DesSoft
Design Software

Engineering Design

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DesSoft is a South African company who designed Engineering Design Software for the Electrical, Instrumentation and Process engineers and designers to build their design information documentation.

DesSoft's mission is to provide the easiest and most productive documentation design tool and have the shortest support cycle to our clients.

The software is not only for Engineering, Construction and Procurement (EPC) companies but can also be used by End Users to maintain these documents, viewing the drawings from a SCADA system, having red-lining capabilities to mark-up plant changes, etc.

The software is used widely within the different mining; Diamonds, Platinum, Gold, Aluminium, Iron ore, Coal and other as well as in the Chemical, Nuclear, Food, etc. sectors.

This is possible because DesSoft's software is totally customizable and flexible as well as scalable for all project sizes.

The developers of the DesSoft software have since the early 90's also developed the following documentation software:

· Company Level - Instrumentation Organizing System (Precious Metals Refiners - South Africa

· National Level (SA) - PiSYS4, PiSYS5 and PiSYS6 Instrumentation Software

· National Level (SA) - ELSYS : Electrical System

· International Level - AutoPLANT Instrumentation V15 and V15.1

· International Level - AutoPLANT PIW V16 (Includes Electrical)

All products generate documents in DGM format (our internal document editor) and can also be exported to DWG (without the requirement of AutoCAD installed), XLS, PDF, VSD, etc. formats.

EDes – Electrical Designer, FDes – Fieldbus and Instrumentation Designer, P&ID – Piping and Instrumentation Designer, RDes – Reticulation Designer and 1Eng – One Engineer each have a built-in report editor to preview, customize the default reports or to create additional reports to suit your own requirements.

1Des – One Design tool for Electrical & Instrumentation Design Documentation Software

1Des is a design tool that is database and CAD independent with many speed building tools to reduce design time and ensure accuracy by using pre-stored library items.

It is database driven meaning that all data entries resides in one place and all documents are populated from the same data source.

1Des is written on the latest, state of the art, .Net technology which implies lots of benefits, but mostly that network traffic is very much reduced which implies again that there are significant speed benefits.

It is database independent allowing the user to create either a Microsoft Access database or a Microsoft SQL database, each with their respective advantages and disadvantages depending on the user's specific requirement and implementation.

It is CAD independent for 1Des has its internal drawing engine producing **autogenerated** design documents like Loop diagrams, Termination Connection diagrams, Cable Block diagrams, Single Line diagrams, Cable Wiring diagrams in DGM format.

These auto-generated drawings can also be saved to DWG and PDF formats without the requirement of any additional software installed.

1Des can also produce template style in DGM, VSD and DWG format drawings where the exact presentation of the user's preference of a drawing can be configured.

Again these DWG drawings can be updated and viewed in 1Des without the requirement of AutoCAD software installed.

· Viewers and Redlining

For the DGM type drawings DesSoft offers a FREE viewer that can be distributed to clients and sub contractors which can be installed on any amount of computers.

DesSoft also offers a **1View** package that can view any drawing created in 1Des, that includes DWG type drawings as well as any report (see "Reports or Lists" below) created within 1Des. An additional functionality within the DGM viewer and 1View is that they also have redlining capabilities for DGM type drawings.

Except for being able to redline it will also **flag the database** (when able to connect to the database) document register that there is a redlined document by colouring the document entry in red for easy identifying of all applicable documents.

This allows then the drawing office to rectify the database and update the document again with the correct information ensuring that the drawings are exactly like the plant and up to date. This flagging of the database **completes** the **document maintenance cycle** and taking out the painful frustration of not knowing about these plant changes.

· Reports or Lists

1Des has an internal reporting engine from where the more than 20 standard reports can be viewed or modified or new ones can be created. No external software liken Crystal report engine, MS Access, etc. is required to design these reports – thus **no additional or hidden costs**.

Also can a report been modified while other users are working on the project, in other words a **true multi user** application. Reports represent Equipment, Instrument, Cable, I/O, Racking and Routing, Cable pulling order, PLC Card Layout, MCC Load lists, Motor costing, Instrument costing, Cable costing, Device costing, etc, type lists and schedules.

All reports can be saved as electronic files in PDF, DWG, XLS or TXT formats which means that reports can easily been mailed to or viewed outside the 1Des environment or can be included in an external document management system like SAP.

· Datasheets or Specification Sheets

1Des ships with a set of 48 ISA standard datasheets for instrumentation and 2 typical motor datasheets for electrical. Further can datasheets been created and linked to database entries for cables, panels, racks, etc.

All datasheets are customizable as it is normal Excel type files. It can also be viewed and customized outside the 1Des environment with MS Excel, which means that data from other departments or vendors can be entered directly into the datasheet by the respective responsible person.

1Des datasheets has a build in **synchronize tool** for each time when a datasheet is opened it will compare the document's linked cells to the database fields and display the differences found allowing one to either synch to the document or to the database.

1Des also has a powerful **bulk update and create** tool, where all instruments or motors can be selected and then a datasheet document can be created or if they already exists then all selected items can be synchronized to the document or to the database. Datasheets can also be created for Cables, Panels, Racks, etc.

· Other Excel documents

1Des allows one also to associate other excel documents with instruments, motors,cables, etc. These documents can be used as Loop check sheets, calibration sheets,Cable Pull slips, Rack slips, etc.

· Auto-generated DGM documents

1Des produce auto-generated drawings for loop connection, termination connection and single line diagrams. It uses pre-configured configuration files that are customizable, to insert into an empty drawing that only has one's specific border, which is also customizable, on it.

These **customizable** configuration files ensure quite acceptable type auto-generated drawings that suit most users. Auto-generated drawings means that the drawings adapt to what the database data is configured and reduces the management of template based type drawings.

· Template Type Documents

1Des has an alternative option to auto-generated drawings that allows the user to exactly draw a drawing to meet the client's needs and then put links on the drawing to point to the correct database field and row. 1Des then replace these links with the database values to produce accurate and up to date drawings.

These template style drawings can be in DGM, VSD or DWG format and will be updated without the requirement of an AutoCAD installed.

· Motor Schematic Drawings

DesSoft has found that each company already has their own set of Motor Schematic drawings and that they are based normally on between 8 and 16 different types like a DOL, VSD, etc.

These different types can then been made intelligent by placing links to the database for all the items that change per drawing. 1Des will then create schematic diagrams using these templates and then updating the links without the requirement AutoCAD installed.

· Racking and Routing

1Des provides a very simple but effective method to create rack sections in a hierarchical view. **Multiple cables** can then be routed at a time. Cables can be auto routed where 1Des will find the shortest route to the selected end point or one can manually select the required racks.

When racks are created, the de-rating factor can be selected as well as the cable **fill factor** for the rack. E.g. if it is specified that 20% spare capacity must be allowed then a fill factor of 80% can be specified.

1Des will then colour the racks red that do not have enough rack space available. After cables are routed, **cable sizing** calculation can be performed where the load and voltage drop must meet the correct criteria.

After cable sizing is done, **rack utilization** calculation can be done where the used width will be calculated and fill factor (see above) will be calculated as well as the unit weight per meter for the racks according to all routed cables.

· Document Repository

1Des has the functionality to save each document in its own revision folder so that one can always refer back to previous revisions. To be able to place all the generated documents in a central folder from where it can be monitored by an external document manager like SAP, etc there are an "**Update Document Repository**" button that finds all the latest revision drawings, datasheets and reports and copy them to this central or repository folder.

· Productive Tools

1Des has many productive tools like importing, bulk building of loops, cubicles, documents, datasheets, etc. **Bulk creation or rebuilding** of cable cores, Tstrip terminals, PLC cards, whole loops or field panels by dragging and dropping from the libraries. **Bulk assignment of manufacturer standards** like cable standards, instrument standards, motor standards, device standards, card standards can be assigned by dragging and dropping from the standards list.

These standards can be updated using an import or using the build in editor. Further does 1Des open its different modules in a **multi-window** environment which allows one, for example to switch between the component editor, the document generator, the detail connector, etc without the need to close anyone.

This has an immediate **productive advantage** that one do not need to find again the loop or tag that one was busy working with because it remains in the last opened and selected state. On top of the above are there also a **filter bar** with multiple column filter capabilities in each list of the above modules, to quickly find the desired information.

1Des also has a **spreadsheet** view of all the data tables to do bulk update or viewing of information. These spreadsheet views have also the above filtering methods as well as the capability to **sort** on any field by just clicking on the field header or field name. This saves heaps of time in finding items and ensuring accurate data entry and making **1Des** one of the most user friendly but customizable products in the market.

Added to the above functions are the ***bulk*** *import to different tables* function, *auto generate of cable block* diagrams function, *auto core connect* function, *cross connect* function and more bulk functions that can "kick start" any project or can be used for "reverse engineering" to re-use existing information, eliminate mistakes, reduce data checking as the information was already confirmed, etc.

· **Integration Tools**

1Des can integrate to other systems like AutoCAD, Microsoft Visio, Wonderware ArchestrA, the Unity software of Schneider Electric, Adroit, etc.

DesSoft has its own **anytime intelligent** P&ID software that are totally integrated with the 1Des database with bi-directional data flow. ***DesSoft P&ID*** has auto pipe numbering, various sizing calculations, counting reports, etc.

But for existing P&ID drawings in other formats, 1Des provided other integration tools as described below:

An AutoCAD P&ID **tag extraction** tool is provided to gather information from DWG files and import it into the 1Des database from where ArchestrA templates can be associated and then the **Wonderware Galaxy Model builder** can build the ArchestrA galaxy model. By deploying the ArchestrA model to InTouch, all the documents in 1Des are referenced in the instrument objects, from where the loop drawings can be viewed from the SCADA system, enhancing the solution offered to the client.

The same functionality is also available for Adroit. When viewing the 1Des drawings from the SCADA system, the red-lining functionality is available that will flag the database indicating the changed documents so that the changes can be approved and applied within the database to complete the document maintenance cycle.

The **Unity XPG** tool uses the XPG code templates for the digital, analogue, motor drive, etc, to generate one large file that contains all the blocks from standard code templates for all the tags in all the different PLC's created in the 1Des database.

Other tools like AutoPLANT P&ID or PlantSPACE P&ID database synchronize tool is implemented from where the P&ID information can be synchronized form their database to the 1Des database.

Tools are implemented on client's requests and if DesSoft can identify that more clients would require the same tool, it will become a standard "User Tool" in the software.

The above features makes the **1Des application *FAR MORE* than just a drawing tool.** It produces multiple drawings and lists accurately as all are generated from the same data source, completes the document maintenance cycle with its red-lining method and with its integration tools, allow one to get that data into other systems, ensuring data accuracy, productivity and up to date information.

Most commonly used documents in the 1Des application.

These are the most commonly used documents, but the application allows one to add more types, especially for the different lists and costing reports.

Document Name	EDes	FDes
Diagrams and Drawings		
Auto-generated Card Connection Diagrams	x	x
Auto-generated Loop Connection Diagrams		x
Auto-generated Termination Connection Diagrams	x	x
Auto-generated Wire Connection Diagrams	x	x
Auto-generated Power Distribution Diagrams	x	x
Auto-generated Single Line Diagrams	x	
Template Style Loop Diagrams		x
Template Style Schematic Diagrams	x	
Semi-automatic template style Field-bus diagrams		x
Semi-automatic template style Connection diagrams	x	x
Datasheets	x	x
Hookup drawings	x	x
Utensil drawings	x	
Other Excel documents (Check sheets, Calibration sheets)	x	x
Fieldbus and Ethernet Layout diagrams		x
Reports or Lists		
Cable Core Connections	x	x
Cable Costs	x	x
Cables per Rack	x	x
Cable Route	x	x
Cable Schedule	x	x
Card Schedule	x	x
Card Layout	x	x
Device Costs	x	
Document Register	x	x
Electrical Index (Equipment List)	x	
Hookup Bill of Material	x	x
Instrument Index		x
Instrument Costs		x
I/O List	x	x
I/O Schedule	x	x
Load List	x	
MCC General Arrangement	x	
Motor Costs	x	
Rack Schedule	x	x
Revision History	x	x
Track Changes	x	x

DesSoft Documents, Reports and Calculations.

Documents
Auto-generated Card Connection Diagrams
Auto-generated Loop Connection Diagrams
Auto-generated Termination Connection Diagrams
Auto-generated Wire Connection Diagrams
Auto-generated Power Distribution Diagrams
Auto-generated Single Line Diagrams
Template Style Loop Diagrams
Template Style Schematic Diagrams
Semi-automatic template style Field-bus diagrams
Semi-automatic template style Connection diagrams
Datasheets
Hookup drawings
Utensil drawings
Other Excel documents (Check sheets, Calibration sheets)
Fieldbus and Ethernet Layout diagrams
Cable Block Diagrams
P&ID Diagrams
Power Reticulation Diagrams
Reports or Lists
Cable Core Connections
Cable Costs
Cables per Rack
Cable Route
Cable Schedule
Card Schedule
Card Layout
Device Costs
Document Register
Electrical Index (Equipment List)
Hookup Bill of Material
Instrument Index
Instrument Costs
I/O List
I/O Schedule
Load List
MCC General Arrangement
Motor Costs

Rack Schedule
Revision History
Track Changes
Calculations
Motor Sizing
Cable Sizing
Cable Length Calculations
Rack Width Calculations
Unit Weight per meter for Rack Calculations

ECSA accredited training

DesSofts is officially ECSA accredited with all our respective training programs. This is a formal system of recording Continuing Professional Development (CPD) for engineering practitioners.

This allows DesSoft to help the engineers to maintain and enhance their competence and likewise the ability to keep abreast of developments and knowledge in their areas of expertise in order to maintain their competence.

This brings about advancements to the engineers body of knowledge with which they practice, and to the profession in general.

EDes - Electrical Designer

Electrical design documentation software that creates documents like Motor Schematic Diagrams, Termination Connection Diagrams, Single Line Diagrams, Datasheets, Hookups, etc.

Training course offers 4 CPD points accredited by ECSA - Four day course.

FDes - Fieldbus and Instrumentation Designer

Fieldbus and Instrumentation design documentation software that creates documents like Loop Connection Diagrams, Termination Connection Diagrams, Datasheets, Hookups, Fieldbus Network Layouts, etc. and reports like Instrument lists, Cable schedules, I/O schedules, Different costing reports, etc.

Training course offers 4 CPD points accredited by ECSA – Four day course.

PID - Piping and Instrumentation Diagrams

Database linked (intelligent) P&ID diagrams for bi-directional data to instrumentation (FDes) and Electrical (EDes) department from DesSoft P&ID. Change data in one place and all departments are updated.

Training course offers 3 CPD points accredited by ECSA – Four day course.