

# Jack

## A premier human simulation tool for populating your designs with virtual people and performing human factors and ergonomic analysis

### Benefits

- Human interaction during the design, build and sale stages of the product lifecycle is inevitable, and Jack helps you assess the human element throughout your product lifecycle
- Jack saves your company time and money while enabling you to create more human-friendly designs
- Jack provides a complete environment for all your ergonomics and human factors needs, offering a comprehensive suite of analysis capabilities
- Jack enables you to uncover human performance and feasibility issues early in the design process, allowing for big savings from a small investment
- Jack enables you to effectively communicate issues and visualize potential solutions

### Features

- Human figures that are anthropometrically and biomechanically accurate, as well as visually realistic
- Broad set of anthropometric databases for representing your population

### Summary

Jack is a human modeling and simulation tool that enables you to improve the ergonomics of your product designs and to refine industrial tasks. Jack, and its optional toolkits, provides human-centered design tools for performing ergonomic analysis of virtual products and virtual work environments. Jack enables you to size your human models to match worker populations, as well as test your designs for multiple factors, including injury risk, user comfort, reachability, line of sight, energy expenditure, fatigue limits and other important human parameters. Using Jack facilitates significant cost and time savings by enabling you to improve product quality and process feasibility early in the product lifecycle.



Jack enables you to seamlessly integrate human factors and ergonomics into the planning, design and validation stages of your product lifecycle. Organizations that use Jack gain a significant competitive advantage thanks to classic ergonomics and human factors assessment techniques coupled with the latest visualization and simulation technologies.

# TECNOMATIX

[www.siemens.com/tecnomatix](http://www.siemens.com/tecnomatix)

# SIEMENS

# Jack

## Features *continued*

- State-of-the-art task simulation engine to generate a series of human activities through the use of high-level commands
- Industry-leading human manipulation and figure control to create simulations faster and more accurately
- Most comprehensive set of human performance simulation tools available on the market today
- Extensive support for motion tracking and virtual reality systems

## Human performance capabilities

- ANSUR, Asian\_Indian, Canadian Land Forces, Chinese, German, NHANES and North American Auto Workers anthropometric databases
- Force-influenced posture prediction
- Vision envelope creation
- Reach envelope creation
- Hand clearance and interference study capabilities
- Ergonomic analysis tools, including static and real-time fatigue, low back analysis, material handling limits, energy expenditure, NIOSH, OWAS, RULA, static strength prediction, time standards and the new ForceSolver
- Occupant packaging tools, such as comfort assessment posture prediction, SAE packaging guidelines, pedal behavior and multiple vision zones including reflection, coverage and obscuration

## System requirements

Windows 7, Vista and XP

*Minimum:*

1GHz processor

2GB RAM

400MB free disk space

*Recommended:*

2GHz processor

4GB RAM

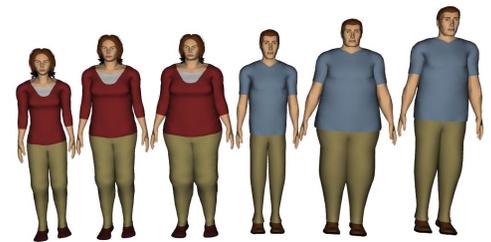
600MB free disk space

The Jack solution provides the latest human simulation capabilities including:

- *Task Simulation Builder*, which enables you to use high-level commands to instruct the human model in your 3D, virtual product and work environment. This capability facilitates quick animation and scenario development. Once a particular task sequence has been defined for the human model, you can easily test what-if scenarios by swapping in human figures of different sizes, by moving objects in the environment or by changing the weight of an object. Human postures and motions are automatically recomputed to reflect the updated scene. The simulation even provides ergonomic reports and time estimates based on standard time tables.
- *Human posturing techniques*, which enable you to quickly and accurately posture the human models with minimal input. Jack boasts some of the most sophisticated methods for figure manipulation and posture prediction available on the market today, including the ability to predict posture based on hand force exertions.
- *Smooth skin human modeling*, which employs deformable mesh technology to represent visually and anthropometrically accurate body shapes
- *Advanced hand modeling*, which provides a premier solution for representing hand anthropometry and other hand modeling features
- *Customization capabilities*, which include an easy-to-access scripting/programming interface to create analysis and interface add-ons that you can use to extend and custom-fit Jack to your business needs (many of these customizations are openly made available to the Jack user community)

## Using Jack

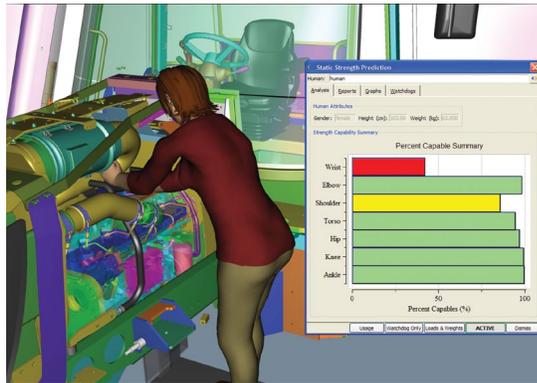
**1. Create a digital human** You can select the type and size of human model that you need from an easy-to-access human library.



**2. Posture the manikin or create a simulation** Using a variety of posturing methods, you can rapidly position the human figure to interact with surrounding objects in your virtual environment. For animations, you can use the Task Simulation Builder to quickly define task sequences through high-level commands, such as GET, PUT and WALK.



**3. Analyze human performance** Using ergonomics analysis tools, you can determine if your population will be able to complete each task or activity. Jack's occupant packaging tools help you to understand how a human will interact with your vehicle designs.



**4. Experience virtual reality** Jack provides interface drivers to a wide range of motion capture hardware devices, including real-time, whole body trackers and data gloves. This capability enables you to experience your design first hand, to quickly identify human factors issues, and to discover alternative processes and designs that will improve your product.



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