

Top 10 Benefits of the Paladin DesignBase Power Systems Design and Analysis Platform

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EDSA is frequently asked to provide “The Short List” of the most valuable features and benefits that our Paladin® DesignBase™ and Paladin® Live™ platforms deliver for customers. Paring the list down is a challenge, but at the highest level, here is a short list of the ten most universally valuable aspects of Paladin DesignBase.

1. Deployable Design Model: Paladin DesignBase is the only power systems design and simulation platform whose design models can be redeployed in “live” mode, to ensure that, once constructed, the facility operates precisely as it was designed to function. Using EDSA’s Paladin Live software, the “ideal” operating design specifications for every component within the design – as well as all system-level model behavior – are calibrated in real-time with actual readings from live operations.

Key Benefits:

- Power system engineering expertise extends beyond the design stage
- Live operations perform precisely as they were intended in the design stage
- Deviations from “as-designed” specifications are immediately known and investigated

2. Unprecedented Ease-of-Use: The Paladin DesignBase user interface is the result of a joint development effort between EDSA and AutoDesk®, creators of AutoCAD® design solutions; engineers familiar with diagrammatic platforms such as Visio® will quickly be productive with Paladin DesignBase. Not only does Paladin DesignBase integrate the ActiveShapes®, “drag and drop,” “plug and socket” model-building processes, it also features a rich component library of frequently-used objects.

Key Benefits:

- Novice users can quickly create robust, highly-accurate models with expert proficiency
- Experienced Visio® users quickly gain mastery of Paladin DesignBase
- Plug-and-Socket features provide automatic connection-checking and data transfer

3. Master Model-Based Design and Simulation: Beyond the Paladin DesignBase modeling environment, EDSA provides the industry’s broadest family of simulation programs, to ensure that common electrical faults are designed-out of the facility before the design model is released. These 50 modules – all working directly from the DesignBase model itself – are used to 1) analyze and optimize power flow, voltage

stability and power systems reliability, as well as 2) resolve faults such as short circuits, arc flash, and electromagnetic transient problems.

Key Benefits:

- “Master Model” is created once, and continually reused for all applications
- ECOs recommended by simulation programs update automatically Master Model
- Design changes automatically ripple through to all simulation programs

4. Engineering Productivity Features: Paladin DesignBase offers users an unparalleled range of features and functions designed to increase their engineering capabilities, without adding technical complexity:

- **Rich-Object Component Library:** This comprehensive library of frequently-used design components allows users to easily “drag and drop” pre-defined symbols on their design workspace. Each Paladin DesignBase symbol is an intelligent object that is instructed to connect itself to the desired object, and to stay anchored once connected. If two branches are connected by the user, then the program automatically generates a physical node.
- **Complex Components:** This feature – an EDSA exclusive – allows Paladin DesignBase users to save any part of a model as an object... no matter how many objects are contained within it. This allows sophisticated grouping of objects – say a collection of buses or equipment – to be saved as a single custom component... and used over and over in downstream design projects.
- **User-Customizable Symbols Catalog:** Paladin DesignBase has incorporated Autodesk’s “ActiveShapes® Editor,” allowing users to design the layout of any new catalog component, such as a new bus symbol or branch symbol.
- **Project Layout Management:** Paladin DesignBase users can organize the project layout as a single drawing model, as a multiple-page model, or as multiple drawings model. The drawings are electrically interconnected and operate on a single project database.
- **User-Customizable Working Environment Layout:** Paladin DesignBase users can customize the displayed tools, features and application, as well as customize the toolbars and the associated commands.
- **Comprehensive Library:** Paladin DesignBase has a comprehensive, verified and validated library with:

- Protective Devices Library
- Comprehensive Control System Library
- Library has edit, merge and copy features
- Harmonics Sources and Filters
- Battery Data
- Transformer Library
- Cable (NEC, and manufacturer published)
- Reliability Index Library (IEEE)
- Motor Nameplate
- Motor Circuit Model (single and double cage motors)
- Motor Characteristic Model
- Motor Load Model
- Over 6,000 Generators "Thermal as well as Hydro" data
- LV Circuit Breakers
- HV Circuit Breakers
- Fuse
- Motor Overload Heaters
- Interruption cost library
- Transmission Line Library
- Multifunction Relays
- Trip Devices
- Mil Spec Harmonics Library
- Milspec Protective Device Library
- Low Smoke Cable Libraries
- Reclosures
- Reliability Index Library (Lockheed Martin)
- Weather Factor
- Cable Loading Patterns, Weekdays, Weekend, Transient Simulation of Power Cables
- Human Reliability Factor

Key Benefits:

- User has complete control over the Paladin DesignBase user preferences
- All design expertise is automatically codified into the DesignBase model
- Model components can be easily used and reused in future design projects

5. Design Team-Based Architecture: This feature – another EDSA exclusive – allows Paladin DesignBase users to organize projects in a team framework, allowing several engineers to work on the same project individually and simultaneously. At the end of the project, the project manager will interconnect the independent drawings, and consequently will generate the entire project model.

Key Benefits:

- Tasks that are sequential in other systems can be completed concurrently with EDSA
- Continuous, team-driven work cycle accelerates the project timetable
- Increased cooperation between team members promotes higher-quality design

6. DesignBase Hyperlink Feature: This feature allows Paladin DesignBase users to connect any Windows-based application to their Paladin DesignBase project, including any website. This is a powerful feature that allows users to organize their Paladin DesignBase projects – stored in a single project database – as multiple page or multiple drawings project. For a given project, the hyperlink feature is a search, find, open the drawing model and locate the network component on the drawing.

Key Benefits:

- DesignBase models become boundary-less, extending wherever necessary
- Models are not constrained to CAD-only elements, but to all business applications
- A single project database ensures manageability over the extended design model

7. Data Structure Analyzer: This is a powerful function that automatically checks the drawings components and their database. This feature allows the user to fix either the model components layout or the project data base against the displayed components.

Key Benefits:

- Automatic updates of legacy information into new DesignBase environment
- Per user selection, can delete obsolete components not found in the database, and...
- Can also generate needed components found in the database, but missing in the model

8. Automatic Error Checking: A state of the art function that allows the user to automatically check the network connectivity and voltage consistency. The feature automatically detects any network connectivity inconsistency and fixes it.

Key Benefits:

- Potential design flaws are isolated and flagged by DesignBase intelligence
- Automatically adjusts network data for system consistency
- Automatically provides data connectivity model components

9. Third-Party Compatibility: Paladin DesignBase is completely compatible with AutoCAD; users can import/export any drawing from/to AutoCAD, with *.dwg or *.dxf file extension. In addition, Paladin DesignBase is completely compatible with Microsoft® Office Products and any Windows® application. It emulates Word, Excel, Powerpoint, and Access user interfaces, and users can import or export any file from these Microsoft applications; any Windows-based application can be embedded into EDSA model.

Key Benefits:

- User has the option of importing schematics and wiring diagrams
- Global enhancements providing detail on wiring
- Users can export model with associated EDSA application (Load Flow, Short Circuit, etc.) without requiring locally-hosted applications

10. Fully-Customizable Symbol Catalog: Paladin DesignBase uses Microsoft® Visual Basic® to allow users create their own symbols and dialog boxes.

Key Benefits:

- Users can modify EDSA symbols for consistency with user-specific symbols
- Users can enhance and enlarge EDSA catalog
- Easier way to create symbol names and attributes based upon user facilities

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