

# DDS-CAD

## Product and Service Overview



Plan | Calculate | Simulate | Document



DATA DESIGN SYSTEM®

# Why DDS-CAD?

## Quality

Plan, calculate, simulate and document the total mechanical, electrical and plumbing (MEP) services for buildings at the highest level.

## Time Saved

Achieve an unprecedented speed of project turn-around.

## Process Optimisation

Software that will optimise and seamlessly integrate into workflows, easy to learn and intuitive to use.

## Investment Security

A future-safe solution with a partner that has a strong financial basis (top ranking financial results).

## Compatibility

Secure the full compatibility with all popular software of your partners from architecture, the craftsmen and the authorities in the field.

## Direct Care

Directly supported by the developers of the software, without any third party intervention.

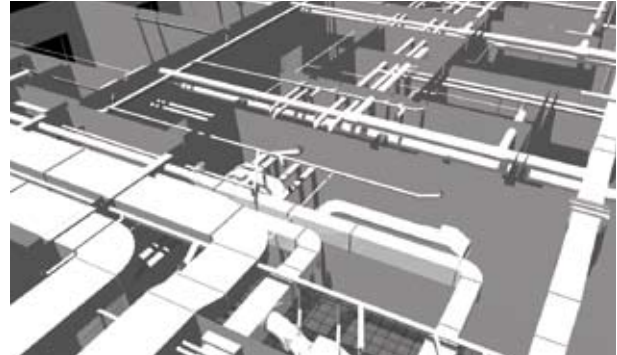
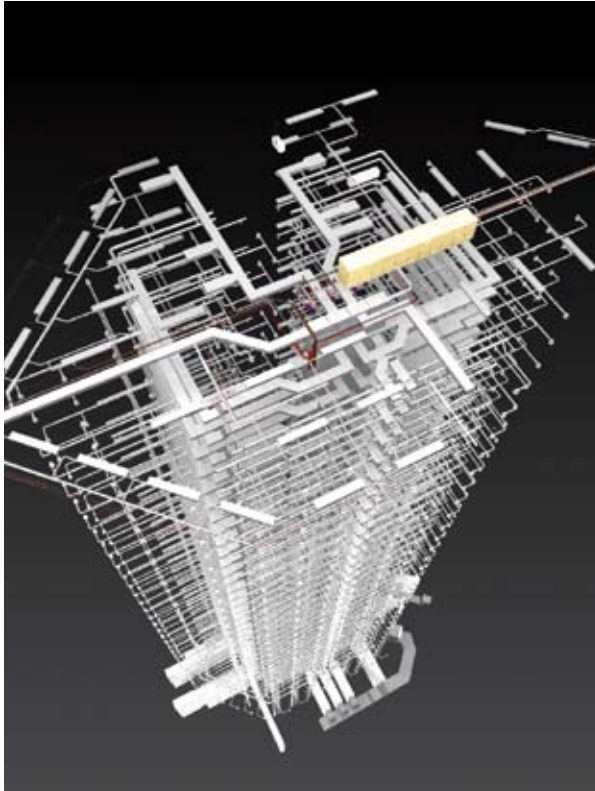
## Security

Profit from integrated multi-discipline control functions (on validity, collision detection, correct connections etc...)

## Easy Start

First class, proven guidance in the use of the software by experienced training professionals.





## Independence

Use an independent, stand-alone solution; additional third-party CAD programs (such as AutoCAD or Revit) are unnecessary. Consequently no duplicate purchase, training, update and maintenance costs.

## Product Databases

Access integrated products and components from numerous different manufacturers. These products are available as intelligent BIM objects.

## Future Security

Able to import and export intelligent data into the industry standard buildingSMART/IFC format and are therefore prepared for the future.

## Minimisation of Liability Risk

Increase security with integrated expertise in all levels. Planning errors are avoided, liability risks are minimised.

## Consistency

Generate, via a mouse click, bills of quantity (BOM) - using data from manufacturers catalogues that matches the technical requirements. This data can then be passed directly to estimating and procurement software.

## Intelligence

Plan realistically on the foundation of an intelligent building model (BIM - Building information Model) with smart components and objects. Thereby using 25 years BIM experience of one of the pioneers of this technology: DDS.

## Work Easier

Calculate via a mouse click - thanks to integrated calculation functions. Calculations take place automatically while drawing; no need to repeat them after drawing the routes.

## Partnership

With the DDS team, you gain a genuine partner, which happily supports you with your challenges.



## Dear Reader,

You hold this brochure in your hands, because you would like to learn more about DDS-CAD. This delights us and therefore:

Many thanks for your interest!

This document will help you to gain a clear understanding of the full spectrum of our software. You will get information on the core components of DDS-CAD as well as the specific functions that are available to you for the planning of projects for all mechanical and electrical disciplines.

However, you do not only benefit as a DDS user by the function and diversity of our programming solutions. Additionally with DDS, you have a direct link to the developer of your software. This means that care and support is available directly with the DDS team, and each and every employee is happy to help you.

For us it is crucial that you know that in this partnership you are in good hands. Therefore, we offer in addition to excellent software features, numerous benefits that promote a fruitful partnership and long-term cooperation. This will be discussed in more detail in this brochure. So you not only get an overview of the DDS-CAD software, but also an appreciation of DDS as a dependable partner for you as an industry professional.

We hope that you find some interesting information and an insight into DDS while reading this brochure. And we trust that the numerous benefits of DDS-CAD software and a partnership with our DDS team can convince you.

We look forward to a good, successful and long-term cooperation with you!

So we say:

### Welcome to DDS!

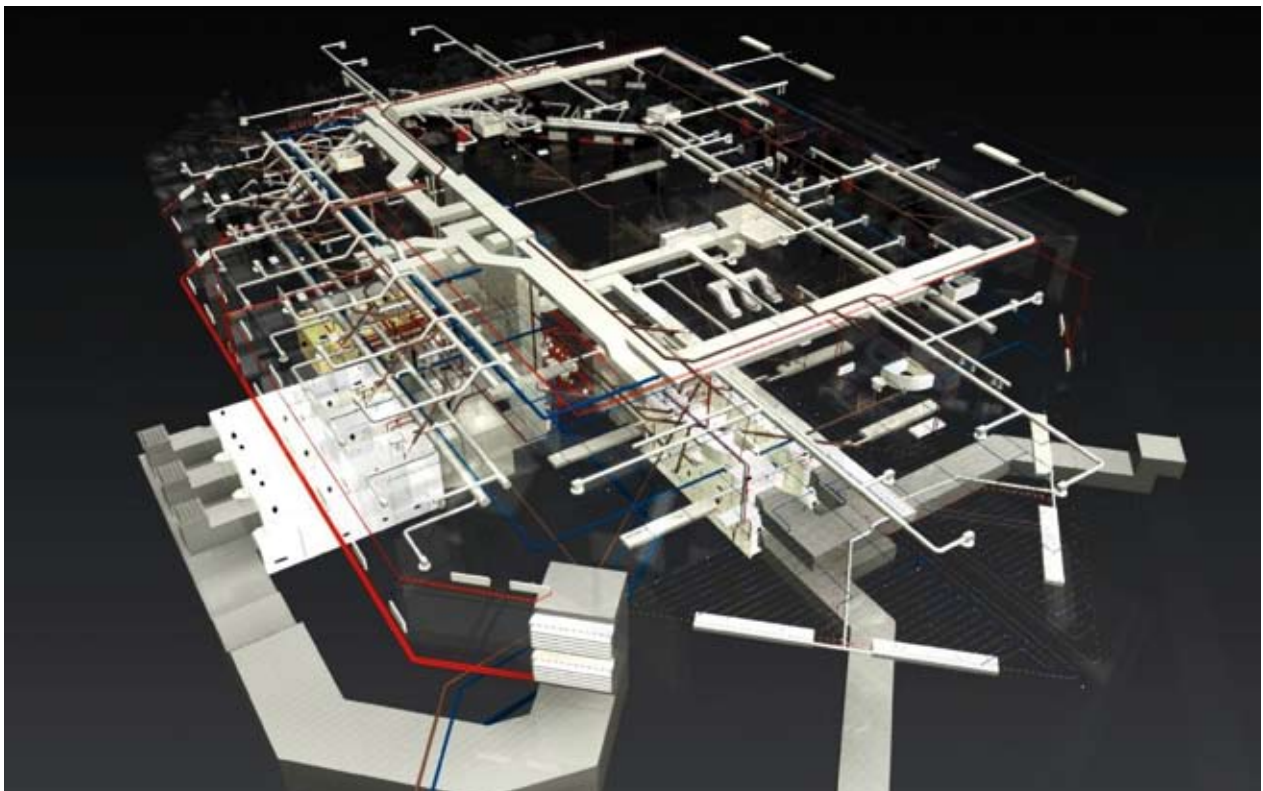
Nils Kverneland  
Managing Director DDS GmbH

Bjørn K. Stangeland  
Chief Executive Officer DDS ASA

and the total DDS team

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## More Than You Expect...

*Good Software Is the Basis, the Perfect Partnership and Consultation Is Our Obligation*

One of our targets as software developers is obvious: We want to provide an ideal planning tool, with which your know-how, authority and experience can transfer perfectly to the drawings and designs you create. We are convinced that we can do this with DDS-CAD.

Furthermore, we see an equally important task of ensuring you enjoy a long-lasting, successful ability to work with our software and that this is beneficial to you.

For this reason, we consider our task is far from fulfilled if we have shipped you your DDS-CAD licenses. Instead, we see this as just one of many steps on the track of a lasting and important "project", which is our partnership.

With this "project" in mind, we gladly undertake this preliminary work:

- Exhaustive free local consultation
- Accurate assessment of your individual needs
- On this basis: selection of suitable, tailored solutions for you (and not "off the shelf" software)



If you are working with the software, we offer you:

- Implementation for an initial consultation without stopping your project work
- Orientation and training of staff
- Support during the first steps with DDS-CAD
- Adapting the software to meet individual requirements
- Helpful support by competent technical advisors via telephone or e-mail
- Inclusion of requirements and suggestions for further development of the software up to the realisation of special solutions
- Project support as needed
- At all times to listen to your concerns

You will see: Understanding the "partnership" we offer clearly more than the mere management of software license transfer and use. Instead, it comes to things like first-class collaboration, solution development, optimisation and successful advancing processes and much more. Our ambition is to offer you more than you expect.

This approach has already convinced more than 13,000 users across Europe (installers, planners, consultants, education institutions and public authorities) of the qualities of our products, and of DDS as partner.

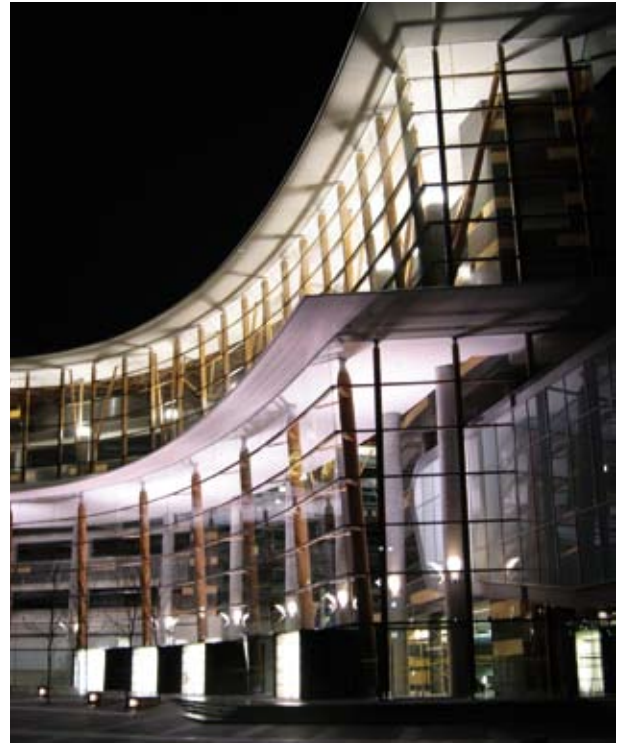
# Identify in Advance the Necessary Improvements and Updates

*As Required by Developments in the Construction Industry*

To keep our customer satisfaction and the effectiveness of DDS-CAD as a planning tool at a high level, we take great care to establish exactly where enhancements are really necessary. In our opinion, the concerns and requirements of the customer are paramount in an effective working partnership. As new requirements have come to light, we have consistently provided our software with features that make your work easier.

For example: Up to 80% of the total project development cost account for changes to the original design. Moreover, we know that design errors cause significant extra costs in a project. Consequently, we have developed DDS-CAD so that modifications are as simple and error free as possible, which improves project productivity. We also aim to really amaze you with the efficiency of our software when submitting your project updates to other design partners, making the process almost effortless and without any loss of information. Re-entry of data is one of the most common causes of error, and DDS-CAD aims to reduce this to a minimum.

It is through listening to our partners, who have been asking for improved data transfer, that we have implemented the buildingSMART/IFC data exchange format as a supported standard in the software, and adopted the "BIM" (Building Information Modelling) concept, which is described in detail on pages 10/11. DDS-CAD was the first MEP (Mechanical, Electrical and Plumbing) design package to introduce IFC support as standard, and has been a world leader in buildingSMART implementation and innovation. What this means in practice is that designing with DDS-CAD goes far beyond simple 2D CAD drawings. With



DDS-CAD you develop a working model of the building's MEP services, and thus the basis of a full building simulation.

Continuous development of DDS-CAD is undertaken to keep the software up to date with new technologies and future developments in the industry. For designers in the construction industry, for example, a challenge they face is the economical transfer of existing building plans, only available in paper form, into intelligent digital models. This is particularly important, as planned refurbishments to the enormous existing building stock are now required, or will be in the near future. This represents a huge potential for new business for planners and designers. For this reason, DDS-CAD is already equipped with the ability to convert scanned building plans to intelligent building model files in an efficient and productive manner. On this basis, building models developed in DDS-CAD can then be used to plan the refurbishment of existing buildings in an efficient and cost effective manner (more on this on page 12).

These examples indicate: We are watching the developments affecting the industry, and respond flexibly and quickly to a foreseeable need. When this finally occurs, it is already served by DDS-CAD.

# Roll-out Without Interruption: The DDS Implementation

*Smooth Integration into Your Project Process Ensures High Level of Approval*



In our experience, an average working week of 60 hours or more is not unusual for planners and designers. The introduction of software such as DDS-CAD is always done so in order to simplify planning processes and optimise them to exploit new opportunities, ultimately saving time and therefore reducing costs.

This is how we have designed the software. But that is not enough, since experience shows that users welcome and accept new software, if the introduction and commissioning of the software is successful.

In most engineering firms in which new DDS-CAD installations are introduced, the software is replacing an existing planning program. Our consultants plan such changes carefully, ensuring there is a direct cost-benefit from the introduction of DDS-CAD. In our experience, the implementation of our software in your project work can be done in such a way that ensures that the projects will not be delayed in any way or worse still, stopped.

We support our partners step-by-step during the important integration of DDS-CAD software into your existing systems as work processes. In this way, the transition from a CAD drawing program to the DDS-BIM solution happens quickly, safely and smoothly.

In practice, we frequently take two different approaches. In many offices, a preliminary sketch outline design is done by the engineer, which is then created by a CAD operator before calculations are made. Then the

dimensions are assigned and the necessary calculations are carried out by the engineer. The results are then incorporated into the design. This approach is also used during iterative updates of the design, with both engineers and draftsmen involved in the process. In many other offices, the work is completed, from design to implementation drawing, by a planner.

Both approaches - as well as several other alternatives that are somewhere between the two described methods - are used in the market with great success. This means for us that our software must be flexible in that each of these variants are supported and can be smoothly integrated into the workflow. We meet this requirement with DDS-CAD.

Thus, the benefits of the new software for all the participating employees are quickly identified, and a high acceptance of the transition is ensured. The tangible improvements through DDS-CAD often have positive effects on motivation and commitment of the user. Working with DDS-CAD is fun from the beginning!



# Ready for the Future: The DDS Concept

*Forward Vision and Development Independence Gives Us a Unique Advantage*

Only a planning solution, which is focused on future requirements, can give you a competitive advantage and investment protection as a user.

For that reason the DDS development team has had the same target for years - not only to meet the current needs of users, but also integrate new technologies into the software. In this way, DDS-CAD users at all times have a software solution available for CAD design for buildings (or BIM-planning) from a pioneer and innovation leader. This ensures that you use a tool, which is always equal to the demands of practice.

To respond quickly to new technologies and changing demands, DDS-CAD has from the beginning been conceived as a standalone solution. In this way, it has its own powerful 3D CAD-core and does not rely on a third-party CAD engine as a base application. This saves costs and update overheads - with full power and flexibility. A fully integrated DXF/DWG interface provides effortless read/write access to these important document formats.

An intelligent and independent DDS core is equipped with numerous features that are, in principle, available in all the DDS-programs. So whether you're an electrical engineer on a electrical package, or use it as a mechanical designer with packages for plumbing, heating, air conditioning and ventilation: the discipline specific features and functions of your software are based on a comprehensive found-



ation, which alone already offers numerous benefits. In this DDS-CAD core functionality, genuine value is added, which will be specified on the following pages.

Despite its high performance, DDS-CAD requires only minimal demands on your hardware resources. With a standard modern Windows based computer system, a 3-button mouse and a decent graphics card, you are ideally equipped for DDS-CAD.



## Your Benefit

Use of modern and flexible design software from only one source, no extra costs or double update overhead, simple processing of existing plans and information through appropriate interfaces (DWG/DXF), expensive hardware updates are not required to operate the software.

# The Building Model Concept “Building Information Modelling” (BIM)

The world is three dimensional. We think in three dimensions. We are developing three-dimensional buildings. Therefore there is no reason why you should restrict yourself to planning construction projects in two dimensions. A two dimensional drawing is a poor representation of a 3D object and thus can not effectively reflect reality. Consequently, DDS-CAD has been developing as up to date planning software, not based on primitive line drawings, but on a full three-dimensional 1:1 scale building model.

Both the systems to be planned, as well as the facility elements of the building, are fully three-dimensional, which allows comprehensive analysis of the project. All relevant data (such as room sizes, wall thicknesses, the details of the room elements such as windows and doors, etc...) is recorded in a “virtual space book”, and is subsequently utilised for different purposes; for example space and load calculations, BOM creation, visualisation of the building, etc... Similarly, the installed components (such as wash basins, radiators, air ducts, cable trays, or heat pumps) are modelled in 3D along with their technical characteristics (radiator performance data, ventilation duct sizing criteria for dampers and terminals) are integrated into the planning model. Even technical documents such as assembly instructions, maintenance information and repair instructions can be provided and linked directly to

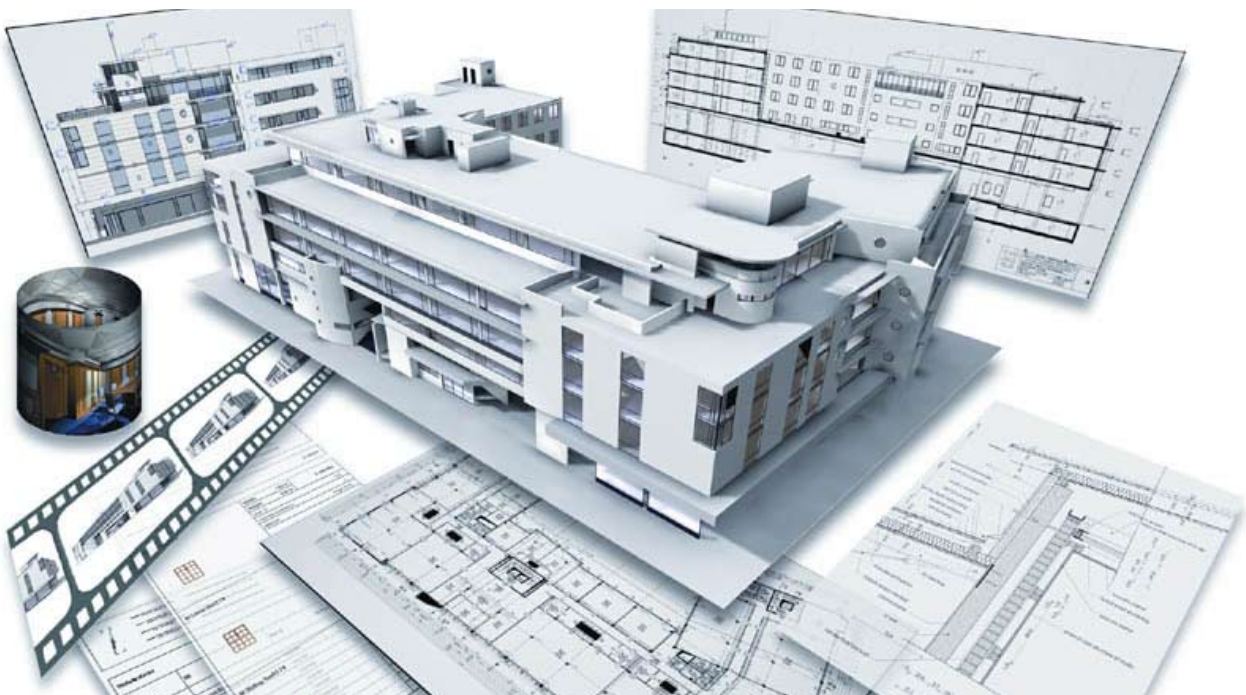
the components. This allows the designer to work all the time with a realistic data model of the building, including all the available background information. This forms the perfect basis for all further design stages to virtual simulation of the building.

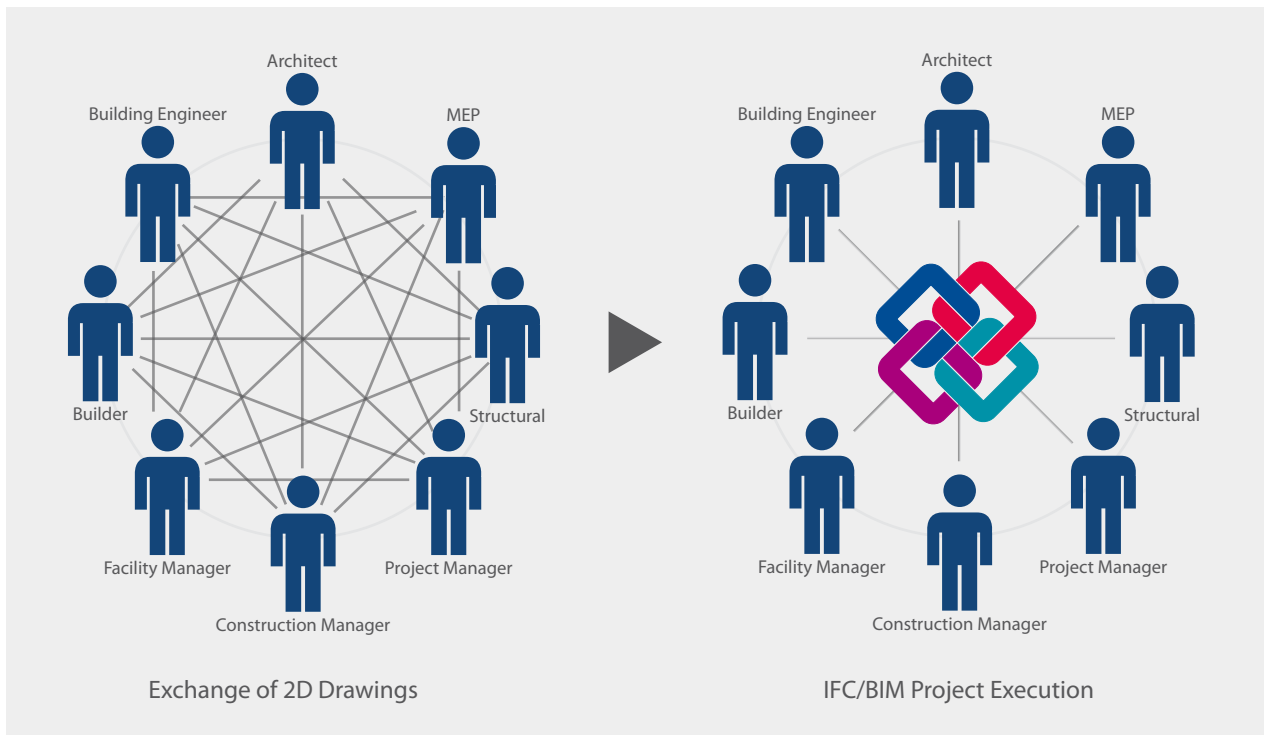
With this approach, there are numerous additional facilities for improving the quality of your proposed design - searching for possible conflicts between ventilation ducts, cable trays, and pipe routes, is an example. Numerous calculation functions, fascinating visualisation options and comprehensive scheduling are other features that are made possible with the 3D model.

In cases where such tests, calculations, BOM listing, 3D visualisation and more detailed planning are not necessary, DDS-CAD can of course also be used for the production of 2D drawings and documentation.

## Your Benefit

Realistic planning on a consistent basis; reduction of risk and many potential uses of the collected data for calculations, visualisation, documentation and full building simulation.





## The Intelligent buildingSMART Data Exchange Format IFC

When setting up the collaboration between specialised engineers, architects and the installing contractors, the smooth, efficient exchange of design data plays a crucial role; particularly in planning based on a 3D building model. Once recorded or entered, to save time and avoid entry errors, design data should never be re-entered by members of the team. This is only guaranteed if the building information model retains its intelligent component data during data exchange between the design team.

With DDS-CAD, you have a tool with which data can be exchanged in the intelligent buildingSMART-IFC data exchange format. As a consequence, you will be able to import building models directly from buildingSMART-certified architectural packages such as ArchiCAD, Allplan, Bentley, Revit or ADT. Once imported, you can reference a precise, rich building model, as the basis for design and calculation of the plumbing, heating, electrical, air conditioning, and ventilation systems. When completed, the transfer of the design back to the architectural software, or to communicate to other certified programs, is as effortless as the initial import. These complimentary software solutions can then gain instant access to all of your detailed design data such as heating loads, U-values, air exchange, cable ratings and design specification. A mouse click is enough to get the desired information; for example, to identify the desired sewer ventilation flow rate.

In the same manner, it is possible during the operational stage of a building's life, to efficiently cross-reference this design data, with appropriate software, when planning upgrades and refurbishments. Duplication of information, which introduces the risk of errors and misinterpretation of design intent, is therefore avoided.

As a buildingSMART-IFC 2x3 certified software product, DDS-CAD offers design professionals unprecedented quality of data exchange.



### Your Benefit

Significant time savings and high level of data exchange security with project partners – helps manage future risks.



## The Versatile Floor Plan and Building Coverage

To create your building plans in DDS-CAD you rarely need to create them from scratch. This is only necessary if there are no plans for the object you are processing - either in data or in paper form. When you are entrusted with the planning of a refurbishment or building modification, you will often only have access to drawings in paper form rather than digital plans. In order to utilise these paper documents for computerised planning, DDS-CAD offers the possibility to process even scanned paper drawings, in TIFF, BMP and many other formats. These scanned 2D plans can be easily referenced and a three-dimensional building model of the project can be efficiently developed using them as a basis.

In DDS-CAD, you can always use the imported 2D plans as a basis for quick and easy 2D MEP planning.

Even without a 3D building model, it is possible to develop a 3D MEP design, as this does not depend on having a building model. This allows you access to the advanced calculation and documentation functions such as network sizing and BOM. To make full use of the building related functions, you can extend this 2D representation with a few clicks to create a realistic 3D building model.

If even paper plans are not available, you can still effortlessly and quickly create a 2D plan or 3D model, based on survey data, using DDS-CAD.

With DWG based floor plans you can easily extend the 2D floor plan files to a 3D building model. Automated, intelligent space detection, means you will develop rooms with windows, doors and space identification labels quickly and easily. The computed information is used by DDS-CAD for the creation of a building model. Using this method, you can develop the basis for professional planning in 3D in a very short time.

However, if you have access to a virtual building model from an IFC-certified software (more details on page 11) these alternative methods are not necessary. With the IFC model, you already have an ideal basis for your design to progress without delay. Floors, ceilings, walls, rooms are recognised by the software, as are features such as recesses, windows and doors, floor areas and volumes. Almost immediately you can start your design and run calculations in DDS-CAD.

### Your Benefit

Improved efficiency and higher margins, by reducing the time spent creating the basis for design; effective planning in 2D drawing or 3D model; leverage legacy paper documents to develop plans and models.

# Intelligence of Components and Integrated Object Recognition

All of the components planned in DDS-CAD carry additional information. For example, a radiator is not just the line, text and hatch elements necessary for the representation of the symbol, but also physical dimensions, heat output, and connection ports at the selected configuration. In a DDS design there are also available all the other components of stored data intelligent planning elements. From the walls (including the wall elements) to Windows (thermal transmittance value) to switches, cables, ducts and other components, your building model holds the necessary information to make valid calculations and plans. In addition, comprehensive product databases from different vendors are integrated in DDS-CAD.

In practice, the situation may show that with DWG/DXF plans, the appropriate objects are available. To be able to fully utilize the abilities of DDS-CAD, a supplement in

the form of corresponding intelligent component data is required. For this to be carried out easily and quickly, the software is equipped with a smart object mapping function. With this function, DDS-CAD is able to detect these objects and replace them with DDS products complete with their technical data and associated intelligence.

## Your Benefit

Time-saving import and processing of supplied plans via object mapping, access to intelligent component data, and access to extensive product databases.

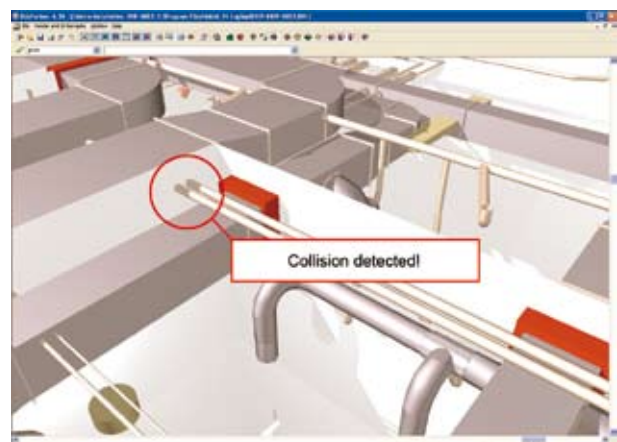
# Your Built-in Safety Net: DDS-CAD as a Validation and Documentation Tool

DDS-CAD was developed as a tool to help designers and planners to carry out their tasks accurately and diligently. This is especially true when validating and checking the design: Are there any collisions detected between pipes, ducts, and other elements? Are all the components included and connected? Are the mounting heights correctly chosen? DDS-CAD will answer these and other questions, including multidisciplinary collision checks, thanks to its built-in controls and functions. If any errors have been detected, DDS-CAD will automatically guide you to the corresponding point (storey, room, and component) in the project.

Using DDS-CAD is like having an additional, highly proficient Quality Assurance inspector on the team, which makes it easier to achieve top-quality results in your designs and documentation.

When the design is complete, your customer would normally expect comprehensive documentation to be provided. Also for your own peace of mind, evidence of the quality and accuracy of your work is crucial. A design implemented in DDS-CAD, ensures that you can provide

your customers detailed, comprehensive evidence in either digital or paper form.



## Your Benefit

Additional security, simplification of process to achieve product quality, minimise your risks and liabilities.

# Consistency and the Multi-Disciplinary Concept

During the course of a project, the design engineer must fulfil numerous tasks. Initially, the architect's drawings must be included and a concept design has to be developed. Corrections and refinements are then made, and revised plans drawn up, presented to clients, and ultimately the project is documented. Finally, the BOM is collated, which will form the basis for procurement.

With DDS-CAD you need just one tool for all these tasks - DDS-CAD! Thanks to the continuity of the software you will be supported from initial planning, to the delivery of a complete bill of materials to your cost estimating software. With the product databases built-in to DDS-CAD, you can benefit from being able to include full text descriptions of the materials in the BOM at the press of a button.

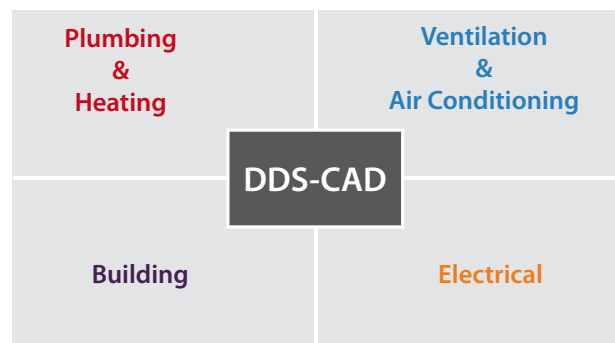
Naturally, the software also lets you pass complete project documentation to your client. This means you can enhance the value to your service, by providing future users of the building all the data they will need to transfer into specialist facility management software, something that traditionally has been a significant additional cost for the end user.

You can use this consistency of approach of DDS-CAD not only for a single trade, but also it is possible in a multi-disciplinary planning environment. It is therefore equally comprehensive, consistent and reliable in all areas of

building services: plumbing, heating, air-conditioning, ventilation and electrical engineering.

## Your Benefit

Plan the entire project with only one tool for all disciplines; reduced software-training needed; save time and effort by automatically creating parts lists and complete project documentation.



# The Calculation Functions - Integrated Authority

Much of your work as an MEP engineer is to execute calculations. The results represent the basis for your design layout decisions. To help you work effectively in this regard, DDS-CAD has numerous calculation functions, which are relevant for the respective disciplines. The calculation results are integrated in the project to ensure that the relevant drawings, diagrams, lists and reports are automatically updated. You can always access the latest design revisions.

The principal MEP calculation functions for plumbing, heating, ventilation, air conditioning, and electrical engineering are included in the respective program

modules. In addition, solutions for dynamic building energy simulation, plus energy and cooling load analysis are available.

## Your Benefit

Optimised use of engineering resources; speedy execution of your projects.

# The Visualisation Possibilities

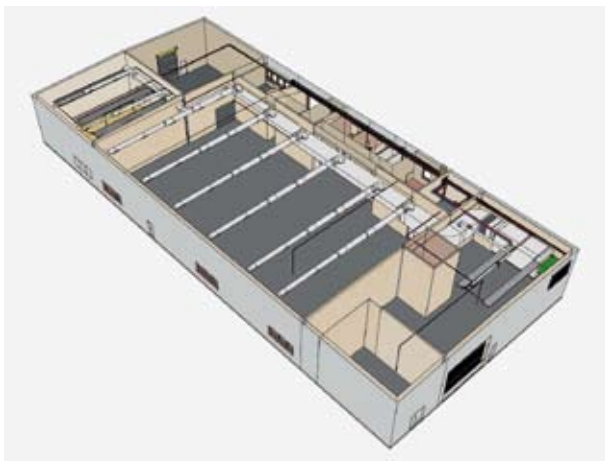
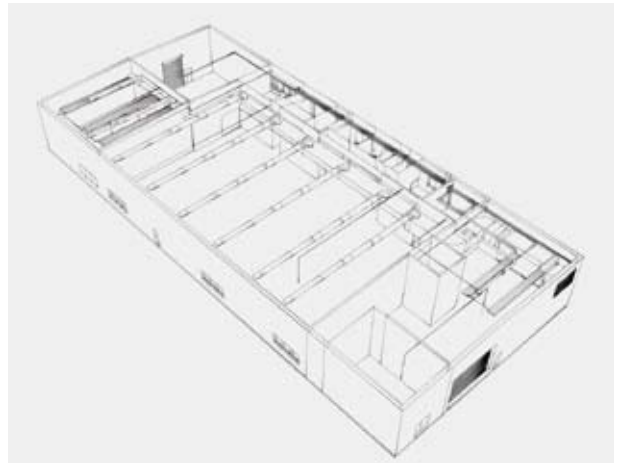
In project meetings, discussions with architects and design partners, reports for your clients, marketing - in many situations - it is essential for MEP engineers to present their work professionally, in an easy to understand manner. For this purpose, the excellent 3D visualisation capabilities of DDS-CAD allow you to present your designs with clarity, and demonstrate your appreciation of a modern way of working.

In addition to the usual 2D floor plans you have for your various visualisation purposes different 3D display types available. Whether as a simple 3D wire frame model, or as a coloured 3D model or with semi-transparent walls, or as an overall view of the building, or as a section of the building model, or as a pure view of the planned building with no other building elements such as walls or floors - you will find the best style for your presentation. Lighting designs can be simulated perfectly to present a

photorealistic image of the entire building, including the furnishings. In addition to static images, it is possible to use the advanced rendering options including the creation of an animated film, allowing the "virtual camera" to be positioned at required positions of your project. A "flight" is possible through a building such as the animated all-round view of the project. The depiction of the sun cast shadows and shading for the planning of solar energy facilities can be represented in this way.

## Your Benefit

Winning expertise through optimal presentation options.





## Integrated Planning Efficiency - The User Friendly Application Concept

Software is only effective when it is easy to use, intuitive, and saves you time. You should be able to concentrate on your primary tasks as an engineer. To guarantee this, DDS has been equipped with a comprehensive CAD functionality that has been rigorously designed to be user-friendly. Despite the complex tasks carried out with the software, it remains simple to learn and easy to use. The graphical user interface, the DDS Explorer, the multi-window viewports, and the smart and simple menu control ensure that your designs can be handled safely, logically and efficiently. You use an elegant, dynamic menu structure, and possess the ability to edit the project in parallel on different model views; the planning in DDS-CAD is efficient and comfortable from the start.

The efficient, discipline based concept of DDS-CAD leads to minimal effort, and promotes time-saving project development. This is reflected in many thoughtful details you will discover in the software.

This ease of use and time saving concept is reflected in the integrated copy functions. For example, it is possible to copy and paste an entire room's MEP installation including pipework and all terminals and outlets, from room to room, including all the 3D information, component data and connection intelligence. For hotels and hospitals, this feature is ideal.

Also, the multi-edit process provides efficiency gains during project planning, as any number of identical components, or components of the same group type can be edited, updated and processed simultaneously. These and other similar features and simplified editing facilities

(for example of dimensions or location), ensure that you can develop your projects faster with DDS-CAD, while maintaining the highest levels of quality.

The software has been developed with usability in mind. However, when you have any detailed usage questions, the comprehensive help system provides answers very quickly, offering step by step tutorials on completing common tasks. Also the exhaustive user's manual will be of great help for you in particular during the first steps with DDS-CAD. In order to offer you further assistance, we have many explanatory videos available for you to view or download, in the support section of our website. As a customer with software maintenance, you will also of course be able to call or e-mail our technical support staff.

### Your Benefit

Get started quickly; easy to learn and use; thereby gaining time and increasing efficiency in the design process.

## Network Aware, Collaborative Multi-User Operation

While the electrical engineers are working to optimise the electrical design, their mechanical colleagues are simultaneously planning the ventilation system. They are all working on separate computers linked via a network, developing a single, common project file.

This scenario is a daily reality in many planning offices which use the network version of DDS-CAD. The multi-user capability of the software allows simultaneous processing of different areas within the same project by DDS-CAD-equipped workstations on the network. In this way, accurate, fast and secure execution of the project planning is assured.

### Your Benefit

Optimised use of engineering resources; speedy execution of your projects



## Tailored Solutions Based on Your Requirements – Modular Design Concept



Unlike most alternative applications, DDS-CAD is not a one-size-fits-all solution. We recognise that each company sets its own priorities, and consequently has its own very individual requirements. Why pay for something you are never going to use? That is why our software is modular, and each module can be deployed individually, or in combination with others. In this way, it is possible

for you to purchase only the functionality that you actually need. Also, should your requirements change in the future, you can simply add functionality without penalty – fair and reasonable terms.

When you want to expand your MEP planning scope, additional modules and add-ons are also available. As an example, an extension to help develop escape, rescue and fire fighting plans is available, as well as fully fledged energy analysis add-ons and many other specialist additional modules. You can customise and expand your DDS-CAD installation as far as you want, to match the changing requirements of your business.

### Your Benefit

No need to pay for unnecessary functions; add new, cost effective functionality as required; add the tools you need, to the software you already use, rather than having to implement, maintain and train on a new platform.

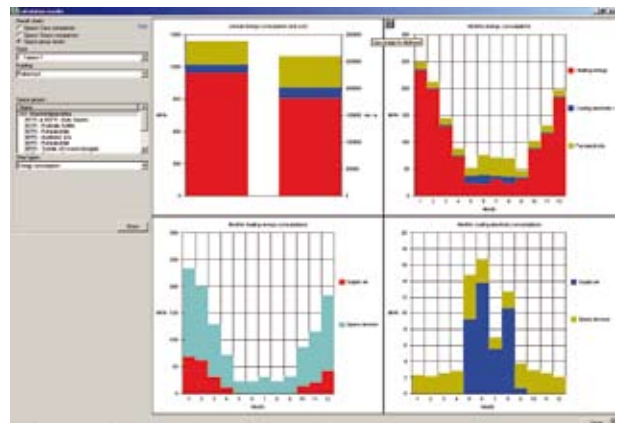
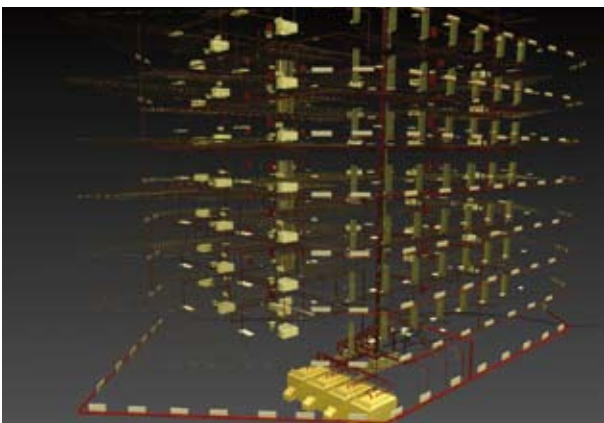
# Outline: Key Functions of the Core "Building" Module

## *Proprietary, Intelligent CAD/BIM Core*

- DXF/DWG interface and editor with smart object recognition
- Scale independent construction and drawing functions in 2D and 3D
- Intelligent symbol component selection with symbol preview. Custom symbols can also be created if necessary
- Intelligent room detection for automated creation of a 3D-building models based on DWG files
- Extensive editing and copy functions
- Printing and plotting of drawings with free scale selection
- Structured bills of material (BOM) by title, building, storey, room, distributor and circuit
- Wide range of interfaces to all major estimating and job costing systems, Excel and Word
- Coordination with external catalogues is possible
- Network aware and multi-user project execution
- Multi-window viewports, any quantity number of views
- Discipline specific project management
- Comprehensive additional functions
- Cross discipline, state-of-the-art data exchange using buildingSMART/IFC 2x3

## *Realistic 3D-Building Model Supports Building Information Modelling (BIM)*

- Extensive selection of intelligent, flexible building elements & components
- Intelligent construction of ceiling grids, rooflights, skylights, roofs, dormers and solar heat collector/photovoltaic modules
- Volume and area calculation including roofs and dormers
- Complete composite building model for all disciplines for visualisation, collision detection and for generation of the BOM
- Integrated calculation functions



## ***Labels, Descriptions, Dimensions and Builderswork***

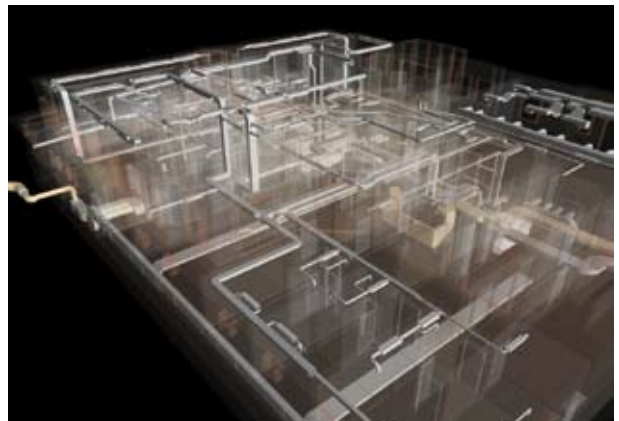
- Configurable and automatic space labelling
- Chase and builderswork opening planning with automatic cross discipline indication

## ***Quality Control, Documentation, Simulation, Presentation***

- Many quality control functions (collision detection, checks for correct connections, unconnected components)
- Automatic cross discipline layer/transparency administration
- Excellent visualisation possibilities from wire frame to simulation
- 3D-Colour model
- Intelligent model navigation
- Video creation
- Freely definable cross-sections, elevations, views, wall displays and cut-outs
- Complete documentation
- Modular construction = custom-made solution

## ***Attractive Expansion Options***

- Escape, rescue and fire-brigade plan creation
- Advanced Rendering (additional visualisation possibilities including sun shadows and external shading)
- Energy consultant extension
- Dynamic energy simulation
- Cooling load calculation
- Photovoltaic planning
- and much more



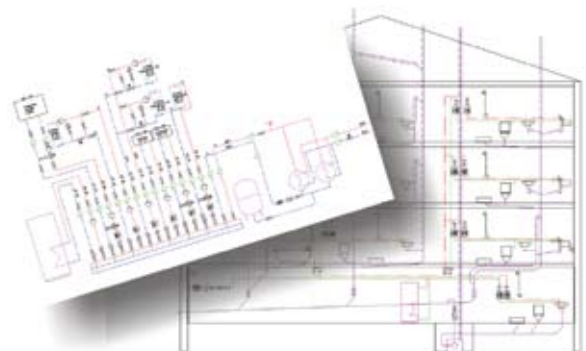
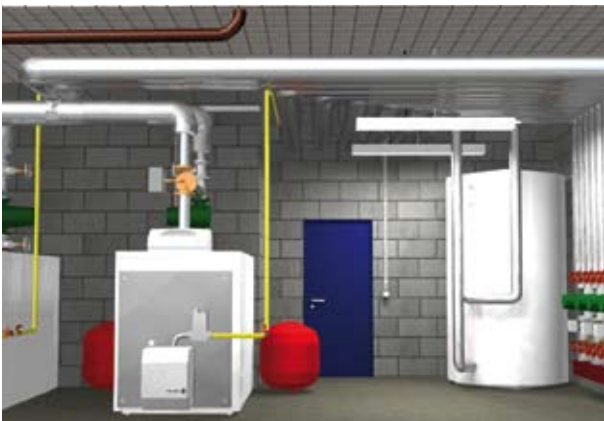
# Outline: Important Functions in the Module Plumbing & Heating

## *Discipline Specific Planning Functions*

- For the disciplines Plumbing, Heating, Sprinkler, Gas
- Pipeline construction (2D and 3D)
- Intelligent component link
- Extensive selection of integrated manufacturer data
- Designs and assembly drawings; Schematics and system arrangements
- Automatic manifold construction (2D and 3D)
- Manufacturer specific under-floor heating planning also pre-defined floors based on EN 1264
- Automated zone design for under-floor heating (computational and graphical)
- Solar heating representation; Heat pump system planning
- Storey logic and automatic building model

## *System Specific Calculations and Control Functions*

- U-value calculation, volume and area calculation
- Heating load calculation based on EN 12831 and heat requirement
- Intelligent heating element design
- Integrated height check and multi discipline collision check
- Pipeline sizing calculation; including reverse return systems
- Pressure drop calculation (with hydraulic valve assignment and valve settings)
- Pipeline calculation for potable water and circulation
- Waste water calculation and sizing
- Multi-discipline collision check
- Sun study and shadow calculation for optimal solar heat collector placement



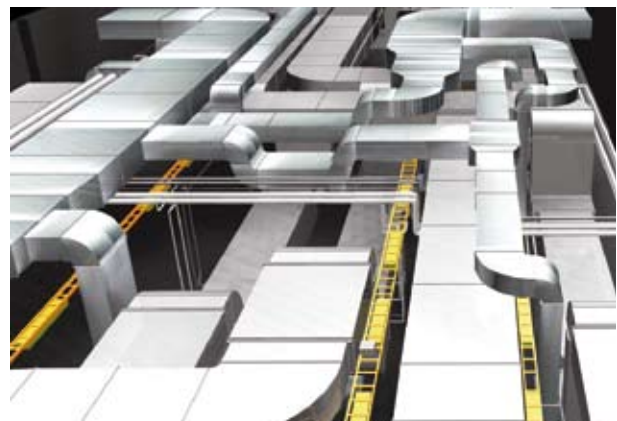
# Outline: Important Functions in the Module Ventilation & Air Conditioning

## *Discipline Specific Planning Functions*

- For large scale installations and small, house ventilation schemes
- Duct system construction (2D and 3D)
- Selection of duct cross section configuration (round, oval, rectangular)
- Parametric symbols with automatic orientation and mounting height check
- Intelligent component and terminal connections
- Extensive selection of integrated manufacturer data
- Designs and assembly drawings
- Schematics and system arrangements
- Associative, freely configurable labelling of components and duct system
- Storey logic and automatic building model
- Automatic duct scheduling output

## *System Specific Main Calculations and Control Functions*

- Duct system sizing
- Pressure drop calculation
- Integrated height check and multi discipline collision check
- Hydraulic balancing of valves, dampers and adjustable air terminals
- Duct design settings can be selected for each section (also fixed dimensions)
- Intelligent storey aware connection control functions



# Outline: Important Functions in the Module Electrical Installation

## *Plan Development For All Parts of the Electrical Installation*

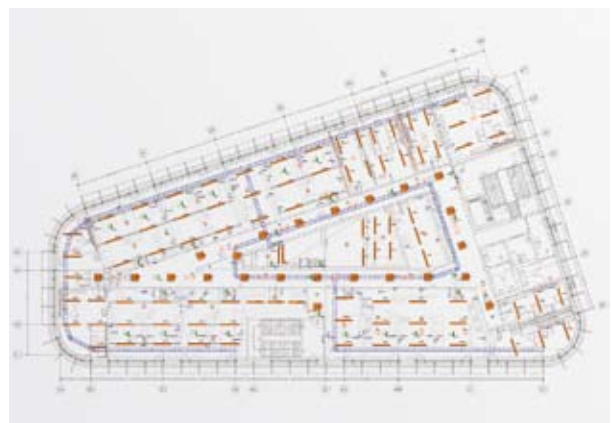
- Low Voltage, PA systems, antenna systems, burglar alarm systems, instrumentation and VDS-compliant security systems
- EIB/KNX, data networks, telephone, video, fire alarm systems; nurse call and intercoms

## *Cable Management and Containment System Planning in 3D*

- Intelligent cabling functions with containment network construction
- Complete cable and wiring management
- Cable ladder, tray and trunking, conduit layout and dimensioning
- Professional 3D lightning and earthing planning, foundation earthing and potential balance
- Automatic creation of a cable assembly list

## *Integrated System Specific “Know-how”*

- Integrated light calculation (plus interface to Relux and Dialux)
- Intelligent circuit selection; circuit and component dimensioning
- Automatic cable and circuit calculation with length check (for example for data cables)
- Control functions for unconnected components
- Multi discipline collision check
- Integration of catalogue performance data with symbols
- Extensive selection of integrated manufacturer data
- Photovoltaic (sun study and shading simulation for optimal collector positioning)



# Outline: Important Functions in the Module Electrical Automation

## System Specific Plan, Log and List Creation

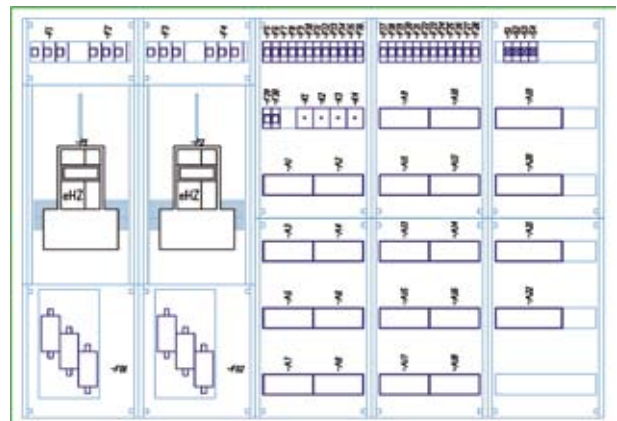
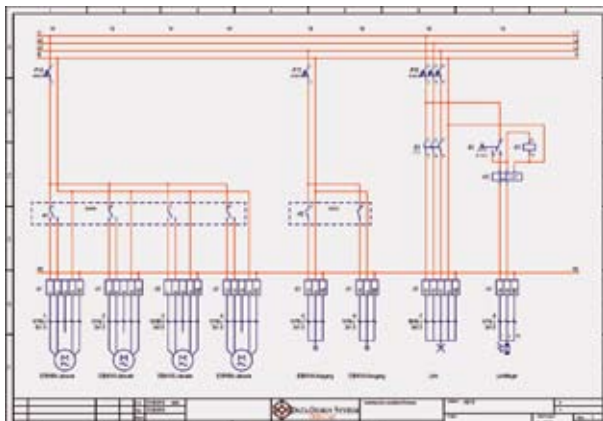
- Drawing, page, revisions and mailing lists
- Overview diagrams and test reports
- Measuring and testing instrument support, direct connection via bi-directional interface; automated transfer of the results of measurement in test reports
- Single and multiline circuit diagrams
- Cable connection and terminal diagrams
- Documentation of controls, EIB-line summary
- PLC card overview
- Data network and telecoms technology
- Flexible representation of sheets and circuit diagrams

## Distribution Board Construction 2D and 3D

- Integrated calculation of space units for fuse and distribution boards
- Automatic dimensioning
- Automatic generation of all views (sheets, inside, door, 3D view)
- Punch patterns and mimic diagrams

## Integrated System Specific “Know-how”

- Automatic prevention of duplicate contacts, components and terminals
- Automatic numbering of components and terminals as well as system/local labelling
- Summation of all operating currents at the output terminal of the main feed
- Phase-calculation with consideration of the simultaneity factors over the entire distribution network
- Warning on under-sizing of components and cables





# Photovoltaic and Solar Heating with DDS-CAD

*The Best Solution for Solar Energy Specialists*

Solar installations - both those for photovoltaic and solar heating - are no longer excluded from planning for new buildings. With conventional 2D drafting programs or with software that operates on the basis of photos, you find a planner quickly reach the limits of two-dimensional representation. Accurately plotting a solar study including the shading from adjacent objects is difficult, and consequently using just two dimensions is inappropriate.

To obtain a comprehensive basis for the optimal placement of the solar collectors, it is necessary to use a tool with excellent visualisation capabilities and additional calculation functions. DDS-CAD is the best tool for the job.

With few mouse clicks you can photorealistically represent the sun study including the shading of adjacent objects. It can become immediately clear whether a system arrangement is going to work.

The sun study can be represented statically or animated as a film sequence. This visual editing of the sun study and shading simulation can be assessed for any time period throughout the year.

With DDS-CAD solar technology, you can plan with all roof shapes; while in addition, the software also provides

the opportunity for the placement of modules on facade elements or in open areas.

The solar collection panels can be placed on any facet of the building or adjacent free space. The position of the plant on the longitude and latitude of the site is the basis for the precise sun position information used in the project calculations. In addition, by default, many places with location data are stored and directly selectable.

The creation of an investment analysis and a schematic diagram for photovoltaic projects are as simple and fast as possible as creating the installation plans.

The optional, integrated plug-in "Polysun Inside" provides further functions which are important for the PV planning process. For example, a photovoltaic investment income calculations or automatic assignment of inverters are available with this plug-in. You also get access to a comprehensive database of solar modules and inverters.

Combining DDS-CAD and Polysun Inside has created one of the most powerful PV planning tools on the market.

# Your Bespoke Additions: the Extension Modules of DDS

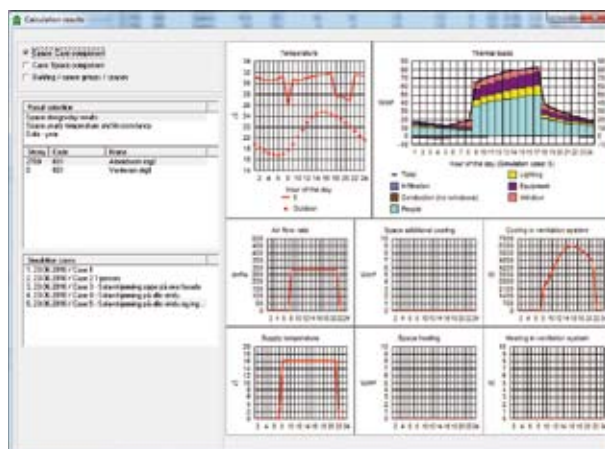
*The Extra Features for the Extra Options*

Beyond the extensive features of DDS-CAD, we can tailor a program package to precisely suit your needs. For special needs cases and application areas a variety of expansion modules are available. From the professional planning of escape routes to dynamic energy simulation - the additional modules open up many possibilities.

The most frequently used extensions are briefly described below. We will be happy to provide you with complete details about these and the other available expansion modules on request.

## *Dynamic Energy Simulation, DDS Riuska*

RIUSKA is a program for dynamic simulation of the comfort and energy consumption of buildings. It is used during the planning and later, together with facility management applications. RIUSKA simulates room temperatures, the heating and cooling capacities of rooms and compares different air conditioning systems and their energy costs. In addition, it allows the energy consumption of the complete building to be calculated. RIUSKA covers all the requirements of thermal building simulation during the planning, facility management and redevelopment.



## *DDS-FR for Design of Escape, Rescue and Fire-Brigade Plans*

By using the DDS-FR plug-in, you can efficiently create the statutory escape and rescue plans for public buildings. It can also be used for the development of other types of drawings, for example fire plans (fire-use plans, fire prevention plans) or fire alarm schematics. For these specific drawing types, the module includes many specialised symbols and other useful functions.



## *DDS-AR Advanced Rendering for the Photorealistic Representation*

DDS-AR improves the already excellent visualisation capabilities of DDS-CAD and enables the generation of animated film sequences. Animation of sun studies is also possible with this module, including the shading from adjacent objects - an indispensable aid when planning Solar/PV systems.

# Your Personal Support Team: DDS Customer Service

*With Practical Customer Support Your Planning Problems Can Be Reduced*

A major reason for the success of DDS-CAD is undoubtedly in the quality of technical customer support; our support team enjoys an excellent reputation amongst our users. In order to maintain these high standards, we will continue to provide top quality customer support via our skilled team of professional engineers, technicians and product specialists.

## **Telephone Customer Support**

As trained and proven professionals our “hotline” team is always able to understand your problems. The combination of technical know-how and in-depth knowledge of the software makes them ideal contacts for your questions, should you have any. Of course, support is also available via e-mail.

## **Project Support**

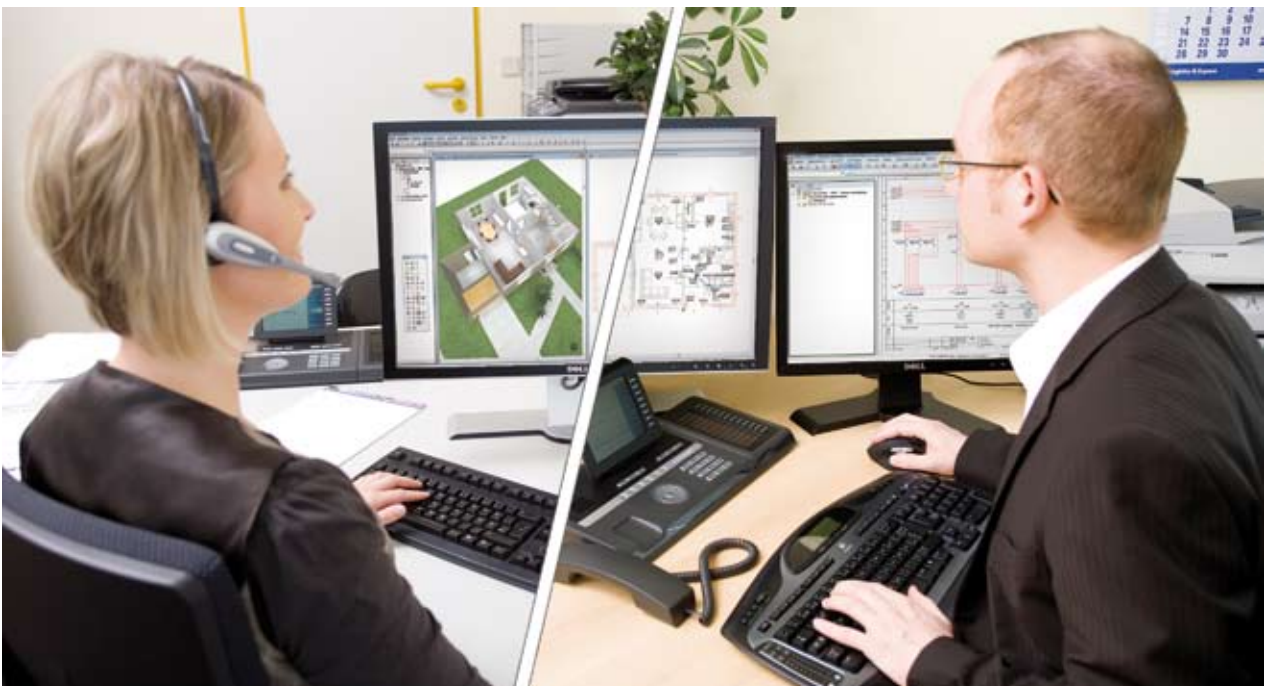
Our support team will find a solution to your challenges and can also provide - for special tasks – individual project support to assist you in managing your design process using DDS-CAD.

## **On-Line Remote Support**

In addition to the telephone hotline, if necessary, we can also use the proven capabilities of our online remote support. Using remote support our team has direct access to your PC and can explain to you the optimal solution for your application within your specific project environment.

## **Continuous Development**

Naturally, our customer support team is always open to your requests and suggestions regarding the software. Constructive criticism and suggestions from our users allow us to optimise the development of DDS-CAD. This means we are permanently developing the product at the highest possible level, from which you benefit as a user of our CAD solution.



# Your Road to Perfection: DDS User Training

*Ideal Concepts for a Perfect Start*

DDS-CAD was conceived as a tool which can support you with your planning tasks. From experience you will know that even with the best tool, if the person who operates it is unfamiliar with using it, you are not going to achieve the best possible results.

With effective training, you get the security that you use the tools professionally, economically and efficiently. Our training is conducted by qualified personnel, backed by years of experience both in industry and with the products. This gives you a quick, secure and above all, practical introduction to the handling of your new software. This allows you to move swiftly from beginner to advanced user, with the knowledge necessary to use the tools perfectly.

The following training options are available:

## ***Individual Training***

These training courses are held exclusively for employees of your company – either in your offices or in one of our training centres. To ensure optimum effectiveness, the number of participants should be limited to a maximum of six people. Training is specific to the needs of people without any previous experience with the software, and customised, intensive training in dealing with the DDS-CAD Modules.



## ***Intensive Group Training***

These two-day training sessions are exclusively conducted at our training centres. Again, the number of participants is limited to six people, to ensure the sessions are effective. In addition to the intensive training you will also benefit from the experience of other companies attending these sessions.

## ***Web-Based Training***

With this training option, you participate via an online connection to the computer of your DDS trainer, with direct telephone contact. The advantage of this option is that you do not have to pay the costs of travel and expenses, as both you and your trainer stay at their desks. Similarly, you do not have to spend time travelling to and from the training centre. This makes the web-based training an affordable alternative. We especially recommend this option for users with prior knowledge of the software.

This type of training is particularly flexible as you can book training sessions by the hour, rather than the day with the other methods. This makes it an ideal option for DDS users, who wish to refresh their knowledge without having the cost of a full day's training.

# Your Assurance: DDS-CAD Software Maintenance

*The DDS-Maintenance Package Enables You to Keep Up to Date*

You know how quickly software improves and new technologies are developed. With a software maintenance agreement for your DDS-CAD installation, you will be able to keep your software up to date at all times, so you can be confident that it will remain a powerful and advanced planning solution, updated to the latest specification and standards.

Software maintenance customers exclusively enjoy numerous benefits unavailable to other users.

## ***Regular Free Program Updates***

You will receive any further development of DDS-CAD, supplied and delivered free of charge.

## ***Regular Free Documentation Updates***

If there are any changes or additions to the manuals and documentation, you always get the latest version.

## ***Free Access to “Hotfixes”***

Minor revisions or program expansions in DDS-CAD, our so-called “hotfixes”, are available online. Via an Internet connection, the DDS-CAD software detects when a hot-fix is available for download. Then with a few clicks, you can update your system.

## ***Customer Support Hotline***

You receive quick, competent support by our highly experienced professionals; by phone, fax, e-mail or Internet. (See also p. 26)

## ***Discount on Training***

Software maintenance customers receive training at a special reduced price.



## Discounts on Upgrades and Additional Modules

When acquiring additional functionality for your DDS-CAD license (upgrades) or in the purchase of additional modules or other applications (for example, energy consultant module, escape, rescue and fire plan development), you will receive special discounts.

## Free Maintenance and Extension of the Integrated Product Databases

The DDS-CAD database includes actual manufacturer product data and is therefore subject to constant revision (for instance with new products or modified item data). As a customer with software maintenance agreement, you always get the latest version of the DDS product databases.

# Tips and Tricks for Free: The DDS On-Line Service

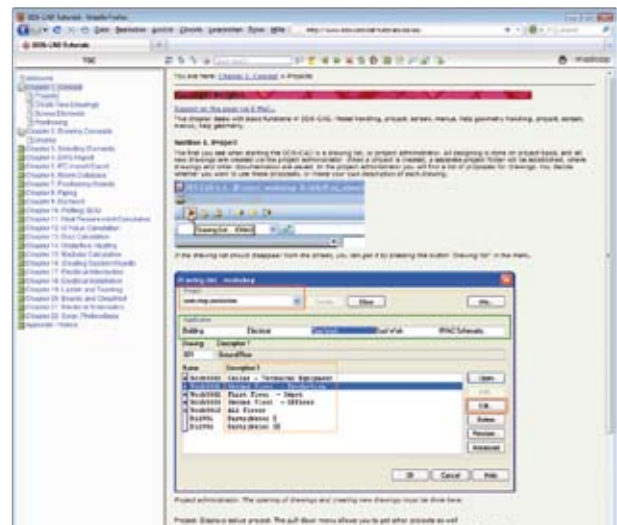
*The DDS User Forum and the DDS Website Offer Additional Assistance*

Beyond the previously described services and training opportunities, we also offer useful online services:

### Internet Help

In the service area of the DDS website we have provided various materials to help you. Here you can get the latest online versions of our manuals and access to more detailed instructions for installation and usage of DDS-CAD.

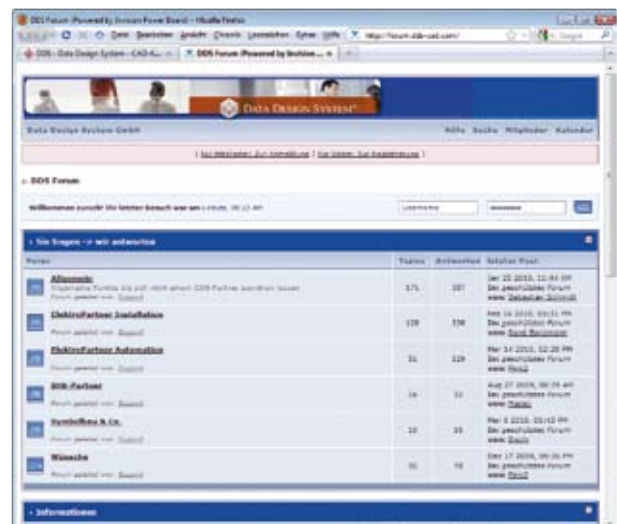
Moreover, there are numerous instructional videos on various topics for viewing or download. These videos illustrate in a clear manner, the best way to use the software for specific tasks.



### The DDS User Forum

We want to help promote your exchange with other DDS-CAD users. Therefore, as a customer you get access to the DDS-CAD user forum. You can meet other DDS-CAD users online, and benefit from tips and tricks that are shared and discussed here. Ask your questions or react on questions or contributions from other users.

Naturally, DDS employees are also active in the forum so that our service team can help provide further help and assistance when needed.



# Your Security: A Strong Partner

*Data Design System: The Company*

For over 25 years now, DDS CAD/BIM solutions have impressed our customers, our partners and our competitors. Nationally and internationally we are among the market leaders in innovative solutions for intelligent planning for homes and buildings.

Of course, the unique team spirit, expertise and innovation in the company allied to continuous development of our product, has contributed to this. First and foremost, we owe our success to this guiding principle: Long term, successful partnerships with our customers are more important than the short term profits.

## ***A Brief Excursion into the History of DDS***

In 1984 the company Data Design System ASA (DDS) was founded near the southern Norwegian port of Stavanger. From the very beginning, the innovative idea has been pursued to develop an interdisciplinary, database driven 3D design software for all building services trades, which should also allow all relevant calculations. This goal was implemented with DDS-CAD. Due to the great success achieved in Norway, the company soon expanded internationally.

In the 90's the German headquarters in the Ascheberg was purchased for Data Design System GmbH. Other locations - including in Austria - soon followed.

Today, DDS has developed into one of the leading international providers of CAD/BIM specific software for

the design of house and building systems. The strong financial base of the company ensured continuity in the development of products and flexibility in the integration of new technologies. This makes DDS a strong partner trusted by European users with 15,000 workstation installations.

## ***Our Philosophy***

Our company, from the start, has always been strongly influenced by its staff. Because each day the employees ensure that our business partners feel safe with us. They are the ones who give our customers the security they need. And they are the ones who shape our software every day, making it even better and more useful.

For this reason, you can demand, and be confident in the personal commitment and creativity of the DDS team. In this environment, a unique team spirit has developed, in which new challenges are addressed and positively overcome. The goal and motivation of our team is the satisfaction and security of our customers. We therefore place great value in close cooperation, continuous dialogue and exchange of information with our partners. So we can be sure that our partners are safe with DDS-CAD!





## *Our Commitment to Staff Training*

As a company that wants to be successful in the future, we are aware of our responsibility for the future.

This leads logically to the fact that we are committed to the promotion and the training of young professionals. Only those who are trained engineers or designers in one of the technical disciplines will continue to deal with a software tool that supports this task.

Against this background, we have set ourselves the goal that both practical and theoretical educational institutions active in the field of building services should be provided with our software. In this way, we want to ensure the training of young engineers, tradesmen and technicians providing them the best grounding for the future.

Our success in this strategy is clear, in particular with the master-craftsmen in the field of electrical engineering. In Germany for example, by far the largest proportion of all young craftsmen has trained with DDS-CAD during formal education.

As well as supporting educational institutions with DDS-CAD software, we are also cooperating with other well known companies in the innovative „INSTRAIN“ multimedia training concept. This approach provides a good opportunity for us to equip the trainees in the craft professions at an early stage with optimal routes of learning and to make them fit for the challenges which they will have to meet in their professional career.



## DDS Headquarters

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