



Wind Power Ltd.

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- Market Analysis
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Background

- The energy demand of the world rises
- Fossil energy will be depleted
- Renewable energy is the future
- The renewable energy type with the best level of efficiency and eminently suitable for Germany:

Wind Power

Business concept

- Buying a piece of land
- Purchase of a 2,3 MW wind turbine, including transport and construction
- Generating electricity by wind energy
- Sale the converted power



Market Analysis

Location: Meppen
(North German lowlands)

Mean wind speed: 6,34 m/s

Mean wind capacity: 289,1 W/m²

Hours of full Throttle: 1781 h/a

Wind turbine: ENERCON E70

Max. plant capacity: 2,3 MW

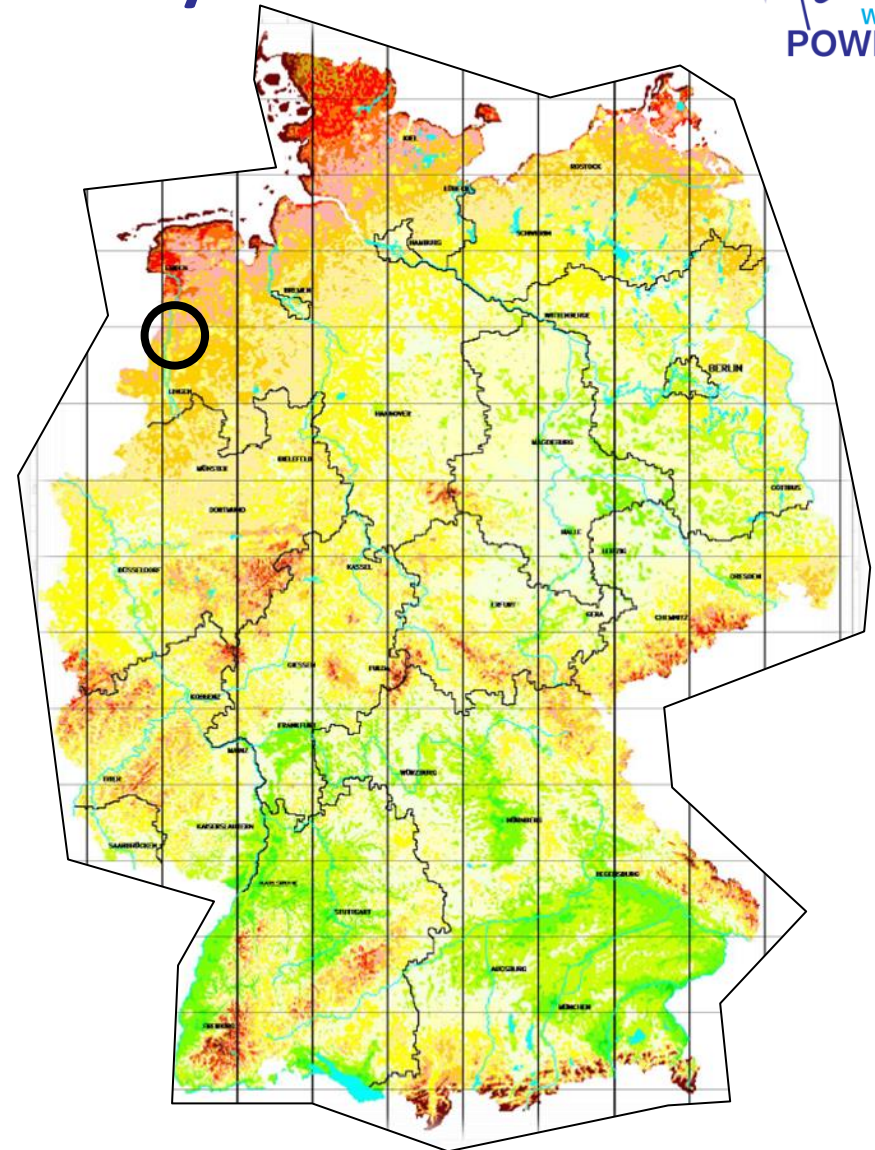
Mean plant capacity: 0,468 MW

Total Production: 4100000 kWh/a

Selling price: [§29 EEG]

9,20 Cent/kWh start-up remuneration in the first five years

5,02 Cent/kWh basic remuneration



Herausgeber und Copyright:
Deutscher Wetterdienst
Abteilung Klima- und Umweltberatung
Offenbach, 2004

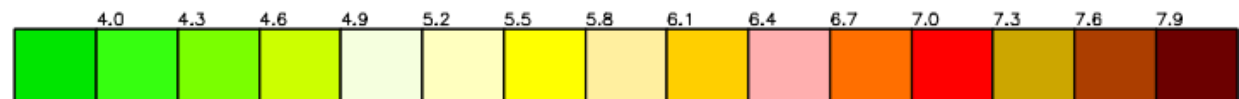


Jahresmittel der Windgeschwindigkeit
– 80 m über Grund –
in der Bundesrepublik Deutschland

Statistisches Windfeldmodell (SWM)
Bezugszeitraum : 1981 bis 2000
Maßstab 1 : 2 500 000

Landesgrenzen: schwarz, Gewässer: blau

WINDGESCHWINDIGKEIT (M/S)



Financing concept

There are two parts:

- 1st Record a bank loan for 40% of the total investment with fixed interest rate out of 7%
- 2nd Find about 30 shareholders which invest ca. 70.000€ in this project



Calculation of the investment and depreciation costs

	Investment expenditure	Depreciation (%)	Depreciation costs
Plant			
Cost of land	165.600 €	0%	- €
Enercon E70	953.235 €	8,33%	79.404 €
Transport	124.200 €	8,33%	10.346 €
Assembly	372.600 €	8,33%	31.038 €
Foundations	165.600 €	8,33%	13.794 €
Fence, lights, etc.	21.735 €	8,33%	1.811 €
Planning	62.100 €	8,33%	5.173 €
Sum	1.865.070 €		141.566 €
Facilities			
Grid connection	142.830 €	8,33%	11.898 €
Roads	62.100 €	8,33%	5.173 €
Sum	204.930 €		17.071 €
Unexpected			
	200.000 €		- €
Circulation cost			
	50.000 €		- €
Total	2.320.000 €		158.637 €



Calculation of consumption costs



	1. Year	2. Year	3. - 20. Year
Quantity in kWh	2050000	4100000	4100000

Variable costs per a	1. Year	2. Year	3. - 20. Year
Maintenance contract	- €	- €	10.486 €
Insurance	8.102 €	8.102 €	8.102 €
Energy costs	477 €	477 €	477 €
Management	4.800 €	4.800 €	4.800 €
SUM	13.379 €	13.379 €	23.865 €

Variable costs per kWh	1. Year	2. Year	3. - 20. Year
Maintenance contract	- €	- €	0,0026 €
Insurance	0,0040 €	0,0020 €	0,0020 €
Energy costs	0,0002 €	0,0001 €	0,0001 €
Management	0,0023 €	0,0012 €	0,0012 €
SUM	0,0042 €	0,0021 €	0,0046 €

In the first two years maintenance will be paid by the manufacturer.

Total of investment and financing

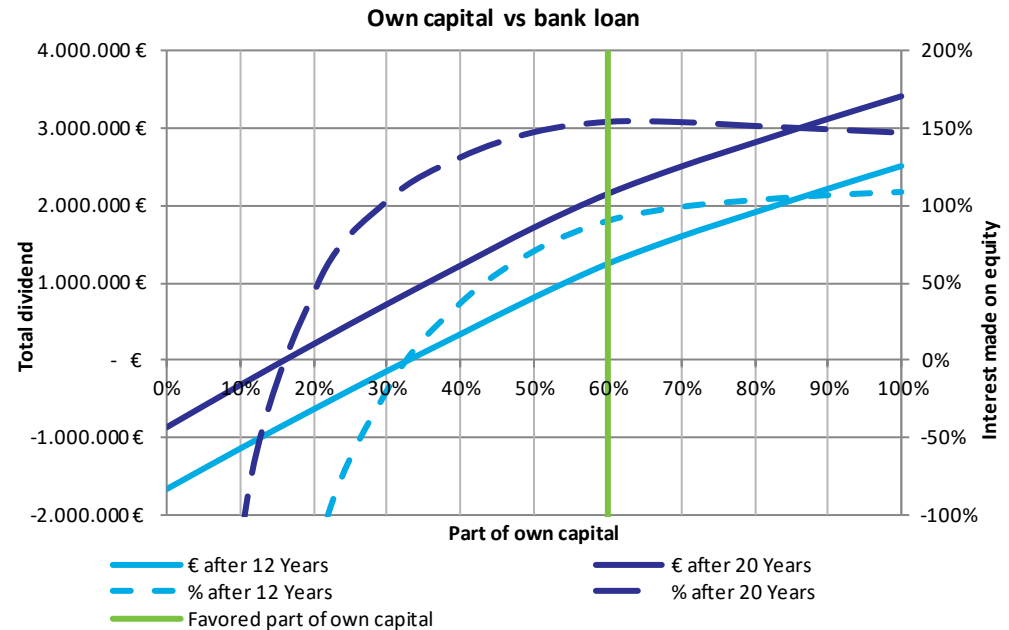
Total investment		2.320.000 €
Own capital funds	60%	1.392.000 €
Bank loan	40%	928.000 €

Number of shareholders	20
Shareholders equity	69.600 €

- Our economic efficiency is highly dependent on the ratio of own and external capital

- To increase the part of own capital we split it in 20 parts. Each shareholder can join our business for 69.600€.

- 40% of the total investment will be funded by external capital. We assume a bank loan especially for wind power plants with constant annual loan redemption and a 7% interest rate over 12 Years.



Calculation of financing costs: Interest paid on debt

Year	Balance of dept	Interest rate (%)	Interest costs paid p.a.	Repayment / Paying back loan p.a.
1.	928.000 €	7%	64.960 €	77.333 €
2.	850.667 €	7%	59.547 €	77.333 €
3.	773.333 €	7%	54.133 €	77.333 €
4.	696.000 €	7%	48.720 €	77.333 €
5.	618.667 €	7%	43.307 €	77.333 €
6.	541.333 €	7%	37.893 €	77.333 €
7.	464.000 €	7%	32.480 €	77.333 €
8.	386.667 €	7%	27.067 €	77.333 €
9.	309.333 €	7%	21.653 €	77.333 €
10.	232.000 €	7%	16.240 €	77.333 €
11.	154.667 €	7%	10.827 €	77.333 €
12.	77.333 €	7%	5.413 €	77.333 €
Total interest paid			422.240 €	
Total repayment				928.000 €



Self costs per kWh and calculation of turnover/revenue



Capacity p.a. **4100000 kWh**

	1.Year/per kWh	1.Year	2.Year	3.Year	4.Year	5.Year	6.Year	7.Year	8.Year	9.Year	10.Year	11.Year	12.Year
Utilization of capacity		50%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Quantity in kWh		2050000	4100000	4100000	4100000	4100000	4100000	4100000	4100000	4100000	4100000	4100000	4100000

Costs	Costs per kWh	Costs p.a.	Costs p.a.	Costs p.a.	Costs p.a.	Costs p.a.	Costs p.a.	Costs p.a.	Costs p.a.	Costs p.a.	Costs p.a.	Costs p.a.	Costs p.a.
Depreciation costs	0,0774 €	158.637 €	158.637 €	158.637 €	158.637 €	158.637 €	158.637 €	158.637 €	158.637 €	158.637 €	158.637 €	158.637 €	158.637 €
Financing costs	0,0317 €	64.960 €	59.547 €	54.133 €	48.720 €	43.307 €	37.893 €	32.480 €	27.067 €	21.653 €	16.240 €	10.827 €	5.413 €
consumption costs	0,0042 €	8.579 €	8.579 €	19.065 €	19.065 €	19.065 €	19.065 €	19.065 €	19.065 €	19.065 €	19.065 €	19.065 €	19.065 €
SUM of costs		232.176 €	226.762 €	231.835 €	226.421 €	221.008 €	215.595 €	210.181 €	204.768 €	199.355 €	193.941 €	188.528 €	183.115 €
Costs per kWh	0,1133 €	0,1133 €	0,0553 €	0,0565 €	0,0552 €	0,0539 €	0,0526 €	0,0513 €	0,0499 €	0,0486 €	0,0473 €	0,0460 €	0,0447 €

Remuneration	0,0920 €	0,0920 €	0,0920 €	0,0920 €	0,0920 €	0,0920 €	0,0502 €	0,0502 €	0,0502 €	0,0502 €	0,0502 €	0,0502 €	0,0502 €
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Turnover/Revenue		188.600 €	377.200 €	377.200 €	377.200 €	377.200 €	205.820 €	205.820 €	205.820 €	205.820 €	205.820 €	205.820 €	205.820 €
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	13.Year	14.Year	15.Year	16.Year	17.Year	18.Year	19.Year	20.Year
Utilization of capacity	100%	100%	100%	100%	100%	100%	100%	100%
Quantity in kWh	4100000	4100000	4100000	4100000	4100000	4100000	4100000	4100000

Costs	Costs p.a.	Costs p.a.	Costs p.a.	Costs p.a.	Costs p.a.	Costs p.a.	Costs p.a.	Costs p.a.
Depreciation costs	- €	- €	- €	- €	- €	- €	- €	- €
Financing costs	- €	- €	- €	- €	- €	- €	- €	- €
consumption costs	19.065 €	19.065 €	19.065 €	19.065 €	19.065 €	19.065 €	19.065 €	19.065 €
SUM of costs	19.065 €	19.065 €	19.065 €	19.065 €	19.065 €	19.065 €	19.065 €	19.065 €
Costs per kWh	0,0046 €	0,0046 €	0,0046 €	0,0046 €	0,0046 €	0,0046 €	0,0046 €	0,0046 €

Remuneration	0,0502 €	0,0502 €	0,0502 €	0,0502 €	0,0502 €	0,0502 €	0,0502 €	0,0502 €
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Turnover/Revenue	205.820 €	205.820 €	205.820 €	205.820 €	205.820 €	205.820 €	205.820 €	205.820 €
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Computation of cash-flow

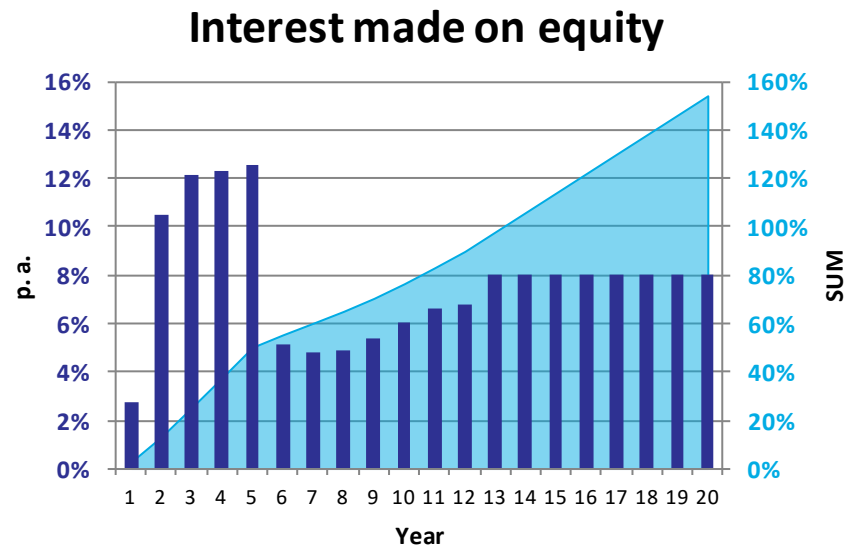
	1.Year	2.Year	3.Year	4.Year	5.Year	6.Year	7.Year	8.Year	9.Year	10.Year	11.Year	12.Year
Turnover/Revenue	188.600 €	377.200 €	377.200 €	377.200 €	377.200 €	205.820 €	205.820 €	205.820 €	205.820 €	205.820 €	205.820 €	205.820 €
Depreciation costs	158.637 €	158.637 €	158.637 €	158.637 €	158.637 €	158.637 €	158.637 €	158.637 €	158.637 €	158.637 €	158.637 €	158.637 €
consumption costs	8.579 €	8.579 €	19.065 €	19.065 €	19.065 €	19.065 €	19.065 €	19.065 €	19.065 €	19.065 €	19.065 €	19.065 €
Financing costs	64.960 €	59.547 €	54.133 €	48.720 €	43.307 €	37.893 €	32.480 €	27.067 €	21.653 €	16.240 €	10.827 €	5.413 €
Loss carried forward		- 43.576 €	- €	- €	- €	- €	- 9.775 €	- 14.136 €	- 13.084 €	- 6.618 €	- €	- €
Profit before tax	- 43.576 €	106.862 €	145.365 €	150.779 €	156.192 €	- 9.775 €	- 14.136 €	- 13.084 €	- 6.618 €	5.261 €	17.292 €	22.705 €
Taxes (40%)	- €	42.745 €	58.146 €	60.312 €	62.477 €	- €	- €	- €	- €	2.104 €	6.917 €	9.082 €
Profit after taxes	- 43.576 €	64.117 €	87.219 €	90.467 €	93.715 €	- 9.775 €	- 14.136 €	- 13.084 €	- 6.618 €	3.156 €	10.375 €	13.623 €
Cash-flow (net profit + depreciation costs)	115.061 €	222.754 €	245.856 €	249.104 €	252.352 €	148.862 €	144.501 €	145.553 €	152.018 €	161.793 €	169.012 €	172.260 €
Repyment credit	77.333 €	77.333 €	77.333 €	77.333 €	77.333 €	77.333 €	77.333 €	77.333 €	77.333 €	77.333 €	77.333 €	77.333 €
Dividend	37.728 €	145.420 €	168.522 €	171.770 €	175.018 €	71.529 €	67.167 €	68.220 €	74.685 €	84.460 €	91.678 €	94.926 €

	13.Year	14.Year	15.Year	16.Year	17.Year	18.Year	19.Year	20.Year
Turnover/Revenue	205.820 €	205.820 €	205.820 €	205.820 €	205.820 €	205.820 €	205.820 €	205.820 €
Depreciation costs	- €	- €	- €	- €	- €	- €	- €	- €
consumption costs	19.065 €	19.065 €	19.065 €	19.065 €	19.065 €	19.065 €	19.065 €	19.065 €
Financing costs	- €	- €	- €	- €	- €	- €	- €	- €
Loss carried forward	- €	- €	- €	- €	- €	- €	- €	- €
Profit before tax	186.755 €	186.755 €	186.755 €	186.755 €	186.755 €	186.755 €	186.755 €	186.755 €
Taxes (40%)	74.702 €	74.702 €	74.702 €	74.702 €	74.702 €	74.702 €	74.702 €	74.702 €
Profit after taxes	112.053 €	112.053 €	112.053 €	112.053 €	112.053 €	112.053 €	112.053 €	112.053 €
Cash-flow (net profit + depreciation costs)	112.053 €	112.053 €	112.053 €	112.053 €	112.053 €	112.053 €	112.053 €	112.053 €
Repyment credit	- €	- €	- €	- €	- €	- €	- €	- €
Dividend	112.053 €	112.053 €	112.053 €	112.053 €	112.053 €	112.053 €	112.053 €	112.053 €



Equity profitability

Year	Total			Interest made on equity	
	Equity	Profit after tax	Dividend	p.a.	SUM
1	1.392.000 €	- 43.576 €	37.728 €	2,7%	2,7%
2	1.392.000 €	64.117 €	145.420 €	10,4%	13,2%
3	1.392.000 €	87.219 €	168.522 €	12,1%	25,3%
4	1.392.000 €	90.467 €	171.770 €	12,3%	37,6%
5	1.392.000 €	93.715 €	175.018 €	12,6%	50,2%
6	1.392.000 €	- 9.775 €	71.529 €	5,1%	55,3%
7	1.392.000 €	- 14.136 €	67.167 €	4,8%	60,1%
8	1.392.000 €	- 13.084 €	68.220 €	4,9%	65,0%
9	1.392.000 €	- 6.618 €	74.685 €	5,4%	70,4%
10	1.392.000 €	3.156 €	84.460 €	6,1%	76,5%
11	1.392.000 €	10.375 €	91.678 €	6,6%	83,1%
12	1.392.000 €	13.623 €	94.926 €	6,8%	89,9%
13	1.392.000 €	112.053 €	112.053 €	8,0%	97,9%
14	1.392.000 €	112.053 €	112.053 €	8,0%	106,0%
15	1.392.000 €	112.053 €	112.053 €	8,0%	114,0%
16	1.392.000 €	112.053 €	112.053 €	8,0%	122,1%
17	1.392.000 €	112.053 €	112.053 €	8,0%	130,1%
18	1.392.000 €	112.053 €	112.053 €	8,0%	138,2%
19	1.392.000 €	112.053 €	112.053 €	8,0%	146,2%
20	1.392.000 €	112.053 €	112.053 €	8,0%	154,3%
SUM after 12 years			1.251.124 €		89,9%
SUM after 20 years			2.147.550 €		154,3%



Total dividend cumulated over 20 years: 2.147.550€

Conclusion

- 1st Wind power is only profitable for long investments.
- 2nd The mean wind speed of the selected location is too low. It is essential that the plant is working to capacity most of the time.
- 3th Without an promotional program it will be difficult to find 30 shareholders. With the new remuneration values wind power plants are much less attractive as they had been for a long time.