

KDV 15,000 CENTER

KCETA - Kayseri Region Electricity Company



16/05/2010

## PREAMBLE

### THE ENERGY SECTOR IN TURKEY

Currently, Turkey is a major energy importer, as its energy consumption growth has outpaced domestic production. Substantial investment in the energy sector will be required in the near future in order to meet the increasing demand in Turkey.

The energy consumption in Turkey reached a level of 102 tonnes of oil equivalent, or 1,415 kg of oil equivalent per head in 2008 (which is still below Western levels) with an increasing trend between 2004 and 2008.

Turkey has also a significant potential for renewable energy. Due to substantial renewable energy resources and recent developments in renewables legislation and liberalization in the electricity market, there is a suitable environment for renewable investments





## ELECTRICITY

The Turkish electricity market is currently going through a liberalization process and rapid growth.

The market is experiencing a transition towards a competitive electricity market in order to attract private sector investment and maximise efficiency. Electricity demand in 2008 equalled 198 TWh, representing 4.3% annual growth from 2007

The current energy supply including the existing power plants, the licensed plants and those under construction was expected to be insufficient to cover the Base Energy Demand starting from 2009.

After a recovery in electricity demand, there will be the requirement for further capacity to balance supply and demand. The estimated investment required for the period of 2009-2017 is approximately US\$ 35-50 bn .





## THE KDV 15000E PROJECT IN KAYSERI

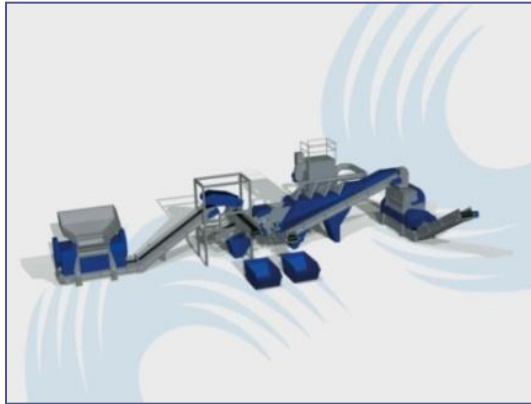
This feasibility study is based on a project located in Kayseri (Turkey) ,leaded by “KAYSERI ve CIVARI ELEKTRIK T.A.S.” a company involved in the Production of electricity.

The global investment of this project will be around 96 million euros ( 49.8 for the kdv15000 plant,18 million for the energy production module, 18 for the Waste Sorting Plant and 10.2 million for the Land, Site requirements and pre project first year expenses including the interest cost of a Credit line used in the first year to make all the investment advanced downpayers.

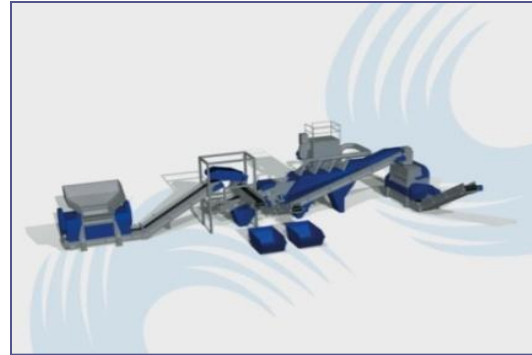
With this investment the project will build a big waste center able to receive more than 575,000 tons of MSW (municipal solid waste) and Industrial waste per year, in order to produce the 240.000 tons of feedstock needed to have a production of 14.335 liters of diesel per hour that will produce 60.225 KWh of electricity.

- MSW
  - **72,24**
  - Tons hour
- FEED
  - STOCK
    - **30,00**
    - Tons hour
- DIESEL
  - **11,83**
  - Tons hour
- **ELECTRICITY**
  - **60,223**
  - **KW h**

## KAYSERI KDV 15,000e CENTER



- CHAPTER 1-The Sorting plant
- CHAPTER 2-The KDV15,000E plant
- CHAPTER 3-The feasibility study



## CHAPTER ONE

### The Sorting plant

## The Sorting plant



### SENSITIVE VARIABLES SORTING PLANT

FEEDSTOCK	
FEEDSTOCK Calorific Value: PCI KCAL/KG	5.200
Conversion Efficiency	85,00%
Conversion Yield (Output Kg / Input Kg)	0,39432
FEEDSTOCK input Tons./hour	30,00
KG/M3 feedstock	180,00

WASTE Tipping Fees	
Industrial waste tipping fee €/Ton	5,00
Municipal Solid Waste tipping fee €/Ton	5,00
Rejections Landfill €/ton	5,00
Rejections Composting €/ton	5,00

RECOVERED MATERIALS	
Recovered Steel €/ Ton	30,00
Recovered Aluminium €/ Ton	300,00

SORTING PLANT	
Maintenance 5/Investment	7,60%
Insurance %/Investment without Civil works	0,50%
Cost hour energy Front loaders	186,30
Cost hour energy Pre-Shredders	252,00
Cost hour energy Machinery	387,33



## SORTING PLANT DESIGN

-Our Sorting plant will be designed to receive 580,000 tons/year of municipal waste in order to get 240,000 tons/year of clean and shredded feedstock. (Option C)

-We will sort out the wet organic material (for composting ) and all the inorganics (glass, metals, stones). All the metals recovered will be sold to the recycling industry.

We can also make a feasibility study based on the use of heat coming from our electricity plant in order to dry the wet organic material, in this way we can reduce the amount of waste we have to sort and clean in our Sorting Plant, and convert a bigger amount of waste in diesel and electricity.



	A	B	C
Input/hour	105,00 Tons	105,00 Tons	105,00 Tons
Hours/day	10,00	15,00	20,00
Input/day	1.050,00 Tons	1.575,00 Tons	2.100,00 Tons
days x week	6,00	6,00	6,00
Input/week	6.300,00 Tons	9.450,00 Tons	12.600,00 Tons
Weeks	46,00	46,00	46,00
<b>Input/año</b>	<b>289.800,00 Tons</b>	<b>434.700,00 Tons</b>	<b>579.600,00 Tons</b>





# FEASIBILITY STUDY KDV 15,000E

SIMULATOR KAYSERI CENTER

WASTE CENTER		
Type of Waste	Input	Output KDV
Industrial Waste	0	0
MSW	577.925	240.000
Waste Volume: Center Kayseri	577.925	240.000
		41,53%



	Tons	%
Landfill	51.883	8,98%
Composting	264.357	45,74%
Metal Recovery	21.685	3,75%
KDV Material	240.000	41,53%
	577.925	

MSW							
INPUT Tons		REJECTIONS			COMPOST	RECOVERED METALS	
577.925		Glass	Build.mat	Other	Wet Organic	Steel	Aluminium
		3,25%	2,05%	4,15%	48,15%	3,55%	0,36%
		18.782,56	11.847,46	23.983,89	278.270,89	20.516,34	2.071,86
Efficiency		95,00%	95,00%	95,00%	95,00%	96,00%	96,00%
		17.843,43	11.255,09	22.784,69	264.357,34	19.695,68	1.988,99
Feedstock KDV		rejections			COMPOST	VALORIZA	
240.000		41,53%			51.883,22	264.357,34	21.684,67





## INVESTMENT: SORTING PLANT

<b>SORTING PLANT</b>	<b>Amount €</b>
Front Loaders	1.067.450
Pre-Shredders	2.004.000
Sorting Machinery	13.412.000
Civil works	1.520.000
<b>Pre treatment Kayseri</b>	<b>18.003.450</b>



## SORTING PLANT : INCOMES

MSW	Tons	Price/ton	Amount
Incomes from Waste tipping fees	577.925	5,00	2.889.625
<u><i>Incomes (Metal Recovery)</i></u>			
Incomes Steel recovery	19.695,68	30,00	590.871
Incomes Aluminium recovery	1.988,99	300,00	596.696
			1.187.567

**Incomes Sorting Plant** **4.077.192**

Our Sorting Center will receive 2.88 million euros as a Waste management Tipping fees ( this is a very low price) and will also have 1.18 million euros incom coming from Recycling Industry for the the Steel and Aluminium sales. The center will receive a yearly Income of more than 4 million euros.



### SORTING PLANT: Total Operation Cost

SORTING PLANT KAYSERI						
Labour	Annual cost	ud/shift	shifts/day	use	Amount €	
Jefe de Planta	35.360	1	1	0,00%	0	
Supervisor	45.000	1	2	100,00%	90.000	
Operators	30.000	12	2	100,00%	720.000	
Front Loader Drivers	24.000	4	2	100,00%	192.000	
Maintenance	40.000	4	2	100,00%	320.000	
Labour						1.322.000
Energy consumption	Annual cost	ud/shift	shifts/day	hours/year	Amount €	
Front Loader	186,30	2	100,00%	5.520	1.028.376	
Pre-Shredders	252,00	2	100,00%	5.520	1.391.040	
Sorting Machinery	387,33	2	100,00%	5.520	2.138.063	
Civil works	1,13	2	100,00%	5.520	6.210	
Consumo Energia						4.563.689
Maintenance	CosteTurno€	Turnos/jorn	Importe			
Front Loader	1.067.450	5,60%	59.777	2	119.554	
Pre-Shredders	2.004.000	5,20%	104.208	2	23.333	
Sorting Machinery	13.412.000	7,60%	1.019.312	2	2.038.624	
Civil works	1.520.000	2,00%	30.400	2	60.800	
Maintenance						2.242.312
Diverse	Importe					
Quality control						42.000
Insurance	16.483.450	0,50%				82.417
Admon.						12.500
Other expenses						24.000
Diverse						160.917
<b>Operatcion Cost</b>						<b>8.288.918</b>



## SORTING PLANT: Final Disposal Cost

MSW	Tons	Tarifa €/Tn	Importe
Landfill final disposal	51.883	5,00	259.416
Composting final disposal	264.357	5,00	1.321.787
<b>WFD Waste Final Disposal</b>			<b>1.581.203</b>

Our Sorting Center will take all the sorted materials that we can not use in the KDV process to Final disposal. All the Wet Organic material to the composting plants (we have also the possibility to dry this material and then use it in the KDV process), and the rejected materials to the Landfill. The annual cost of this final disposal is 1.58 million euros.



## SORTING CENTER PROFIT

<b>ITF</b>	Incomes by Tipping fees	2.889.625
<b>IMR</b>	Incomes by Metal recovery	1.187.567
<b>CTI</b>	Center Total Incomes	<b>4.077.192</b>
<b>SOC</b>	Sorting Plant Operation Cost	-8.288.918
<b>WFD</b>	Landfill & Composting Final Disposal	-1.581.203
<b>MAD</b>	Machinery Depreciation 10% annual	-1.648.345
<b>CWD</b>	Civil works Depreciation 5% annual	-100.320
<b>CTC</b>	Center Total Cost	<b>-11.618.786</b>
<b>CMI</b>	Feedstock total cost	<b>-7.541.594</b>



## SORTING CENTER PROFIT

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Our Sorting Center have a deficit of more than 7.5 million euros per year because the Tipping fees paid by the waste producers are very low ( 5 euros /Ton) and are not able to cover all the center operation expenses.

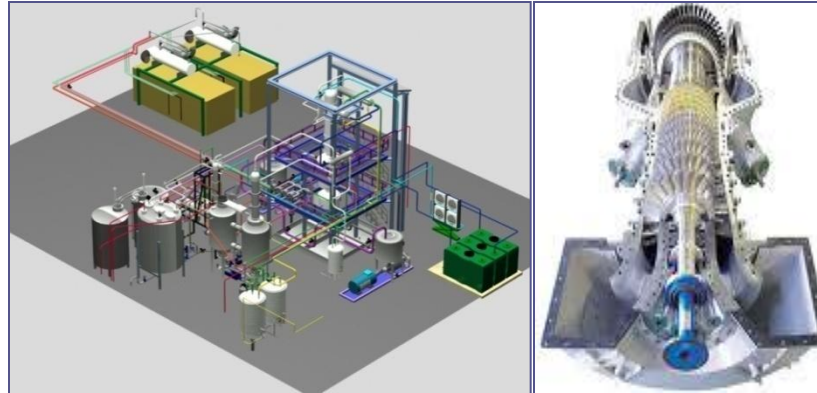
This means that the feedstock arrives to the KDV15,000E Center at a cost of 31.42 euros/Ton.



## COST OF KDV FEEDSTOCK

<b>SORTING CENTER MARGIN</b>	<b>-7.541.594</b>
FEEDSTOCK FOR KDV Tons	240.000
<b>Feedstock cost per Ton</b>	<b>-31,42</b>





## CHAPTER TWO

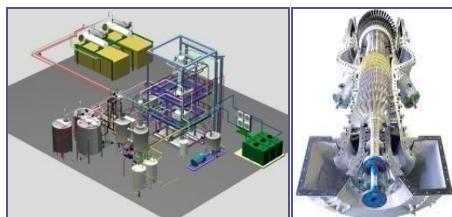
### The KDV15,000E plant





# FEASIBILITY STUDY

## KDV 15,000E



The KDV15,000E plant

### SENSITIVE VARIABLES KDV15000 PLANT

KDV	Reference
Working hours per year	8.000

GROSS PRODUCTION	
KDV15000 Nominal (Liters/hour)	15.000
Business Plan reduction	95,59%
Business Plan Production /hour	14.338

DIESEL DENSITY	
Diesel density KG/liters	0,825

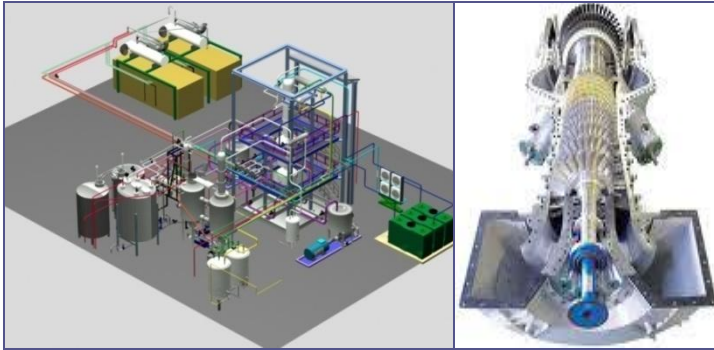
MATERIALS CATALYST & LIME	
Catalyst % Input	0,80%
Price Catalyst/Kg	3,00
Catalyst Recovery %	50,00%
Lime kg/hour	30,00
Price Lime	0,20

OPERATION COST	
Maintenance %/investment	2,00%
Social security %/Labour cost	30,00%
Annual Insurance % Investment	0,60%
Inorganics: % Landfill	8,00%
Ashes: Landfill cost / ton	8,00
Energy consumption: KW/hour KDV15000E	6300,00
Annual Depreciation	10,00%

ELECTRICITY PRODUCTION	
Kwh by 1 Diesel Liter	4,200
Selling Price €/KWh	0,100



The KDV15,000E plant



## INVESTMENT: KDV15000E PLANT

KDV 15000E	Amount €
Complete system KDV15000	49.800.000
Energy Prod.Module	18.000.000
<b>KDV15000E</b>	<b>67.800.000</b>



INPUT FEEDSTOCK		
INPUT per YEAR	240,000	Tons
Yield %	<b>33,3 %</b>	
Diesel Gross production	94.636	Tons
Diesel density	,825	
Diesel Gross production	114.711,000	Liters



OUTPUT		
Diesel <u>Gross production</u>	114.711.000	Liters/Year
Operating hours per year	8.000	
Diesel <u>production per hour</u>	14,338	Liters/ Hour
Production KW Hour	60,223	

### ANUAL OPERATION COST KDV15000E CENTER OF KAISERY

KDV15000E				
Catalyst		1.919.998		
Catalyst recovery	50,00%	-959.999		
Catalyst net consumption		959.999	3,000	2.879.997
Lime		240.000	0,200	48.000
<b>Materials</b>				<b>2.927.997</b>
<b>Feedstock Cost</b>		240.000		<b>7.540.846</b>
<b>Maintenance</b>		67.800.000	0,020	<b>1.356.000</b>
Shift Operator	1.100	15.400	15	231.000
Shift Supervisor	1.550	21.700	5	108.500
Maintenance Chief	2.100	29.400	2	58.800
Maintennce Auxiliar	1.450	20.300	5	101.500
Rotation Employee	1.100	15.400	2	30.800
Plant Supervisor	2.675	37.450	1	37.450
Social security		170.415	30,00%	170.415
<b>Labour</b>				<b>738.465</b>
Energy	6.300	8.000	0,1	5.040.000
<b>Energy</b>				<b>5.040.000</b>
Insurance		67.800.000	0,60%	406.800
Land Lease	40.000	8		300.000
Landfill disposal	8,00%	19.200	8,00	153.600
Administration cost		6.000	12	72.000
<b>Diverse</b>				<b>932.400</b>
Depreciation Equipments		67.800.000	10,00%	6.780.000
Depreciation Civil Works				
<b>Depreciation</b>				<b>6.780.000</b>
<b>Center Operation Cost</b>				<b>25.315.708</b>



## Global Operation Cost KDV15000

GOC KDV15000E	Amount
Materials	2.927.997
Feedstock	7.540.846
Maintenance	1.356.000
Labour	738.465
Energy	5.040.000
Diverse	932.400
Depreciacion	6.780.000
<b>GOC Kayseri</b>	<b>25.315.708</b>



GOC KDV15000E	LITER	KW/H
Materials	0,026	0,006
Feedstock	0,066	0,016
Maintenance	0,012	0,003
Labour	0,006	0,002
Energy	0,044	0,010
Diverse	0,008	0,002
Depreciacion	0,059	0,014
<b>GOC Kayseri</b>	<b>0,221</b>	<b>0,053</b>

Our KDV Center will be producing each liter of Diesel at a global cost of 22,1 cents. This means that our KWh will have a cost of 5,3 cents. This is including the cost of the feedstock (deficit of the sorting plant), the energy needed and the depreciation of all the investments.





## THE BIG NUMBERS

ELECTRICITY  
PRODUCTION

60.223 KWh



KWh production cost : 5,3 € cents

KWh selling price : 10,0 € cents





## CHAPTER THREE

### The feasibility study





The feasibility study

## SENSITIVE VARIABLES PROJECT FEASIBILITY

TAX & DEBT	
Income Tax	30,00%
Project Loan/Global Investment	85,00%
Long Term Loan Period	10 years
Long Term Loan Interest Rate	6,75%
Long Term Loan payment schema	french
Credit Line Interest Rate	7,50%
Credit Line term	1 year
Residual Value Equipments	25,00%



## GLOBAL INVESTMENT

<b>SORTING PLANT</b>	<b>Amount €</b>
Front Loaders	1.064.000
Pre-Shredders	2.004.000
Sorting Machinery	13.412.000
Civil works	1.520.000
Pre treatment Kayseri	18.000.000
<b>KDV 15000E</b>	<b>Amount €</b>
Complete system KDV15000	49.800.000
Energy Prod.Module	18.000.000
KDV15000E	67.800.000
<b>LAND AND PROJECT</b>	<b>Amount €</b>
Land & Site requirements	2.650.000
Pre-operation First year expenses	5.390.000
Working capital	2.160.000
L&P	10.200.000
<b>Global Budget</b>	<b>96.000.000</b>



## PROJECT FINANCING

Equity	14.400.000	15,00%
Long Term Loan	81.600.000	85,00%
Project Funds	96.000.000	100,00%

Our KDV project will be financed with 14.4 million euros Equity and a Bank Loan of 81.6 million euros.

- In our first year (maturity period) our project will have a Short term one year credit line to make all the advanced payments to be paid to the project suppliers, to buy the Land and site requirements and the initial project expenses including all the credit line interest.

After the initial year needed to build the center the Short term Credit Line will be cancelled with a Long Term 10 years Loan.



# FEASIBILITY STUDY

## KDV 15,000E



ALPHA K.A.T.

First Year  
Treasury  
(use of credit line)

PROJECT TREASURY	Mo 1	Mo 2	Mo 3	Mo 4	Mo 5	Mo 6	Mo 7	Mo 8	Mo 9	Mo 10	Mo 11	Mo 12	Period
Equity	14.400												14.400
Short Term Loan			30.000		17.000		23.000			11.600			81.600
Financing	14.400	0	30.000	0	17.000	0	23.000	0	0	11.600	0	0	96.000
<b>Incomes</b>	14.400	0	30.000	0	17.000	0	23.000	0	0	11.600	0	0	96.000
<b>1-INVESTMENTS</b>													
<b>Sorting plant</b>													
Front Loaders									1.064				1.064
Pre-Shredders									2.004				2.004
Sorting Machinery			5.365				5.365			2.682			13.412
Civil works			456			456			456		152		1.520
													18.000
<b>KDV15000</b>													
Order down payment	4.980												4.980
Diverse Payments			14.940		14.940		9.960						39.840
Start up										4.980			4.980
													49.800
<b>ENERGY PLANT</b>													
Order payment	1.800												1.800
Diverse Payments			5.400		5.400		3.600						14.400
Start up										1.800			1.800
													18.000
<b>LAND FOR PROJECT</b>													
Land and site require.	2.650												2.650
<b>2-PROJECT EXPENSES</b>													
Building permits	260												260
Activity permits						420							420
Engineering	250			250									500
Adminisration	9	9	9	9	9	9	9	9	9	9	9	9	108
Diverse exp.	25	25	25	25	25	25	25	25	25	25	25	25	300
Credit line interest	0	0	188	188	294	294	438	438	438	510	510	510	3.805
<b>Outcomes</b>	9.974	34	26.382	472	20.668	1.204	19.396	472	3.996	10.006	696	544	93.843
Cash Flow	4.426	-34	3.618	-472	-3.668	-1.204	3.604	-472	-3.996	1.594	-696	-544	
<b>Treasury</b>	4.426	4.392	8.010	7.538	3.870	2.667	6.270	5.799	1.803	3.397	2.701	2.157	



## LONG TERM LOAN

SORTING PLANT	18.000.000
KDV15000E	67.800.000
WORKING CAPITAL	10.200.000
<b>Global Investment</b>	<b>96.000.000</b>

External Financing	85,00%
<b>Long term Loan amount</b>	<b>81.600.000</b>
Years	10
Interest rate	6,75%

Y	Initial	Interest	Capital	Debt service	Balance
1	81.600.000	5.508.000	5.976.108	11.484.108	75.623.892
2	75.623.892	5.104.613	6.379.495	11.484.108	69.244.397
3	69.244.397	4.673.997	6.810.111	11.484.108	62.434.286
4	62.434.286	4.214.314	7.269.794	11.484.108	55.164.493
5	55.164.493	3.723.603	7.760.505	11.484.108	47.403.988
6	47.403.988	3.199.769	8.284.339	11.484.108	39.119.649
7	39.119.649	2.640.576	8.843.531	11.484.108	30.276.118
8	30.276.118	2.043.638	9.440.470	11.484.108	20.835.648
9	20.835.648	1.406.406	10.077.702	11.484.108	10.757.946
10	10.757.946	726.161	10.757.946	11.484.108	0
		<b>33.241.078</b>	<b>81.600.000</b>	<b>114.841.078</b>	

The first year credit line be converted in a Long Term Loan (10 years). The project will return every year (10 equal payments-french system) the same amount of 11.484.108 € as a Loan term loan debt service (capital plus interest)



## EBITDA 10 years production period (thousands 000)

### EBITDA

(thousands euros)

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Diesel prod.lts	114.711	114.711	114.711	114.711	114.711	114.711	114.711	114.711	114.711	114.711
Electricity prod.KWH	481.787	481.787	481.787	481.787	481.787	481.787	481.787	481.787	481.787	481.787
Price KWh	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10
Incomes	48.179	48.179	48.179	48.179	48.179	48.179	48.179	48.179	48.179	48.179
subventions	0	0	0	0	0	0	0	0	0	0
<b>TOTAL INCOMES</b>	<b>48.179</b>	<b>48.179</b>	<b>48.179</b>	<b>48.179</b>	<b>48.179</b>	<b>48.179</b>	<b>48.179</b>	<b>48.179</b>	<b>48.179</b>	<b>48.179</b>
Materials	2.928	2.928	2.928	2.928	2.928	2.928	2.928	2.928	2.928	2.928
Feedstock	5.793	5.793	5.793	5.793	5.793	5.793	5.793	5.793	5.793	5.793
Maintenance	1.356	1.356	1.356	1.356	1.356	1.356	1.356	1.356	1.356	1.356
Labour	738	738	738	738	738	738	738	738	738	738
Energy	5.040	5.040	5.040	5.040	5.040	5.040	5.040	5.040	5.040	5.040
Diverse	932	932	932	932	932	932	932	932	932	932
OPC	16.787	16.787	16.787	16.787	16.787	16.787	16.787	16.787	16.787	16.787
<b>Ebitda</b>	<b>31.391</b>	<b>31.391</b>	<b>31.391</b>	<b>31.391</b>	<b>31.391</b>	<b>31.391</b>	<b>31.391</b>	<b>31.391</b>	<b>31.391</b>	<b>31.391</b>
<b>Ebitda accumulated.</b>	<b>31.391</b>	<b>62.783</b>	<b>94.174</b>	<b>125.565</b>	<b>156.957</b>	<b>188.348</b>	<b>219.739</b>	<b>251.131</b>	<b>282.522</b>	<b>313.913</b>

**EBITDA (10 years) : 313,9 million €**



## NET PROFIT 10 years production period (thousands 000)

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Ebitda	31.391	31.391	31.391	31.391	31.391	31.391	31.391	31.391	31.391	31.391
Depreciation SORTING P	1.748	1.748	1.748	1.748	1.748	1.748	1.748	1.748	1.748	1.748
Depreciation KDV 15000	6.780	6.780	6.780	6.780	6.780	6.780	6.780	6.780	6.780	6.780
Interest	5.508	5.105	4.674	4.214	3.724	3.200	2.641	2.044	1.406	726
Profit Before Tax	17.355	17.758	18.189	18.649	19.139	19.663	20.222	20.819	21.457	22.137
Income Tax 30%	5.207	5.328	5.457	5.595	5.742	5.899	6.067	6.246	6.437	6.641
Net Profit	12.149	12.431	12.732	13.054	13.398	13.764	14.156	14.574	15.020	15.496
Net Profit accum.	12.149	24.579	37.312	50.366	63.763	77.528	91.683	106.257	121.277	136.772

**NET PROFIT (10 years) : 136,7 million €**



## CASH FLOW 10 years production period (thousands 000)

INCOMES	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Period 10
Diesel prod.lts 000	114.711	114.711	114.711	114.711	114.711	114.711	114.711	114.711	114.711	114.711	1.147.112
Electricity prod.KWH 000	481.787	481.787	481.787	481.787	481.787	481.787	481.787	481.787	481.787	481.787	4.817.872
Price KWh	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10
Ord.Incomes	48.179	48.179	48.179	48.179	48.179	48.179	48.179	48.179	48.179	48.179	114.711
Subventions	0	0	0	0	0	0	0	0	0	0	0
<b>INCOMES</b>	<b>48.179</b>	<b>48.179</b>	<b>48.179</b>	<b>48.179</b>	<b>48.179</b>	<b>48.179</b>	<b>48.179</b>	<b>48.179</b>	<b>48.179</b>	<b>48.179</b>	<b>481.787</b>

OUTCOMES	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Period 10
Materials	2.928	2.928	2.928	2.928	2.928	2.928	2.928	2.928	2.928	2.928	29.280
Feedstock	5.793	5.793	5.793	5.793	5.793	5.793	5.793	5.793	5.793	5.793	57.925
Maintenance	1.356	1.356	1.356	1.356	1.356	1.356	1.356	1.356	1.356	1.356	13.560
Labour	738	738	738	738	738	738	738	738	738	738	7.385
Energy	5.040	5.040	5.040	5.040	5.040	5.040	5.040	5.040	5.040	5.040	50.400
Diverse	932	932	932	932	932	932	932	932	932	932	9.324
OPC	16.787	16.787	16.787	16.787	16.787	16.787	16.787	16.787	16.787	16.787	167.874
Interest	5.508	5.105	4.674	4.214	3.724	3.200	2.641	2.044	1.406	726	33.241
Capital Return	5.976	6.379	6.810	7.270	7.761	8.284	8.844	9.440	10.078	10.758	81.600
Debt Service	11.484	11.484	11.484	11.484	11.484	11.484	11.484	11.484	11.484	11.484	114.841
Taxes	5.207	5.328	5.457	5.595	5.742	5.899	6.067	6.246	6.437	6.641	58.617
<b>Outcomes</b>	<b>33.478</b>	<b>33.599</b>	<b>33.728</b>	<b>33.866</b>	<b>34.013</b>	<b>34.170</b>	<b>34.338</b>	<b>34.517</b>	<b>34.708</b>	<b>34.913</b>	<b>341.332</b>

Cash Flow period	14.701	14.580	14.451	14.313	14.165	14.008	13.840	13.661	13.470	13.266	140.456
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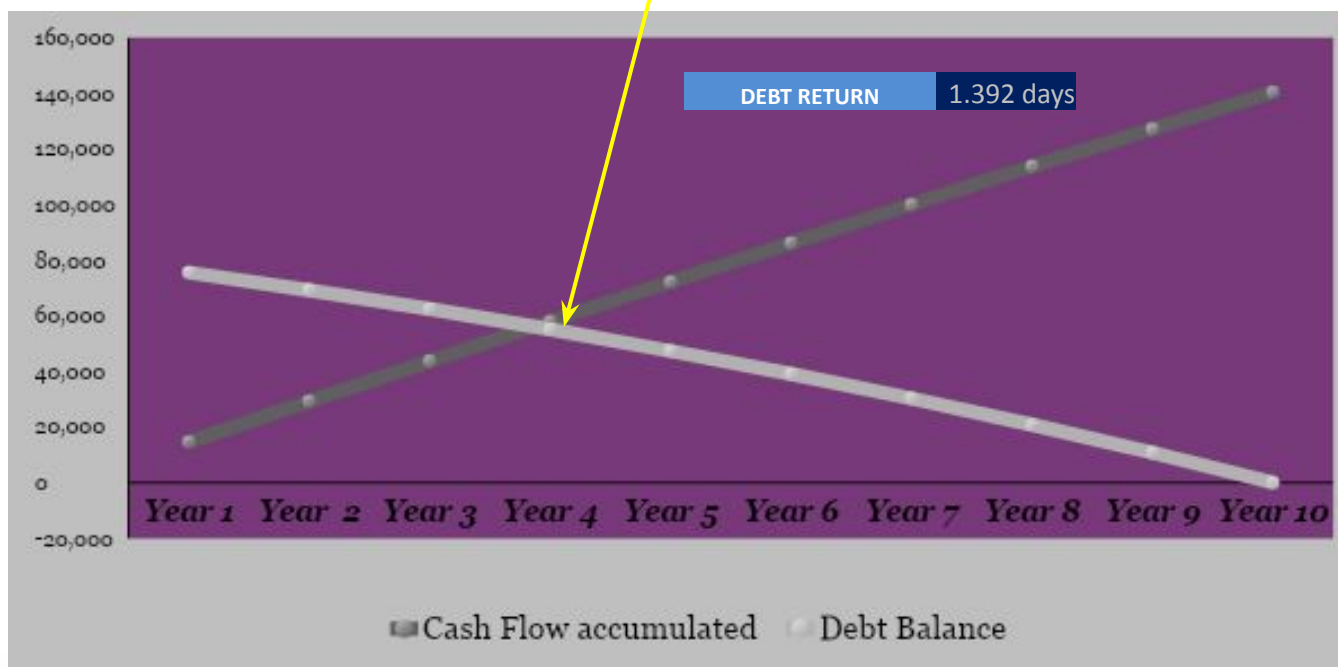
<b>Cash Flow accumulated</b>	<b>14.701</b>	<b>29.280</b>	<b>43.731</b>	<b>58.044</b>	<b>72.209</b>	<b>86.217</b>	<b>100.058</b>	<b>113.719</b>	<b>127.189</b>	<b>140.456</b>	<b>140.456</b>
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**CASH FLOW (10 years) : 140,4 million €**



## TREASURY

TESORY/DEBT	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Incomes	48.179	48.179	48.179	48.179	48.179	48.179	48.179	48.179	48.179	48.179
Outcomes	33.478	33.599	33.728	33.866	34.013	34.170	34.338	34.517	34.708	34.913
Cash Flow period	14.701	14.580	14.451	14.313	14.165	14.008	13.840	13.661	13.470	13.266
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Cash Flow accumulated	14.701	29.280	43.731	58.044	72.209	86.217	100.058	113.719	127.189	140.456
Debt Balance	75.624	69.244	62.434	55.164	47.404	39.120	30.276	20.836	10.758	0





## GLOBAL PAYBACK

**GLOBAL PAYBACK**      Prepayment debt / papayment equity

Incomes	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Period 10
Diesel prod.Its 000	114.711	114.711	114.711	114.711	114.711	114.711	114.711	114.711	114.711	114.711	1.147.112
Electricity prod.KWH 000	481.787	481.787	481.787	481.787	481.787	481.787	481.787	481.787	481.787	481.787	4.817.872
Price KWh	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10
<b>Incomes</b>	<b>48.179</b>	<b>48.179</b>	<b>48.179</b>	<b>48.179</b>	<b>48.179</b>	<b>48.179</b>	<b>48.179</b>	<b>48.179</b>	<b>48.179</b>	<b>48.179</b>	<b>481.787</b>
Outcomes	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Period 10
OPC	16.787	16.787	16.787	16.787	16.787	16.787	16.787	16.787	16.787	16.787	167.874
Interest	5.508	5.105	4.674	4.214	0	0	0	0	0	0	19.501
Capital Return	5.976	6.379	6.810	7.270	0	0	0	0	0	0	26.436
Debt Service	11.484	11.484	11.484	11.484	0	0	0	0	0	0	45.936
Taxes	5.207	5.328	5.457	5.595	6.859	6.859	6.859	6.859	6.859	6.859	62.739
<b>Outcomes</b>	<b>33.478</b>	<b>33.599</b>	<b>33.728</b>	<b>33.866</b>	<b>23.646</b>	<b>23.646</b>	<b>23.646</b>	<b>23.646</b>	<b>23.646</b>	<b>23.646</b>	<b>276.540</b>
Debt Prepayment	0	0	0	55.164	0	0	0	0	0	0	55.164
Equity Prepayment	0	0	0	0	14.400	0	0	0	0	0	14.400
<b>Cash Flow period</b>	<b>14.701</b>	<b>14.580</b>	<b>14.451</b>	<b>-40.852</b>	<b>10.132</b>	<b>24.532</b>	<b>24.532</b>	<b>24.532</b>	<b>24.532</b>	<b>24.532</b>	<b>135.674</b>
<b>Cash Flow accum.</b>	<b>14.701</b>	<b>29.280</b>	<b>43.731</b>	<b>2.879</b>	<b>13.011</b>	<b>37.544</b>	<b>62.076</b>	<b>86.609</b>	<b>111.141</b>	<b>135.674</b>	<b>135.674</b>

Our project is able to payback the Loan Balance after 4 operation years.

Our project is able to payback all the funds employed in the project included the equity funds after 5 operation years.



## INTERNAL RETURN RATE ANALYSIS

IRR EQUITY				
GLOBAL INVESTMENT	96.000.000			
EQUITY	14.400.000	15,00%		
RESIDUAL VALUE	25,00%	24.000.000		
a	INVESTMENT	CASH FLOW	RES,VALUE	TOTAL FLOW
0	-14.400.000			-14.400.000
1		14.700.718		14.700.718
2		14.579.702		14.579.702
3		14.450.517		14.450.517
4		14.312.613		14.312.613
5		14.165.399		14.165.399
6		14.008.249		14.008.249
7		13.840.491		13.840.491
8		13.661.410		13.661.410
9		13.470.240		13.470.240
10		13.266.167	24.000.000	37.266.167
	-14.400.000	140.455.506	24.000.000	150.055.506
			<b>TIR</b>	<b>101,27%</b>

IRR PROJECT				
GLOBAL INVESTMENT	96.000.000			
PROJECT	96.000.000	100,00%		
RESIDUAL VALUE	25,00%	24.000.000		
a	INVESTMENT	CASH FLOW	RES,VALUE	TOTAL FLOW
0	-96.000.000			-96.000.000
1		24.532.426		24.532.426
2		24.532.426		24.532.426
3		24.532.426		24.532.426
4		24.532.426		24.532.426
5		24.532.426		24.532.426
6		24.532.426		24.532.426
7		24.532.426		24.532.426
8		24.532.426		24.532.426
9		24.532.426		24.532.426
10		24.532.426	24.000.000	48.532.426
	-96.000.000	245.324.261	24.000.000	173.324.261
			<b>TIR</b>	<b>23,07%</b>



## BREAK-EVEN ANALYSIS



**Break-even 8.524 Lts/hour (60% of expected 14.338 Lts/hour)**



### PROJECTED BALANCE SHEET

PROJECTED BALANCE (PERIOD FROM MATURITY YEAR 00 TO YEAR 10)

ASSETS	0	1	2	3	4	5	6	7	8	9	10
Cash	2.157	16.858	31.437	45.888	60.201	74.366	88.374	102.215	115.876	129.346	142.613
Fixed Assets	88.450	88.450	88.450	88.450	88.450	88.450	88.450	88.450	88.450	88.450	88.450
Depreciation		-8.528	-17.057	-25.585	-34.113	-42.642	-51.170	-59.698	-68.227	-76.755	-85.283
<b>ASSETS</b>	<b>90.607</b>	<b>96.779</b>	<b>102.831</b>	<b>108.753</b>	<b>114.537</b>	<b>120.174</b>	<b>125.654</b>	<b>130.966</b>	<b>136.100</b>	<b>141.041</b>	<b>145.779</b>

LIABILITIES & EQUITY	0	1	2	3	4	5	6	7	8	9	10
Equity	14.400	14.400	14.400	14.400	14.400	14.400	14.400	14.400	14.400	14.400	14.400
First year Loss	-5.393	-5.393	-5.393	-5.393	-5.393	-5.393	-5.393	-5.393	-5.393	-5.393	-5.393
Net Margin	0	12.149	24.579	37.312	50.366	63.763	77.528	91.683	106.257	121.277	136.772
Credit Line	81.600										
Long Term Loan	0	75.624	69.244	62.434	55.164	47.404	39.120	30.276	20.836	10.758	0
<b>L &amp; EQUITY</b>	<b>90.607</b>	<b>96.779</b>	<b>102.831</b>	<b>108.753</b>	<b>114.537</b>	<b>120.174</b>	<b>125.654</b>	<b>130.966</b>	<b>136.100</b>	<b>141.041</b>	<b>145.779</b>



# KCS KAYSERI CALCULATIONS SIMULATOR

A.T.

### SIMULATOR KAYSERI CENTER

#### WASTE CENTER

Type of Waste	Input	Output KDV
Industrial Waste	0	0
MSW	577.925	240.000
Waste Volume: Center Kayseri		577.925
		41,53%

	Tons	%
Landfill	51.883	8,98%
Composting	264.357	45,74%
Metal Recovery	21.685	3,75%
KDV Material	240.000	41,53%
<b>Total</b>	<b>577.925</b>	

#### Break even Lts/Hour

Break-even: **8.523,75** Ltrs /hour

### TRESURY/DEBT

DEBT RETURN	1,392 days
GLOBAL PAYBACK	1,629 days

Ayuda inicial Municipio	0,00%	0
Endeudamiento inicial:	85,00%	
	81.600.000	6,75%

Interest rate

Equity	15,00%	TIR RP
	14.400.000	101,27%
Proyecto	100,00%	TIR PROJ
	96.000.000	23,07%

RESULTS	Year	Period
MW	481.787.166	4.817.871.660
KWh selling p.	0,1	0,1
Incomes	48.178.717	481.787.166
Cost	-25.315.708	-253.157.079
Interest	-3.324.108	-33.241.078
Taxes	-5.861.670	-58.616.703
<b>Net Profit</b>	<b>13.677.231</b>	<b>136.772.306</b>

PROJECT PROFIT: **136.772.306**

	Cash Flow	CF Accum.	LT DEBT
			0
1	14.700.718	14.700.718	75.623.892
2	14.579.702	29.280.420	69.244.397
3	14.450.517	43.730.938	62.434.286
4	14.312.613	58.043.550	55.164.493
5	14.165.399	72.208.949	47.403.988
6	14.008.249	86.217.198	39.119.649
7	13.840.491	100.057.690	30.276.118
8	13.661.410	113.719.099	20.835.648
9	13.470.240	127.189.339	10.757.946
10	13.266.167	140.455.506	0
	<b>140.455.506</b>		

#### KDV15000E

Materials (Catalyst & Lime)	2.927.997
Feedstock: Sorting center	7.540.846
Maintenance	1.356.000
Labour	738.465
Energy	3.040.000
Diverse	932.400
Depreciation	6.780.000
<b>Operating Cost KDVcenter</b>	<b>23.315.708</b>

Production: **114.711.230** Ltrs Year

Production: **14.338,90** L/H  
Production cost: **0,221** €/liter

Production: **60.223,40** KWH  
Production cost: **0,0525** €/KWH

#### SORTING PLANT

	Importe €
Labour	1.322.000
Energy	4.563.689
Maintenance	2.241.925
Diverse	160.900
Depreciation	1.748.320
<b>Operation Cost</b>	<b>10.036.835</b>
<b>Waste Management</b>	<b>-2.495.989</b>
<b>Margin (cost of kdv feedstock)</b>	<b>7.540.846</b>

	Importe €
KDV15000E / tons	240.000
Coste de Operación/Ton	
Gestión materiales/Ton	
Feedstock Net cost per Ton	<b>31,42 €</b>

	Importe €
Ingreso Input Mat.	-2.889.625
Venta Acero	-590.871
Venta aluminio	-596.696
Gts.Vertedero	259.416
Gts.Compostaje	1.321.787
Gestión Materiales	-2.495.989

#### Waste management

	Price / Ton
Tipping Fee Industrial waste	-5,00
Tipping Fee MSW	-5,00
Incomes Steel recovery	-30,00
Incomes Aluminium recovery	-300,00

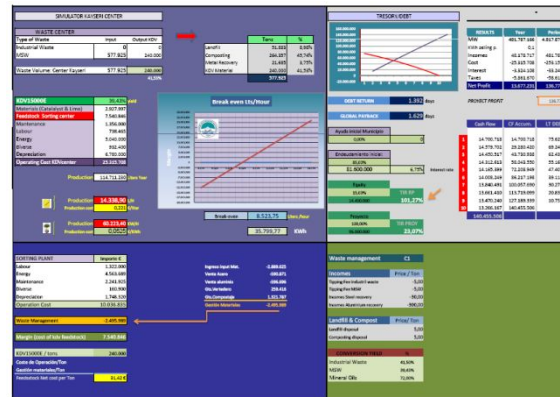
	Price/ Ton
Landfill disposal	5,00
Composting disposal	5,00

	CONVERSION YIELD	%
Industrial Waste		41,50%
MSW		39,43%
Mineral Oils		72,00%



## KDV 15,000E



Business Plan Kayseri KDV15000E:  
Done by Alphatek SL, an Alphakat company on May 16 2010.

