

Package ‘WindCurves’

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Type Package

Title Tool to Fit Wind Turbine Power Curves

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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, drc, imputeTestbench

License GPL

Encoding UTF-8

LazyData true

RoxygenNote 6.0.1

Suggests knitr, rmarkdown

VignetteBuilder knitr

NeedsCompilation no

Repository CRAN

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R topics documented:

fitcurve	2
img2points	2
pcurves	3
plot.fitcurve	4
validate.curve	4

Index	6
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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)
```

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

```
# 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)
```

pcurves

Wind Turbine Power Curves

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`
```

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)
```

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)
```

Index

*Topic **curves**
pcurves, 3

*Topic **power**
pcurves, 3

fitcurve, 2

img2points, 2

pcurves, 3

plot.fitcurve, 4

validate.curve, 4