

## STATGEN - Overview

Calculation: Statgen\_Exam

Name

MCP LT - MCP session (1) - [Neural Network] (3) - MCP LT - MCP session (1)

Source

USER

Country

Germany

Site coordinates

UTM (north)-ETRS89 Zone: 32 East: 548,207 North: 6,061,864

Site Data

Site data: STATGEN (4)

Meteorological Data

MCP LT - MCP session (1) - [Neural Network] (3)

WASP version

WASP 11 Version 11.04.0026

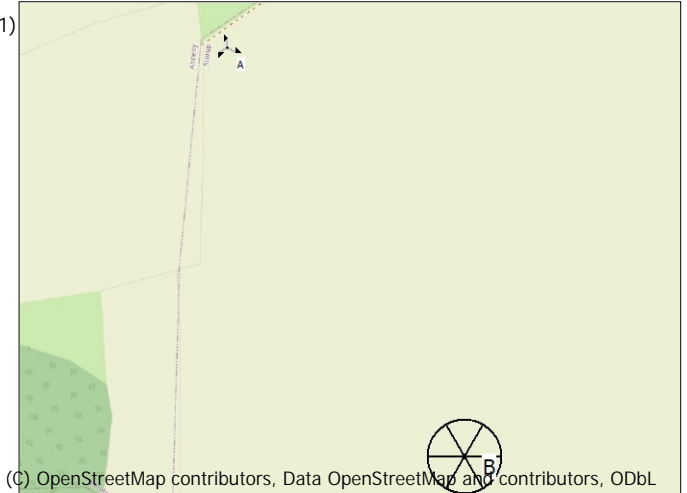
Interval setup

Use all

Interval used

1/1/1994 - 1/1/2025

Omnidirectional displacement height from objects



Site Data

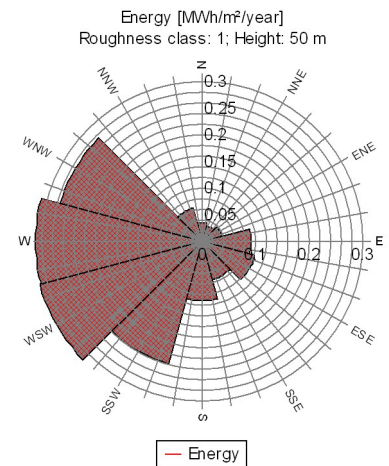
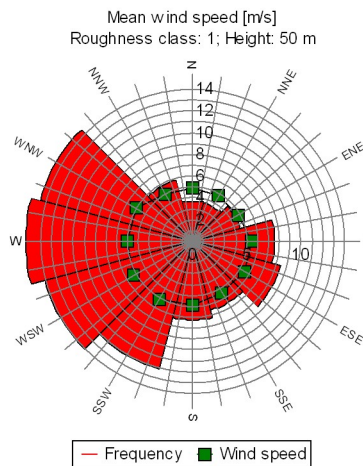
Scale 1:7,500  
Meteorological Data

### Mean wind speed [m/s]

Height [m]	Roughness class/Length				
	0	1	2	3	4
10.0	0.00 m	0.03 m	0.10 m	0.40 m	1.50 m
25.0	5.7	4.2	3.6	2.9	1.9
50.0	6.3	5.0	4.5	3.8	2.9
100.0	6.8	5.8	5.3	4.6	3.7
200.0	7.3	6.8	6.3	5.5	4.7
200.0	8.0	8.3	7.6	6.8	5.8

### Wind energy [kWh/m<sup>2</sup>/year]

Height [m]	Roughness class/Length				
	0	1	2	3	4
10.0	0.00 m	0.03 m	0.10 m	0.40 m	1.50 m
25.0	1,755	758	500	243	70
50.0	2,248	1,207	882	524	235
100.0	2,731	1,696	1,307	860	467
200.0	3,546	2,675	2,056	1,394	841
200.0	4,811	5,027	3,836	2,641	1,658



### WTG energy [kWh/m<sup>2</sup>/year]

Normal rated WTG (0.45 kW/m<sup>2</sup>)

Height [m]	Roughness class/Length				
	0	1	2	3	4
10.0	0.00 m	0.03 m	0.10 m	0.40 m	1.50 m
25.0	684	235	129	23	-
50.0	854	459	322	151	23
100.0	1,005	693	541	340	140
200.0	1,182	1,027	847	617	365
200.0	1,397	1,488	1,281	1,007	704

High wind rated WTG (0.55 kW/m<sup>2</sup>)

Height [m]	Roughness class/Length				
	0	1	2	3	4
10.0	0.00 m	0.03 m	0.10 m	0.40 m	1.50 m
25.0	709	230	122	17	-
50.0	899	469	323	143	18
100.0	1,073	719	557	342	133
200.0	1,288	1,098	891	637	369
200.0	1,558	1,665	1,413	1,076	730

Low wind rated WTG (0.35 kW/m<sup>2</sup>)

Height [m]	Roughness class/Length				
	0	1	2	3	4
10.0	0.00 m	0.03 m	0.10 m	0.40 m	1.50 m
25.0	644	256	149	28	-
50.0	792	449	331	173	28
100.0	924	652	520	347	161
200.0	1,075	943	786	586	368
200.0	1,254	1,309	1,159	926	661

### Key numbers

Wind energy is relative to 3300 kWh/m<sup>2</sup>/year for roughness class 1 and 50 m hub heightWTG energy is relative to 1025 kWh/m<sup>2</sup>/year for roughness class 1 and 50 m hub height

Name	Distance [km]	Wind energy [%]	WTG energy [%]	Name	Distance [km]	Wind energy [%]	WTG energy [%]
Current wind statistic		51.4	67.6	Bremen, 1970-79	194.5	67.0	80.6
Skrydstrup, 1971-80	66.7	118.0	110.1	Værløse, 1972-80	201.6	83.2	87.3
List/Sylt, 1971-80	92.2	113.9	114.3	Værløse, 1972-80	201.6	83.2	87.3
Beldringe, 1972-80	93.9	99.0	101.1	Kastrup, 1965-72	212.6	114.9	122.4
Hamburg, 1970-79	119.9	70.2	84.8	Zafarana 1991-95, 24.5 m a.g.l	245.4	168.3	164.7
Helgoland, 1971-80	132.8	95.3	103.1	Hannover, 1970-79	250.7	66.4	77.6
Horns Rev Fyrskib, 1962-80	159.3	106.3	106.2	Ålborg, 1965-72	267.1	125.4	120.1
Karup, 1971-80	180.3	142.3	133.6	Eelde, 1970-76	271.1	96.6	103.6
Tirstrup, 1971-79	186.2	131.8	115.7	Eelde, 1970-76	271.1	96.6	103.6
				Braunschweig, 1973-81	271.4	59.5	71.1

Project:

Exam\_16.01

Licensed user:

Hochschule Flensburg, University of Applied Sciences  
Darf nur für Zwecke der Lehre verwendet werden

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student / weti-lab-vt10@hs-flensburg.de

Calculated:

1/16/2025 3:11 PM/4.0.547

## STATGEN - Terrain

Calculation: Statgen\_Exam Site Data: B - Site data: STATGEN (4)

Obstacles:

0 Obstacles used

Roughness:

Terrain data files used in calculation:

C:\Users\student\Desktop\Exam\_16\_01\_2025\Windpro\_exam\_16.01\ROUGHNESSLINE\_ONLINEDATA\_0.wpo

Min X: 518,359, Max X: 578,403, Min Y: 6,030,681, Max Y: 6,091,978, Width: 60,044 m, Height: 61,297 m

Orography:

Terrain data files used in calculation:

C:\Users\student\Desktop\Exam\_16\_01\_2025\Windpro\_exam\_16.01\CONTOURLINE\_ONLINEDATA\_0.wpo

Min X: 538,612, Max X: 558,177, Min Y: 6,051,218, Max Y: 6,071,644, Width: 19,565 m, Height: 20,426 m

STATGEN - Wind Data Analysis

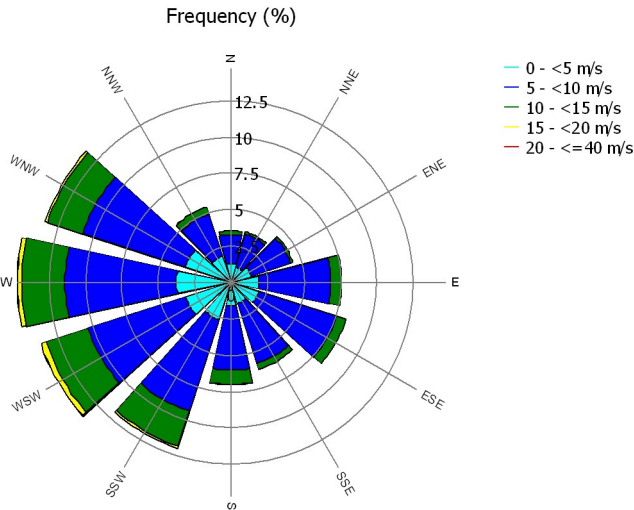
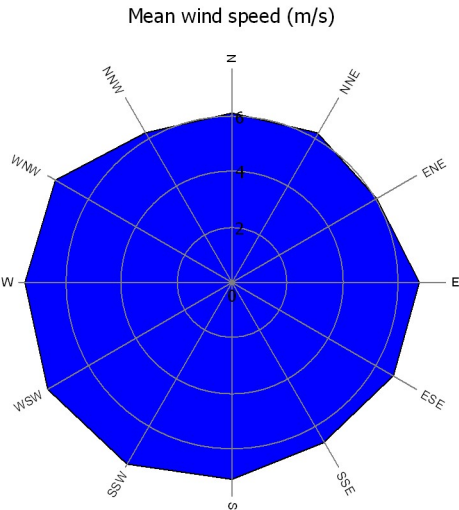
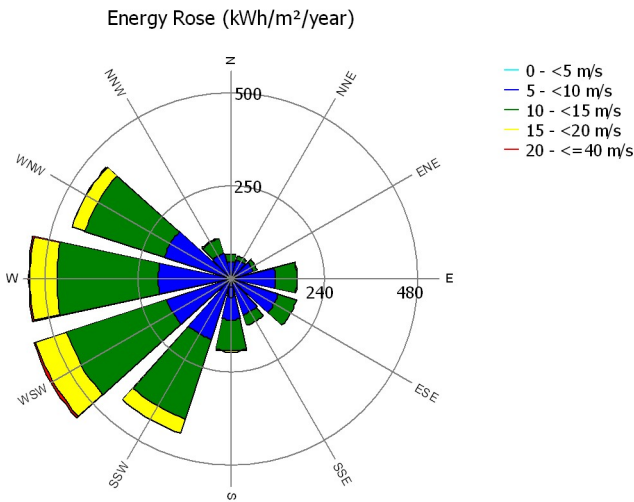
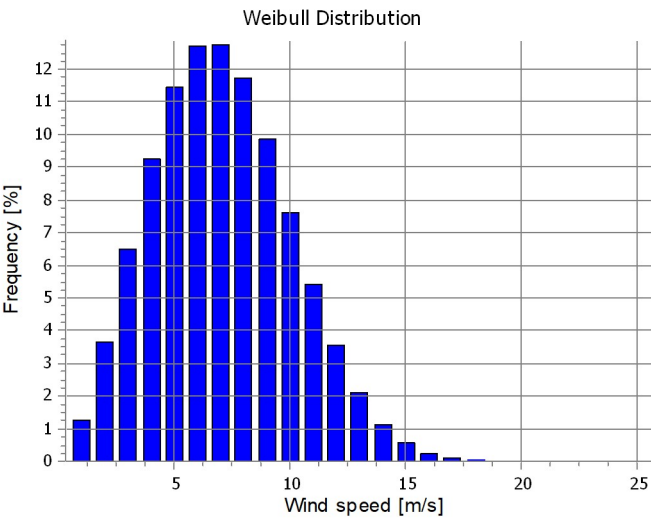
Calculation: Statgen\_Exam Wind data: A - MCP LT - MCP session (1) - [Neural Network] (3); Height: 125.0

Site coordinates  
UTM (north)-ETRS89 Zone: 32  
East: 548,207 North: 6,061,864

Meteo data  
MCP LT - MCP session (1) - [Neural Network] - MCP LT - MCP session (1) - [Neural Network] (3)

Weibull Data

Sector	A- parameter [m/s]	Wind speed [m/s]	k- parameter	Frequency [%]
0 N	6.85	6.08	2.537	3.6
1 NNE	6.93	6.20	3.123	3.6
2 ENE	6.76	6.05	3.100	4.4
3 E	7.57	6.76	3.009	7.6
4 ESE	7.50	6.71	3.182	8.3
5 SSE	7.39	6.63	3.323	6.3
6 S	7.97	7.11	2.900	7.0
7 SSW	8.54	7.58	2.563	12.0
8 WSW	8.68	7.69	2.348	13.7
9 W	8.41	7.45	2.345	14.7
10 WNW	8.26	7.33	2.505	13.4
11 NNW	7.04	6.25	2.464	5.4
All	7.97	7.07	2.547	100.0



## STATGEN - Wind statistics info

Calculation: Statgen\_Exam

### Main data for wind statistic

File	DE MCP LT - MCP session (1) - [Neural Network] (3) - MCP LT - MCP session (1) - [Neural Network] 125.00 m.wws
Name	MCP LT - MCP session (1) - [Neural Network] (3) - MCP LT - MCP session (1) - [Neural Network] 125.00 m
Country	Germany
Source	USER
Mast coordinates	UTM (north)-ETRS89 Zone: 32 East: 548,207 North: 6,061,864
Created	1/16/2025
Edited	1/16/2025
Sectors	12
WAsP version	WAsP 11 Version 11.04.0026
Coordinate system	UTM (north)-WGS84 Zone: 32
Displacement height	None

### Additional info for wind statistic

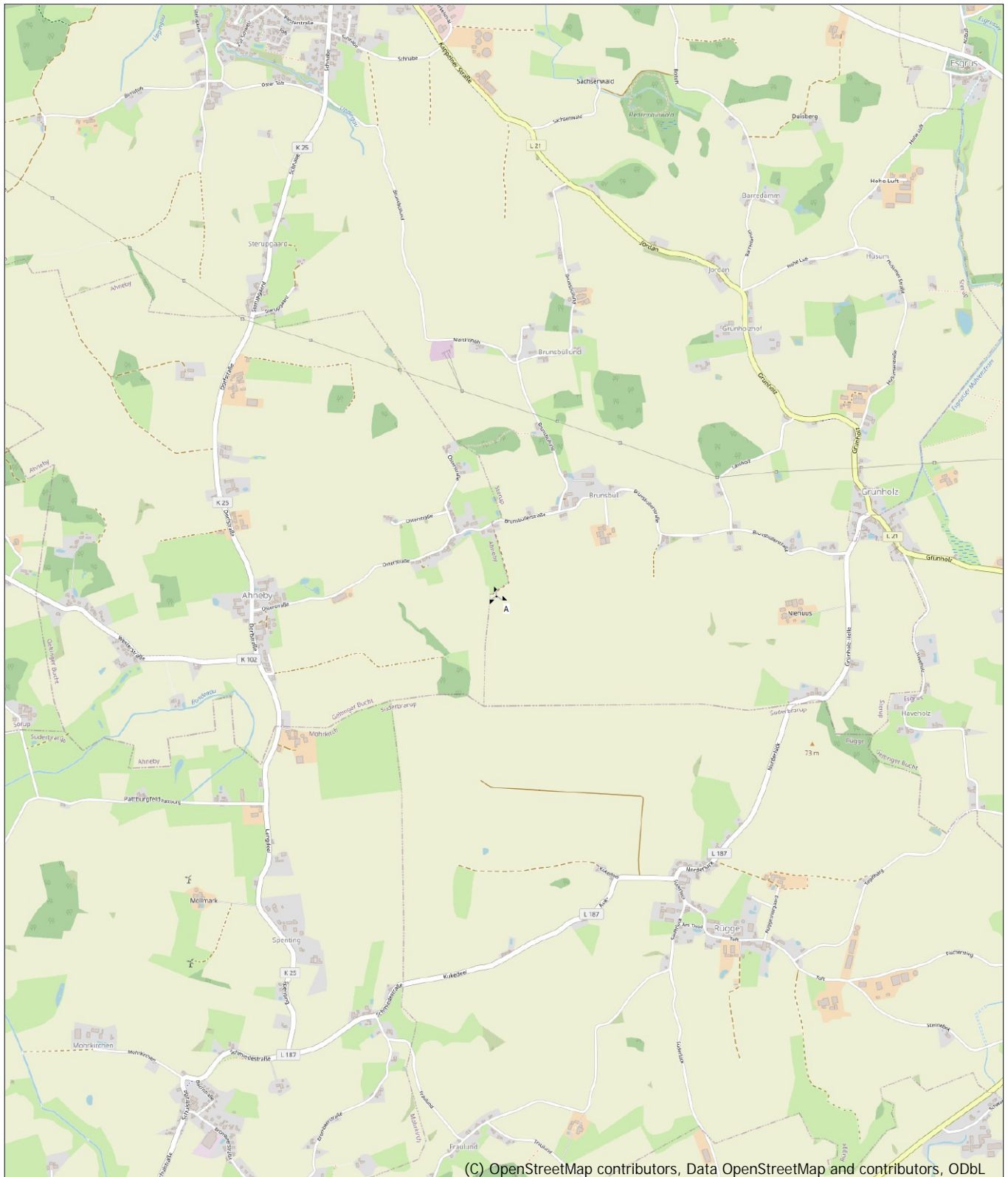
Source data	MCP LT - MCP session (1) - [Neural Network] (3)
Data from	1/1/1994
Data to	1/1/2025
Measurement length	372.0 Months
Recovery rate	100.0 %
Effective measurement length	372.0 Months

### Note

To get the most correct calculation results, wind statistics shall be calculated with the SAME model and model parameters, as currently chosen in calculation. For WAsP versions before 10.0, the model is unchanged, but thereafter more model changes affecting the wind statistic is seen. Likewise WAsP CFD should always use WAsP CFD calculated wind statistics.

## STATGEN - Map

Calculation: Statgen\_Exam



0 250 500 750 1000m

Map: EMD OpenStreetMap , Print scale 1:25,000, Map center UTM (north)-ETRS89 Zone: 32 East: 548,207 North: 6,061,864

Meteorological Data