

# Package ‘WindCurves’

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**Type** Package

**Title** Tool to Fit Wind Turbine Power Curves

**Version** 0.2

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**Description** Provides a tool to fit and compare the wind turbine power curves with successful curve fitting techniques. Facilitates to examine and compare the performance of a user-defined power curve fitting techniques. Also, provide features to generate power curve discrete points from a graphical power curves. Data on the power curves of the wind turbine from major manufacturers are provided.

**Imports** methods, readbitmap, grid

**License** GPL

**URL** <https://www.neerajbokde.in/vignette/2021-10-14-WindCurves/>

**Encoding** UTF-8

**LazyData** true

**RoxygenNote** 7.1.2

**Suggests** knitr, rmarkdown

**VignetteBuilder** knitr

**NeedsCompilation** no

**Repository** CRAN

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fitcurve	<i>A fitcurve function</i>
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**Description**

Fits the power curve with Weibull CDF, Logistic and user defined techniques

**Usage**

```
fitcurve(data, MethodPath, MethodName)
```

**Arguments**

data	as input data.frame with two columns, i.e., wind speed and wind power
MethodPath	as path of a code for user defined curve fitting technique
MethodName	as name of the user defined curve fitting technique

**Value**

fitted curves and corresponding discrete fitted values

**Examples**

```
data(pcurves)
s <- pcurves$Speed
p <- pcurves$`Nordex N90`
da <- data.frame(s,p)
fitcurve(da)
```

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img2points	<i>A function to capture Speed Vs Power discrete points from power curve image</i>
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**Description**

A function to capture Speed Vs Power discrete points from power curve image

**Usage**

```
img2points(imagePath, n)
```

**Arguments**

imagePath	as Path of a power curve image
n	as number of points to be captured from the curve image (default value is 15)

**Value**

data.frame with two columns, i.e., wind speed and wind power

**Examples**

```
## Not run:  
# to import image from system 'extdata' folder.  
# user can directly specify the path of the image in 'img2points()'.  
imagePath <- system.file("extdata","powercurve.jpeg", package="WindCurves")  
img2points(imagePath)  
## End(Not run)
```

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pcurves

*Wind Turbine Power Curves*

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**Description**

Data on the power curves of wind turbine from four major manufacturers: Siemens, Vestas, RE-power and Nordex. Represents wind turbine power output in 'kW' against wind speed in 'metres per second'.

**Usage**

```
data(pcurves)
```

**Format**

An object of class `data.frame` with 25 rows and 7 columns.

**Source**

<https://goo.gl/tD2JW6>

**References**

Iain Staffell (2012) <https://goo.gl/tD2JW6>

**Examples**

```
data(pcurves)  
v <- pcurves$`Vestad V80`
```

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plot.fitcurve	<i>A function to plot the curves fitted with fitcurve() function</i>
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**Description**

A function to plot the curves fitted with fitcurve() function

**Usage**

```
## S3 method for class 'fitcurve'
plot(x, ...)
```

**Arguments**

x	is object returned by fitcurve() function
...	Additional graphical parameters given to plot function.

**Value**

Plot the curves fitted with fitcurve() function

**Examples**

```
s <- pcurves$Speed
p <- pcurves$`Nordex N90`
da <- data.frame(s,p)
x <- fitcurve(da)
plot(x)
```

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validate.curve	<i>A Validate.curve function</i>
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**Description**

Compares the performance of curve fitting techniques fitted in fitcurve() function

**Usage**

```
validate.curve(x, MethodPath, MethodName)
```

**Arguments**

x	is object returned by fitcurve() function
MethodPath	as path of a code for user defined error measure technique
MethodName	as name of the user defined error measure technique

**Value**

A comparison matrix in terms of various error measures.

**Examples**

```
s <- pcurves$Speed
p <- pcurves$`Nordex N90`
da <- data.frame(s,p)
x <- fitcurve(da)
validate.curve(x)
```

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