	5,09	568,46
EMO-3	INSULATION of STEAM GENERATOR RETURN LINE	Electricity	1.661,42	kWh/year	0,14	284,10	284,10	312	1,10	822,40
EMO-4	LIGHTING - Option 1	Electricity	3.528,00	kWh/year	0,30	603,29	603,29	3.024,00	5,01	1.746,36
EMO-5	LIGHTING - Option 2	Electricity	13.104,00	kWh/year	1,13	2.240,78	2.240,78	9.516,00	4,25	6.486,48
EMO-6	LIGHTING - Option 3	Electricity	1.800,00	kWh/year	0,15	307,80	307,80	1.525,00	4,95	891,00
EMO-7	LIGHTING - Option 4	Electricity	168,00	kWh/year	0,01	28,73	28,73	204,00	7,10	83,16
EMO-8	LIGHTING - Option 5	Electricity	9.156,00	kWh/year	0,79	1.565,68	1.565,68	12.426,00	7,94	4.532,22
EMO-9	LIGHTING - Option 6	Electricity	720,00	kWh/year	0,06	123,12	123,12	476,00	3,87	356,40
Sub Total		ELECTRICITY	31.285,82	kWh/year	2,69	5.349,88	5.349,88	28.483,00	5,32	15.486,48
		NATURAL GAS	1.367,44	m ³ /year	1,13	1.046,09	1.046,09	500,00	0,48	2.650,45
TOTAL					3,82	6.395,97	6.395,97	28.983,00	4,53	18.136,93
TOTAL SAVINGS PERCENTAGE									6,47%	

These estimates are valid for 6 weeks starting the report submission date and subject to change according to market updates.