



Emergya Wind Technologies BV

DIRECTWIND 500

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|-----------|----------------|------------|
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| Doc code: | R-1009941.docx |            |

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|--------------|------|----------------|----------|
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Title:

Report

# **DIRECTWIND 54\*500**

## **Power Curve**

| Revision | Date | Author | Approved | Description of changes |
|----------|------|--------|----------|------------------------|
| -        | -    | -      | -        | -                      |
| -        | -    | -      | -        | -                      |
| -        | -    | -      | -        | -                      |
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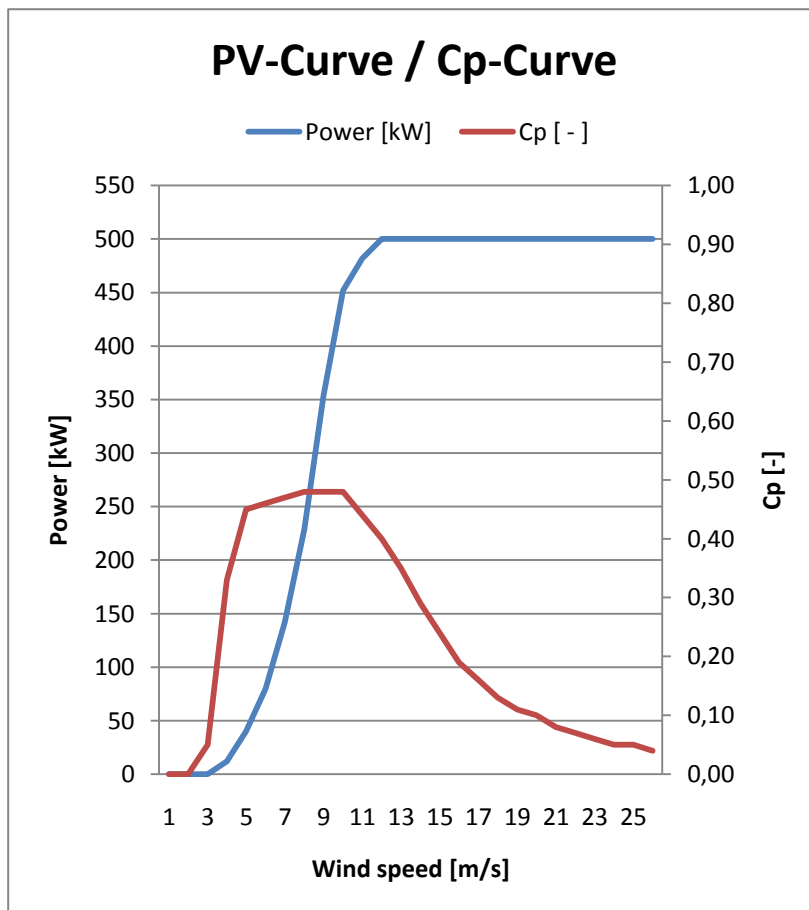
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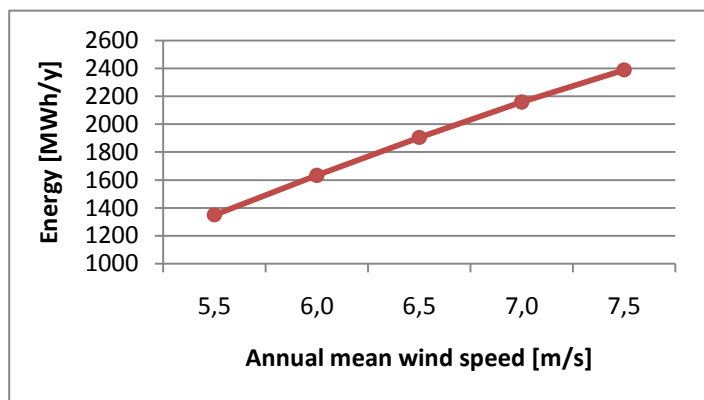
The performance curves are computed from wind turbine analysis and simulation software. They are valid for standard atmospheric conditions with an air density of  $1.225\text{kg/m}^3$ , vertical wind shear exponent of  $1/7$  and horizontal flow. No misalignment is assumed in the calculation. The power curve is represented with a turbulence intensity of 10% according to IEC 61400-1 and takes into account the effects of blade deformation and the effects of rotation on lift coefficient.

| Wind speed | Power | Cp    |
|------------|-------|-------|
| [m/s]      | [kW]  | [ - ] |
| 0          | 0     | 0     |
| 1          | 0     | 0     |
| 2          | 0     | 0,05  |
| 3          | 12    | 0,33  |
| 4          | 40    | 0,45  |
| 5          | 80    | 0,46  |
| 6          | 142   | 0,47  |
| 7          | 229   | 0,48  |
| 8          | 354   | 0,48  |
| 9          | 452   | 0,48  |
| 10         | 482   | 0,44  |
| 11         | 500   | 0,4   |
| 12         | 500   | 0,35  |
| 13         | 500   | 0,29  |
| 14         | 500   | 0,24  |
| 15         | 500   | 0,19  |
| 16         | 500   | 0,16  |
| 17         | 500   | 0,13  |
| 18         | 500   | 0,11  |
| 19         | 500   | 0,1   |
| 20         | 500   | 0,08  |
| 21         | 500   | 0,07  |
| 22         | 500   | 0,06  |
| 23         | 500   | 0,05  |
| 24         | 500   | 0,05  |
| 25         | 500   | 0,04  |



The curve depicted above, is a theoretical power curve, the calculations hereunder are based on the power curve depicted. Further assumptions are a k-value of 2.0 and 100% availability and no other losses are taken into account.

| Wind Speed | Energy  | Energy_sp  |
|------------|---------|------------|
| [m/s]      | [MWh/y] | [kWh/m2.y] |
| 5,5        | 1350    | 590        |
| 6,0        | 1633    | 713        |
| 6,5        | 1905    | 832        |
| 7,0        | 2158    | 943        |
| 7,5        | 2389    | 1043       |



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