

Input NgasMicroCHPWind50percentNONCHP

The EnergyPLAN model 7.20



Electricity demand (TWh/year):	Flexible demand	0.00				Capacities		Efficiencies		Regulation Strategy: Technical regulation no. 2				Fuel Price level:							
Fixed demand	49.00	Fixed imp/exp.	0.00			Group 2:	MW-e	MJ/s	elec.	Ther	COP		KEOL regulation		00000		Capacities Storage		Efficiencies		
Electric heating	0.00	Transportation	0.00			CHP	1350	1647	0.41	0.50	3.50		Minimum Stabilisation share		0.00		MW-e	GWh	elec.	Ther.	
Electric cooling	0.00	Total	49.00			Heat Pump	0	0					Stabilisation share of CHP		0.00		Hydro Pump:	0	1	0.68	
District heating (TWh/year)	Gr.1	Gr.2	Gr.3	Sum	Group 3:	7500		0.90				Minimum CHP gr 3 load		450 MW		Hydro Turbine:	0	2.44			
District heating demand	39.18	0.00	0.00	39.18	CHP	2000	2440	0.41	0.50	3.50		Heat Pump maximum share		0.50		Electrol. Gr.2:	0	360	0.80	0.15	
Solar Thermal	0.02	0.00	0.00	0.02	Heat Pump	0	0					Maximum import/export		0 MW		Electrol. Gr.3:	0	0	0.40	0.50	
Industrial CHP (CSHP)	1.73	0.00	0.00	1.73	Boiler	11300		0.90				Distr. Name :		Price_DKV_2005.txt		Electrol. trans.:	0	0	0.80		
Demand after solar and CSHP	37.43	0.00	0.00	37.43	Condensing	8000	0.52						Multiplication factor		1.00		Ely. MicroCHP:	0	0	0.80	
Wind	3100 MW	7.26	TWh/year	0.00	Grid	Heatstorage: gr.2: 40 GWh		gr.3: 10 GWh				Dependency factor		0.00 DKK/MWh pr. MW		(TWh/year)		Coal	Oil	Ngas	Biomass
Offshore Wind	4500 MW	17.23	TWh/year	0.00	stabilisation	Fixed Boiler: gr.2: 2.5 Per cent		gr.3: 1.0 Per cent				Average Market Price		277 DKK/MWh		Transport		0.00	69.20	0.00	0.00
Photo Voltaic	0 MW	0	TWh/year	0.00	share	Electricity prod. from		CSHP		Waste (TWh/year)						Household		0.01	6.72	4.05	7.29
Wave Power	0 MW	0	TWh/year	0.00		Gr.1:		2.41		0.00						Industry		3.37	26.92	18.19	5.18
Hydro Power	0 MW	0	TWh/year			Gr.2:		0.00		0.00						Various		0.00	3.01	19.73	0.00
Geothermal	0 MW	0	TWh/year			Gr.3:		0.00		0.00											

Output

District Heating											Electricity														Exchange								
Demand		Production									Consumption							Production							Balance				Payment				
Distr. heating	MW	Solar	Waste+	CSHP	DHP	CHP	HP	ELT	Boiler	EH	Ba-lance	demand	Flexi-ble	Elec-trolyser	EH	Hydro Pump	Tur-bine	RES	Hy-dro	Geo-thermal	Waste+	CSHP	CHP	PP	Stab-Load	Imp	Exp	CEEP	EPP	Imp	Exp		
MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	%	MW	MW	MW	MW	Million DKK	Million DKK		
January	7177	1	197	6980	549	0	0	0	0	0	-549	6305	0	0	0	0	0	3662	0	0	274	852	1719	100	0	202	202	0	0	0	0		
February	7343	2	197	7144	549	0	0	0	0	0	-549	6237	0	0	0	0	0	2424	0	0	274	852	2779	100	0	92	92	0	0	0	0		
March	6256	2	197	6057	549	0	0	0	0	0	-549	6004	0	0	0	0	0	2722	0	0	274	820	2347	100	0	159	159	0	0	0	0		
April	5013	3	197	4813	549	0	0	0	0	0	-549	5291	0	0	0	0	0	3161	0	0	274	744	1418	100	0	307	307	0	0	0	0		
May	3933	3	197	3733	549	0	0	0	0	0	-549	5162	0	0	0	0	0	2068	0	0	274	668	2290	100	0	139	139	0	0	0	0		
June	1782	3	197	1582	549	0	0	0	0	0	-549	5017	0	0	0	0	0	2461	0	0	274	517	1991	100	0	226	226	0	0	0	0		
July	1782	4	197	1582	549	0	0	0	0	0	-549	4574	0	0	0	0	0	1890	0	0	274	512	2031	100	0	132	132	0	0	0	0		
August	1782	3	197	1582	549	0	0	0	0	0	-549	5263	0	0	0	0	0	2461	0	0	274	520	2175	100	0	167	167	0	0	0	0		
September	2736	3	197	2537	549	0	0	0	0	0	-549	5401	0	0	0	0	0	2397	0	0	274	575	2327	100	0	173	173	0	0	0	0		
October	4076	2	197	3877	549	0	0	0	0	0	-549	5602	0	0	0	0	0	3270	0	0	274	679	1809	100	0	430	430	0	0	0	0		
November	5347	1	197	5149	549	0	0	0	0	0	-549	6054	0	0	0	0	0	3704	0	0	274	766	1717	100	0	408	408	0	0	0	0		
December	6385	1	197	6187	549	0	0	0	0	0	-549	6056	0	0	0	0	0	3229	0	0	274	818	2077	100	0	343	343	0	0	0	0		
Average	4460	2	197	4261	549	0	0	0	0	0	-549	5578	0	0	0	0	0	2788	0	0	274	693	2055	100	0	232	232	0	0	0	0	Average price	
Maximum	12535	28	197	12338	549	0	0	0	0	0	-549	8603	0	0	0	0	0	7564	0	0	274	868	7039	100	0	4487	4487	0	0	0	0	(DKK/MWh)	
Minimum	1561	0	197	1364	549	0	0	0	0	0	-549	2795	0	0	0	0	0	2	0	0	274	450	0	100	0	0	0	0	0	0	0	263	0
Total for the whole year																									Million DKK								
TWh/year	39.18	0.02	1.73	37.43	4.82	0.00	0.00	0.00	0.00	0.00	-4.82	49.00	0.00	0.00	0.00	0.00	0.00	24.49	0.00	0.00	2.41	6.09	18.05		0.00	2.04	2.04	0.00	0	0	0		

FUEL BALANCE (TWh/year):																				Imp/Exp Corrected			CO2 emission (Mt):		
DHP	CHP2	CHP3	Boiler2	Boiler3	PP	Geo-th.	Hydro	Elc.ly.s	Waste	CAES	Wind	Offsh.	PV	Wave	Solar.Th	Transp.	househ.	Industry	Various	Total	Imp/Exp	Netto	Total	Netto	
Coal	1.00	-	-	-	-	12.82	-	-	-	-	-	-	-	-	-	-	-	0.01	3.37	-	17.20	-1.44	15.76	5.88	5.39
Oil	21.94	-	-	-	-	0.97	-	-	-	-	-	-	-	-	-	-	69.20	6.72	26.92	3.01	128.76	-0.11	128.65	34.30	34.27
N.Gas	17.58	-	-	-	-	20.63	-	-	-	-	-	-	-	-	-	-	-	11.42	18.19	19.73	87.56	-2.33	85.24	17.87	17.40
Biomass	1.06	-	9.65	-	-	0.20	-	-	-	-	-	-	-	-	-	-	-	7.29	5.18	-	23.38	-0.03	23.35	0.00	0.00
Renewable	-	-	-	-	-	-	-	-	-	-	7.26	17.23	-	-	0.02	-	-	-	-	-	24.51	0.00	24.51	0.00	0.00
H2 etc.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00	
Geothermal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00	
Total	41.59	-	9.65	-	-	34.62	-	-	-	-	7.26	17.23	-	-	0.02	69.20	25.44	53.66	22.74	281.41	-3.91	277.50	58.06	57.06	



District Heating Production

	Gr.1				Gr.2										Gr.3										RES specification				
	District heating	Solar	CSHP	DHP	District heating	Solar	CSHP	CHP	HP	ELT	Boiler	EH	Storage	Balance	District heating	Solar	CSHP	CHP	HP	ELT	Boiler	EH	Storage	Balance	RES1 Wind	RES2 Offsho	RES3 Photo	RES4 Wave	Total er
	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW
January	7177	1	197	6980	0	0	0	0	0	0	0	0	0	0	0	0	0	549	0	0	0	0	0	-549	743	2918	0	0	3662
February	7343	2	197	7144	0	0	0	0	0	0	0	0	0	0	0	0	0	549	0	0	0	0	0	-549	1095	1328	0	0	2424
March	6256	2	197	6057	0	0	0	0	0	0	0	0	0	0	0	0	0	549	0	0	0	0	0	-549	867	1855	0	0	2722
April	5013	3	197	4813	0	0	0	0	0	0	0	0	0	0	0	0	0	549	0	0	0	0	0	-549	710	2451	0	0	3161
May	3933	3	197	3733	0	0	0	0	0	0	0	0	0	0	0	0	0	549	0	0	0	0	0	-549	720	1348	0	0	2068
June	1782	3	197	1582	0	0	0	0	0	0	0	0	0	0	0	0	0	549	0	0	0	0	0	-549	752	1709	0	0	2461
July	1782	4	197	1582	0	0	0	0	0	0	0	0	0	0	0	0	0	549	0	0	0	0	0	-549	505	1384	0	0	1890
August	1782	3	197	1582	0	0	0	0	0	0	0	0	0	0	0	0	0	549	0	0	0	0	0	-549	721	1739	0	0	2461
September	2736	3	197	2537	0	0	0	0	0	0	0	0	0	0	0	0	0	549	0	0	0	0	0	-549	707	1690	0	0	2397
October	4076	2	197	3877	0	0	0	0	0	0	0	0	0	0	0	0	0	549	0	0	0	0	0	-549	1192	2078	0	0	3270
November	5347	1	197	5149	0	0	0	0	0	0	0	0	0	0	0	0	0	549	0	0	0	0	0	-549	1146	2558	0	0	3704
December	6385	1	197	6187	0	0	0	0	0	0	0	0	0	0	0	0	0	549	0	0	0	0	0	-549	773	2457	0	0	3229
Average	4460	2	197	4261	0	0	0	0	0	0	0	0	0	0	0	0	0	549	0	0	0	0	0	-549	826	1962	0	0	2788
Maximum	12535	28	197	12338	0	0	0	0	0	0	0	0	0	0	0	0	0	549	0	0	0	0	0	-549	3100	4500	0	0	7564
Minimum	1561	0	197	1364	0	0	0	0	0	0	0	0	0	0	0	0	0	549	0	0	0	0	0	-549	0	0	0	0	2
Total for the whole year																													
TWh/year	39.18	0.02	1.73	37.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.82	0.00	0.00	0.00	0.00	-4.82	7.26	17.23	0.00	0.00	24.49	

ANNUAL COSTS (Million DKK)

Total Fuel =	64600
Coal =	964
FuelOil =	11774
Gasoil/Diesel=	13572
Petrol/JP =	17399
Ngas =	16686
Biomass =	4206
Waste =	0
Maginal operation costs =	390
Total Electricity exchange =	0
Import =	0
Export =	0
Bottleneck =	0
Fixed imp/ex=	0
Total CO2 emission costs =	8709
Total variable costs =	73698
Fixed operation costs =	3828
Annual Investment costs =	10049
TOTAL ANNUAL COSTS =	87576