

BENTLEY® INSIDE PLANT™

Design and Document Inside Plant for Communications Networks

Bentley® Inside Plant™ is an engineering solution for designing and documenting the inside plant of communications networks found in head-ends, points-of-presence, central offices and other sites. When used with Bentley® Fiber™, end-to-end network connectivity from outside to inside plant is maintained, allowing the network to be traced from port to customer. Bentley Inside Plant allows users to define, configure, and place equipment in racks and floor plans that visually depict the precise layout of the facility.

Setup

Administrators can define a template library of frames (racks), equipment, slots, cards, and ports to be used in the design process. Properties such as dimensions, ID, catalog number, type, and other defining information can be specified during the setup process. Equipment in the racks and slots within the equipment can be pre-configured. Rules defining valid card-to-slot relationships and jumper cable-to-port type validation can also be defined. Custom toolboxes can be created containing the equipment specific to a certain type of task or job and can be re-used in any work order. Racks and equipment are displayed in floor plans. Floor plans can be created with MicroStation® or imported from other sources. Plans can be as simple as a large scale footprint, or can be detailed architectural drawings.

Design and Documentation

Engineers begin layout of equipment by selecting from pre-configured templates, adding additional properties as appropriate. After placing a rack or frame in the floor plan, front and back elevation views are automatically created. Equipment can be moved within the rack by simply dragging and dropping it to a new position.

Equipment can be connected inside or outside of the building. Connections are established by selecting the equipment and the associated ports. Port colors depict connection status or type, and fiber connection status is also displayed. When connecting to fiber outside the building, users can view Optical System names or sheaths and select the fiber and port to connect or disconnect. A connection report can be generated and the user can trace routes from inside to outside, stepping through each device.

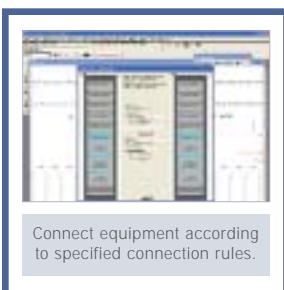
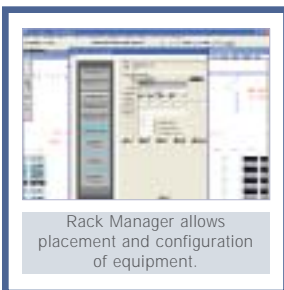
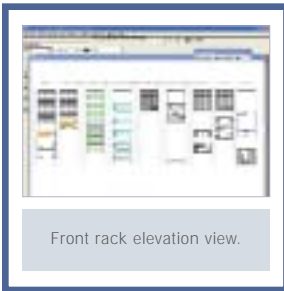
Once a rack or multiple racks are populated and connected, Bentley Inside Plant allows the rack (or grouping of racks) to be copied. All connections are automatically maintained which significantly reduces the time to document multiple facilities with similar equipment.

Reports

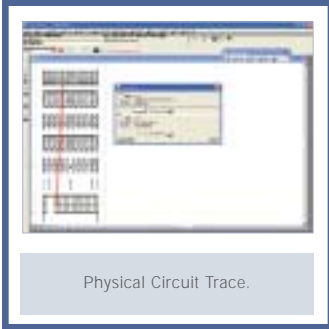
Bentley Inside Plant can generate time-saving reports such as Equipment Specifications, Bill of Materials, and Connection Reports. The Equipment Specifications Report provides details of the equipment used in the design. The BOM Report includes all racks, equipment, and associated costs. The Connection Report displays the port-level connections of the selected equipment. Wire Run and Circuit Trace Reports and logical schematic drawings are automatically created.

Engineering Calculations

With the Engineering Calculations Setup, a specification file is created that contains parameters for calculating loss budget by wavelength and performing other types of analyses. Engineers can also define equipment such as lasers and splitters (from 1x2 to 1x64) and their associated wavelength and loss. Splice loss information can be defined globally, for a specified area, or for a single splice. Input requirements can be specified by device or globally. Fiber cable and connector loss parameters are also user-defined. The engineering calculations can be performed on individual nodes or for all nodes. An easy-to-use GUI guides the engineer through the calculations as the design is interactively optimized and a series of reports based on the calculations is generated. Engineers can select a wavelength to generate a Laser Loss Budget Report or a Laser Connections Report. Additionally, engineers can select a node to generate a Node Level(s) Report, or Node Connection Report showing the connectivity from the node to the laser. An Engineering Calculations BOM is also available to show details of the lasers, splitters, pads, and connectors.



BENTLEY INSIDE PLANT AT-A-GLANCE

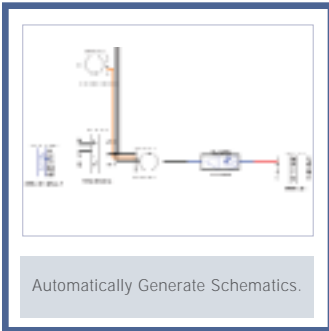


Setup and Configuration

- Easy-to-Use GUI for Equipment Definition
- Pre-Configured Library Included
- Ensures use of engineering standards in design
- Configure Frames, Equipment, Slots, and Ports
- Copy Frame/Rack Assemblies for easy replication of equipment
- Validation Rules
 - Properties
 - Card in proper equipment
 - Card in proper slot
 - Equipment placement in racks
 - Air spaces between equipment
 - Port mapping through equipment
- Connection Rules
 - Jumper Cable-to-Port consistency
 - Port-to-Port consistency

Design and Layout

- Work organized by Project or Work Order
- Design or Import Floor Plans in MicroStation
- Drill down through progressive levels of floor plan detail
- Simple Drag and Drop Equipment Placement
- Edit equipment properties
- Automatic generation of Rack Elevations (Front and Back Views)
- Use MicroStation to add additional work instructions or details
- Equipment state and port connectivity graphically depicted by color
- Actively establish connections inside building or to outside plant
- Generate Connections Report
- Maintain connections while copying or moving equipment and frames



Engineering Documentation

- Wire Run Reports
- Circuit Trace Reports
- Automatically Generated Schematics
- Rack Elevation Views (Front and Back)
- Connectivity Reports by Service

Reports

- Equipment Specifications
- Bill of Materials
- Connection Report through entire facility to customers served

Engineering Calculations

- Engineers define parameters
- Specification file may be saved for re-use
- Loss Budget Analysis
- Optical Coupler Optimization
- Laser, Splitter definition
- Splice, Cable, and Connector loss definition
- Define parameters by device or globally
- Perform Calculations on one or all nodes
- Reports
 - Laser Loss Budget
 - Laser Connections
 - Node Levels
 - Node Connection
 - Engineering Calculations BOM

BENTLEY INSIDE PLANT SYSTEM REQUIREMENTS

- Processor: Intel Pentium-based or AMD Athlon-based PC or workstation
- Operating System: Microsoft Windows 2000 (SP2 or higher recommended), Windows XP, Windows NT 4 (SP6 recommended)
- Prerequisite Application: MicroStation and Oracle
- Memory: 256 MB
- Hard Disk: 200 MB minimum free disk space
- Input Device: Mouse or digitizing tablet
- Output Device: Most industry-standard devices are supported. Works with output devices supported by Windows
- Video: Supported graphics card. Dual-screen graphics supported with vendor-supplied drivers for Windows NT 4. Multi-monitor configurations supported with Windows 2000 and Windows XP

ABOUT BENTLEY

Bentley Systems, Incorporated provides software for the lifecycle of the world's infrastructure. The company's comprehensive portfolio for the building, plant, civil, and geospatial vertical markets spans architecture, engineering, construction (AEC) and operations. With 2003 revenues reaching \$260 million, Bentley is the leading provider of AEC software to the Engineering News-Record Design 500 and major owner-operators.

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