

Green Car Sharing GmbH



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Agenda

- Description
- Market Analysis
- Technology
- Capacity
- Cost Calculation
- Conclusion

Description

- Green Car Sharing GmbH
 - Car Sharing using Plug-in Hybrid Cars
 - Charging stations are operated at FH Aachen and Campus Jülich
 - Car concept and charging technology provided by technical partners
 - Maintenance and repair provided by technical partners

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Market Analysis

- Conventional Car Sharing

- Price per hour

- 07:00 – 23:00: 1,90 €
- 23:00 – 07:00: 0,00 €

- Price for one day (24 hours): 22,00 €

- Price for one week (7 days): 132,00 €

- Price per km

- Up to 100 km: 0,30 €
- From the 101st km on: 0,20 €



Prices including VAT

Market Analysis

- Public transport:

- By bus

- One way ticket: 4,50 €
 - Monthly ticket: 99,50 €

- Service times (Monday to Friday):
 - Aachen: First departure: 6:29 am; Last arrival: 19:52 pm
 - Jülich: First departure: 6:21 am; Last arrival: 18:28 pm
 - Journey time varies between 47 min – 1 h 13 min
 - Departure once every hour



Prices including VAT

Market Analysis

- Public transport:

- By train

- One way ticket: 7,10 €

- Monthly ticket: 136,40 €

- Service times (Monday to Friday):

- Aachen: First departure: 3:38 am; Last arrival: 0:07 am

- Jülich: First departure: 4:46 am; Last arrival: 22:43 pm

- Journey time varies between 1 h 02 min – 1 h 41 min

- Departure once every hour (from Aachen to Jülich)

- Departure twice every hour (from Jülich to Aachen)



Prices including VAT

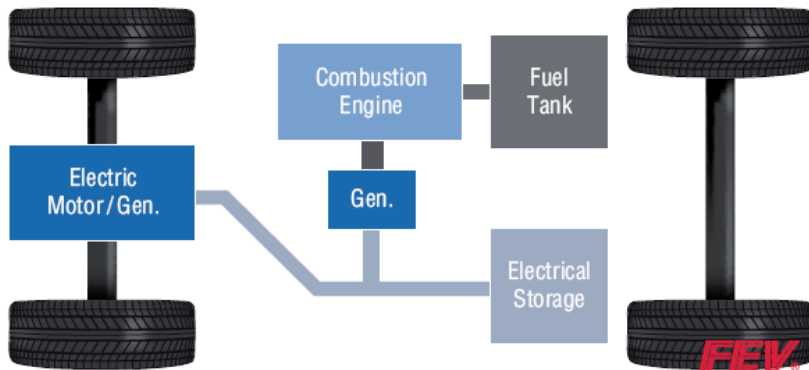
Market Analysis

	Aachen	Jülich
Students	9.500	2000
Professors	220	80
Research staff	450	130
Non-FH teachers	n.s.	70
Sum (appr.)	10.200	2.300

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Technology



Electric Range 100km

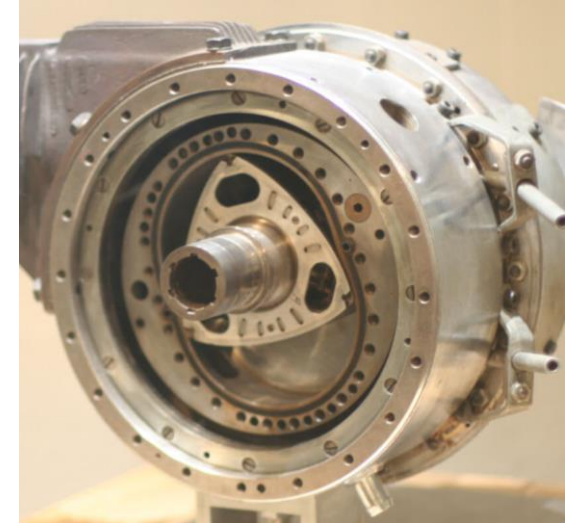
Electric Power 30 kW

Battery pack ~21kWh

Range extender with Wankel-technology

Range of 600km possible

Costs ~ 15000€ car +5000€ for the additional equipment



Technology

- Charging Technology

- 1) Charging station

- Electrical power 40 kW
- 20 kWh battery: charging time appr. 1 hour
- 20 kWh battery equals 2 litres of gasoline
- Designed for commercial use
- Special plug

- 2) Wall Box

- 20 kWh battery: charging time appr. 2 hours
- Designed for private use (garage, carport)
- Special plug

- 3) Regular Plug

- Electrical power 3,7 kW
- 20 kWh battery: charging time appr. 10 hours
- Regular plug and socket



Source: wdr.de



Source: stern.de

Technology

- Charging stations currently operated by Stawag Aachen:



Source: stawag.de

Technology

- Power supply
 - Local electricity supplier
 - Standard tariff: StromSTA
 - Electricity from 100% renewable energy sources: StromSTA Watergreen
 - certified by TÜV Nord Umweltschutz



		StromSTA	StromSTA Watergreen
Variable Price	ct / kWh	14,30	18,79
Base Price	€ / Year	55,20	127,83

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Capacity

- Two departments
 - Headquarter in Aachen
 - Subsidiary in Jülich
- Pool of 50 cars
 - 25 based at Aachen
 - 25 based at Jülich
- Possible future subsidiary
 - Forschungszentrum Jülich (4500 employees)



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Investment

Topic	Description	Investment	Depreciation Time	Depreciation in € /year
Buildings	Officecontainer 1	5.000,00 €	20	250,00 €
	Officecontainer 2	5.000,00 €	20	250,00 €
	Charging Stations	250.000,00 €	10	25.000,00 €
	Supply Lines	10.000,00 €	10	1.000,00 €
Sum of Buildings		270.000,00 €		
Equipment	Tools	5.000,00 €	10	500,00 €
	Tires	250.000,00 €	5	50.000,00 €
	Spare Parts	50.000,00 €	10	5.000,00 €
	Office Equipment	5.000,00 €	4	1.250,00 €
Sum of Equipment		310.000,00 €		
Vehicles	Fiat 500 1-50	1.000.000,00 €	5	200.000,00 €
	Maintenance car	25.000,00 €	5	5.000,00 €
	Trailer	10.000,00 €	5	2.000,00 €
Sum of Vehicles		1.035.000,00 €		
Unexpected		100.000,00 €	0	
Circulating Capital		20.000,00 €	0	
Sum of Investments		1.735.000,00 €		

Investment

Interest Paid on Dept				
	Balance of Dept	Interest Rate (%)	Interest Costs Paid Per Year	Repayment
1. Year	735.000,00 €	6,00	44.100,00 €	73.500,00 €
2. Year	661.500,00 €	6,00	39.690,00 €	73.500,00 €
3. Year	588.000,00 €	6,00	35.280,00 €	73.500,00 €
4. Year	514.500,00 €	6,00	30.870,00 €	73.500,00 €
5. Year	441.000,00 €	6,00	26.460,00 €	73.500,00 €
6. Year	367.500,00 €	6,00	22.050,00 €	73.500,00 €
7. Year	294.000,00 €	6,00	17.640,00 €	73.500,00 €
8. Year	220.500,00 €	6,00	13.230,00 €	73.500,00 €
9. Year	147.000,00 €	6,00	8.820,00 €	73.500,00 €
10. Year	73.500,00 €	6,00	4.410,00 €	73.500,00 €
Total Interest Payed			242.550,00 €	
Total Repayment				735.000,00 €

Cost Calculation

Variable Costs			
Topic	Description	costs / car / year	costs /car /km
Insurance	fully comprehensive cover	1.200,00 €	0,05 €
Maintenance	Full Service every year	1.000,00 €	0,04 €
Car cleaning	Every Second Week full cleaning	480,00 €	0,02 €
Parking lot rent	Calculatory costs	588,00 €	0,02 €
Connection Charges		77,00 €	0,00 €
Electricity + Heating + Water	Office container	20,00 €	0,00 €
Fuel costs	Non Electric mode	232,50 €	0,062 €
Power costs	Electric Mode	907,38 €	0,043 €
Sum of Variable Costs		4.504,88 €	0,24 €

Cost Calculation

Labour costs			
Topic	Description	Monthly Salary	Annual Salary
Management	Anna	4.968,33 €	59.620,00 €
	Mirjam	2.484,17 €	29.810,00 €
	Dominik	2.484,17 €	29.810,00 €
Student Temporary Workers	Mustermann1	673,00 €	8.076,00 €
	Musterfrau2	673,00 €	8.076,00 €
	Mustermann2	673,00 €	8.076,00 €
Sum of labour costs		11.955,67 €	143.468,00 €

Cost Calculation

Selfcosts										
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Utilization of Capacity (%)	50	75	100	100	100	100	100	100	100	100
km /year	625000	937500	1250000	1250000	1250000	1250000	1250000	1250000	1250000	1250000
Depreciation Costs	290.250,00 €	290.250,00 €	290.250,00 €	290.250,00 €	290.250,00 €	290.250,00 €	290.250,00 €	290.250,00 €	290.250,00 €	290.250,00 €
Financing Costs	44.100,00 €	39.690,00 €	35.280,00 €	30.870,00 €	26.460,00 €	22.050,00 €	17.640,00 €	13.230,00 €	8.820,00 €	4.410,00 €
Labour Costs	143.468,00 €	143.468,00 €	143.468,00 €	143.468,00 €	143.468,00 €	143.468,00 €	143.468,00 €	143.468,00 €	143.468,00 €	143.468,00 €
Variable Costs	149.562,50 €	224.343,75 €	299.125,00 €	299.125,00 €	299.125,00 €	299.125,00 €	299.125,00 €	299.125,00 €	299.125,00 €	299.125,00 €
Total of Costs	627.380,50 €	697.751,75 €	768.123,00 €	763.713,00 €	759.303,00 €	754.893,00 €	750.483,00 €	746.073,00 €	741.663,00 €	737.253,00 €
Costs /km	1,00 €	0,74 €	0,61 €	0,61 €	0,61 €	0,60 €	0,60 €	0,60 €	0,59 €	0,59 €

	Year 1	Year 2	Year 3
Utilization of Capacity (%)	50	75	100
km /year	625000	937500	1250000
Depreciation Costs	290.250,00 €	290.250,00 €	290.250,00 €
Financing Costs	44.100,00 €	39.690,00 €	35.280,00 €
Labour Costs	143.468,00 €	143.468,00 €	143.468,00 €
Variable Costs	149.562,50 €	224.343,75 €	299.125,00 €
Total of Costs	627.380,50 €	697.751,75 €	768.123,00 €
Costs /km	1,00 €	0,74 €	0,61 €

Cost Calculation

Revenue			
Year	km	price/km	Revenue
1. Year	625000	0,55 €	403.750,00 €
2. Year	937500	0,55 €	605.625,00 €
3. Year	1250000	0,55 €	807.500,00 €
4. Year	1250000	0,55 €	807.500,00 €
5. Year	1250000	0,55 €	807.500,00 €
6. Year	1250000	0,55 €	807.500,00 €
7. Year	1250000	0,55 €	807.500,00 €
8. Year	1250000	0,55 €	807.500,00 €
9. Year	1250000	0,55 €	807.500,00 €
10. Year	1250000	0,55 €	807.500,00 €

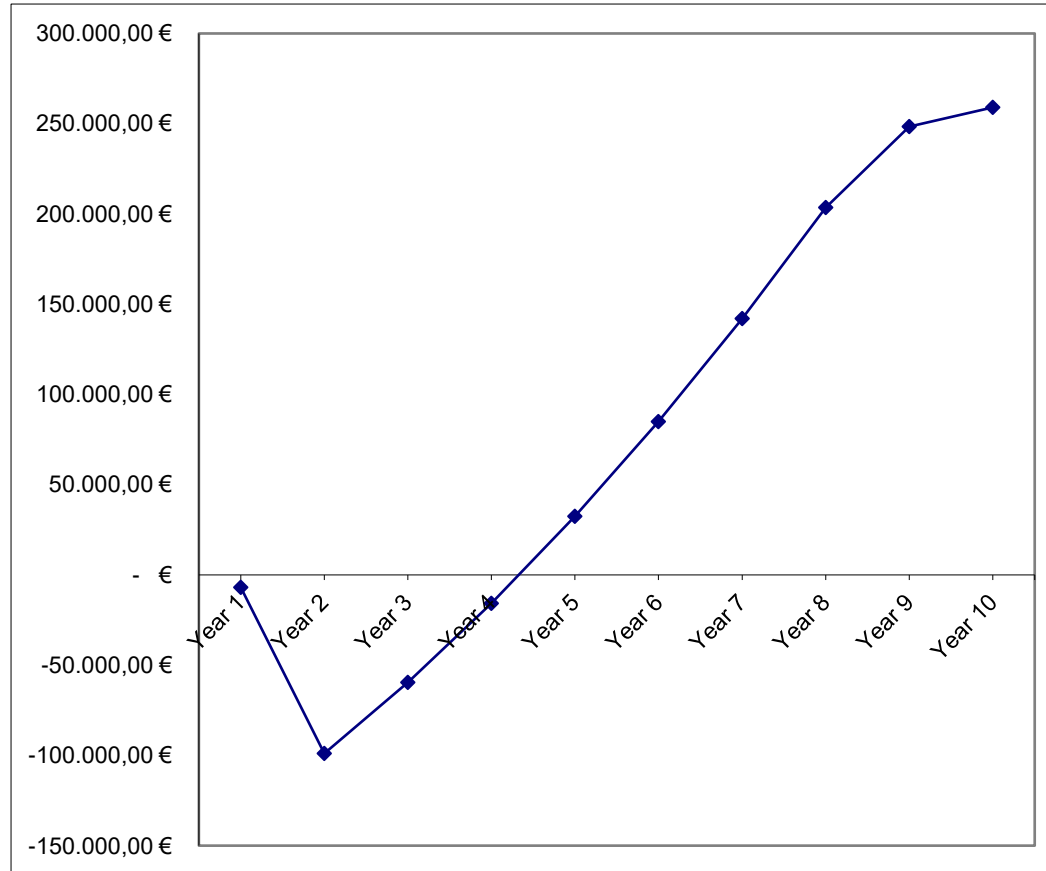
Revenue = km price* km driven per year + annual fee (1200€ per user)

Cash Flow

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Revenue	403.750,00 €	605.625,00 €	807.500,00 €	807.500,00 €	807.500,00 €	807.500,00 €	807.500,00 €	807.500,00 €	807.500,00 €	807.500,00 €
Depreciation Cost	290.250,00 €	290.250,00 €	290.250,00 €	290.250,00 €	290.250,00 €	290.250,00 €	290.250,00 €	290.250,00 €	290.250,00 €	290.250,00 €
Labour Costs	143.468,00 €	143.468,00 €	143.468,00 €	143.468,00 €	143.468,00 €	143.468,00 €	143.468,00 €	143.468,00 €	143.468,00 €	143.468,00 €
Variable Costs	149.562,50 €	224.343,75 €	299.125,00 €	299.125,00 €	299.125,00 €	299.125,00 €	299.125,00 €	299.125,00 €	299.125,00 €	299.125,00 €
Financing Costs	44.100,00 €	39.690,00 €	35.280,00 €	30.870,00 €	26.460,00 €	22.050,00 €	17.640,00 €	13.230,00 €	8.820,00 €	4.410,00 €
Loss carried forward	- €	- 223.630,50 €	- 315.757,25 €	- 276.380,25 €	- 232.593,25 €	- 184.396,25 €	- 131.789,25 €	- 74.772,25 €	- 13.345,25 €	- €
Profit before tax	- 223.630,50 €	- 315.757,25 €	- 276.380,25 €	- 232.593,25 €	- 184.396,25 €	- 131.789,25 €	- 74.772,25 €	- 13.345,25 €	52.491,75 €	70.247,00 €
Taxes (40%)	- €	- €	- €	- €	- €	- €	- €	- €	20.996,70 €	28.098,80 €
Profit after taxes	- 223.630,50 €	- 315.757,25 €	- 276.380,25 €	- 232.593,25 €	- 184.396,25 €	- 131.789,25 €	- 74.772,25 €	- 13.345,25 €	31.495,05 €	42.148,20 €
Cashflow (Net profit)	66.619,50 €	- 25.507,25 €	13.869,75 €	57.656,75 €	105.853,75 €	158.460,75 €	215.477,75 €	276.904,75 €	321.745,05 €	332.398,20 €
Repayment	73.500,00 €	73.500,00 €	73.500,00 €	73.500,00 €	73.500,00 €	73.500,00 €	73.500,00 €	73.500,00 €	73.500,00 €	73.500,00 €
Dividend	- 6.880,50 €	- 99.007,25 €	- 59.630,25 €	- 15.843,25 €	- 32.353,75 €	- 84.960,75 €	- 141.977,75 €	- 203.404,75 €	248.245,05 €	258.898,20 €

	Year 1	Year 2	Year 3	Year 4	Year 5
Revenue	403.750,00 €	605.625,00 €	807.500,00 €	807.500,00 €	807.500,00 €
Depreciation Costs	290.250,00 €	290.250,00 €	290.250,00 €	290.250,00 €	290.250,00 €
Labour Costs	143.468,00 €	143.468,00 €	143.468,00 €	143.468,00 €	143.468,00 €
Variable Costs	149.562,50 €	224.343,75 €	299.125,00 €	299.125,00 €	299.125,00 €
Financing Costs	44.100,00 €	39.690,00 €	35.280,00 €	30.870,00 €	26.460,00 €
Loss carried forward	- €	- 223.630,50 €	- 315.757,25 €	- 276.380,25 €	- 232.593,25 €
Profit before tax	- 223.630,50 €	- 315.757,25 €	- 276.380,25 €	- 232.593,25 €	- 184.396,25 €
Taxes (40%)	- €	- €	- €	- €	- €
Profit after taxes	- 223.630,50 €	- 315.757,25 €	- 276.380,25 €	- 232.593,25 €	- 184.396,25 €
Cashflow (Net profit + Depreciation costs)	66.619,50 €	- 25.507,25 €	13.869,75 €	57.656,75 €	105.853,75 €
Repayment	73.500,00 €	73.500,00 €	73.500,00 €	73.500,00 €	73.500,00 €
Dividend	- 6.880,50 €	- 99.007,25 €	- 59.630,25 €	- 15.843,25 €	32.353,75 €

Profitability



Total Dividend cumulated after 10 years : 788.479 €

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Conclusion

Technology	Total Costs / Year
Private Car	~ 7.500 €
Public Transport	~ 1.400 €
Conventional Car Sharing	~ 10.000 €
Green Car Sharing	~ 17.500 €
Prices including VAT	

Subsidies are mandatory

→ Green Car Sharing becomes competitive