Windchill® Weibull

## ANALYZE LIFE DATA THROUGHOUT ALL STAGES OF PRODUCT LIFE

Windchill Weibull (formerly Relex Weibull) helps you analyze many different types of life data to discover failure trends and predict failure behavior using reliability growth analysis, Weibull analysis, and related distributions.

Windchill Weibull provides sophisticated statistical analyses of failure trends according to the distributions commonly used in life data analysis. Because it is able to use data gained from design and development, product testing, or field studies, life data analysis in Windchill Weibull is useful throughout the product lifecycle. Predict failure behavior, track reliability growth or product degradation, optimize test planning, and perform warranty forecasting calculations using a friendly, intuitive interface.

Key Benefits

Statistical Analysis of All Types of Life Data

- Effective for all types of life data, including mechanical, chemical, electronic, material, and human failure data

- Supports many data types, including grouped data, interval data, and suspensions (censored data)

- Supports non-parametric life data analysis when a distribution will not be assumed during calculations

- Supports reliability growth analysis commonly used during product design and development with Duane and Crow/AMSAA methodologies

- Supports the use of degradation data methodologies to estimate failure times from the rate of decline of parts or components

- Perform warranty forecasting using sales and returns data
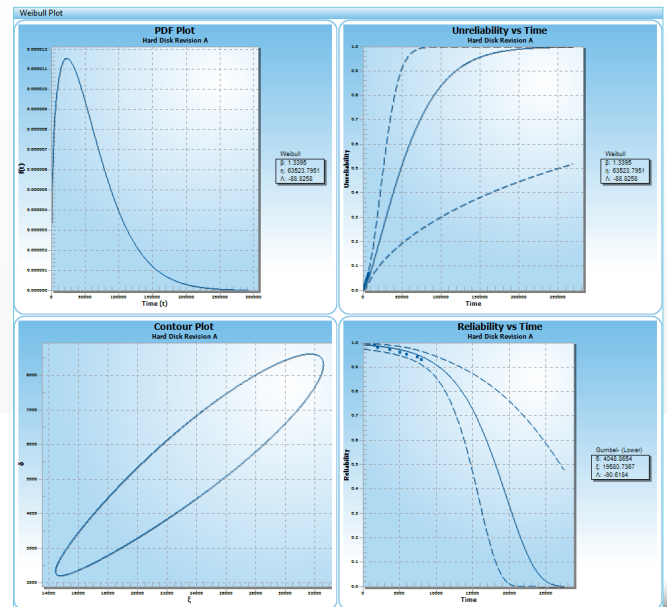
In Windchill Weibull you can view multiple plots simultaneously, and select from plot types displaying data points, distribution curves, and confidence bounds.

Convenient Graphing Tools

- Displays a number of plots including probability plots, 3D surface plots, PDF, CDF, and hazard rate plots

- View multiple data sets together on the same plot for easy comparisons

Powerful Calculations Predict Failure Trends

- Choose from a range of the most commonly used distributions in life data analysis

- If you don't know which distribution fits your data best, the Best Fit Distribution Analysis tool ranks all supported distributions according to goodness of fit

- Calculate standard probability, conditional probability, failure rate, warranty time, time to failure, MTTF, and confidence bounds on distribution parameters

- Supports all commonly used estimation methods and confidence bounds calculations

- Predict the percentage of failed units at any given time throughout the life of the product

- Calculate optimal replacement intervals to minimize downtime or to minimize cost

- Perform test planning calculations given a desired reliability level, time frame, or number of units

Features and Specifications

Supported Distributions

- Weibull (2 or 3 parameters)
- Lognormal
- Normal
- Gumbel lower
- Gumbel upper
- Exponential (1 or 2 parameters)
- Rayleigh (1 or 2 parameters)
- Gamma
- Logistic
- Log-Logistic

Data Types

- Exact
- Interval
- Freeform
- Suspensions
- Grouping
- Inspection
- Interval
- Duane (Cumulative or Interval)
- Crow/AMSAA (Cumulative or Interval)
- Warranty, Sales vs. Returns, Return Dates, and Usage Values
- Degradation

Estimation Methods

- Maximum Likelihood Estimation (MLE)
- Modified Maximum Likelihood Estimation (MMLE)
- Median
- Benard
- Hazen
- Kaplan-Meier
- Modified Kaplan-Meier

Confidence Types

- Lower confidence
- Upper confidence
- Upper and Lower confidence
- Double confidence
- Confidence = Reliability

Confidence Methods

- Fisher Matrix
- Likelihood Ratio
- Binomial

Calculators

- Test planning
- Optimal replacement
- General Statistics

Plot Types

- Probability
- Reliability vs. Time
- Unreliability vs. Time
- PDF Plot
- Failure Rate vs. Time
- Contour Plot
- 3D Contour Plot
- Failure/Suspension Pie
- Failure/Suspension Timeline

Input and Output Data in a Variety of Formats

- Easily import from or export to commonly used formats like Microsoft Excel, Microsoft Access, XML, and plain text files

- Create reports in Microsoft Word, Microsoft Excel, Adobe PDF, and Rich Text Format (RTF)

- User-definable, wizard-driven custom graphs and reports

- Import sales and warranty returns tables

- Dynamically link to other Windchill Quality Solutions modules, such as Windchill FRACAS, Windchill OpSim, and Windchill Prediction

Available Enterprise-Class Features

- Multi-user environment with login permissions, security features, administrator control, and audit trail functionality

- Database integration at enterprise level supports Microsoft SQL Server 2000, SQL Server 2005, SQL Server 2005 Express, SQL Server 2008, SQL Server 2008 Express, Oracle 9i, Oracle 10g, or Oracle 11g

- Feature-rich FlexNet license management tool

- Available integration with the Windchill PDMLink bill-of-materials ensures a single, up-to-date version of the product BOM

Supported Languages

- English, French, German, Japanese, Korean, Russian, Simplified Chinese

For More Information

For more information on Windchill Weibull, please visit:
PTC.com/products/windchill/weibull