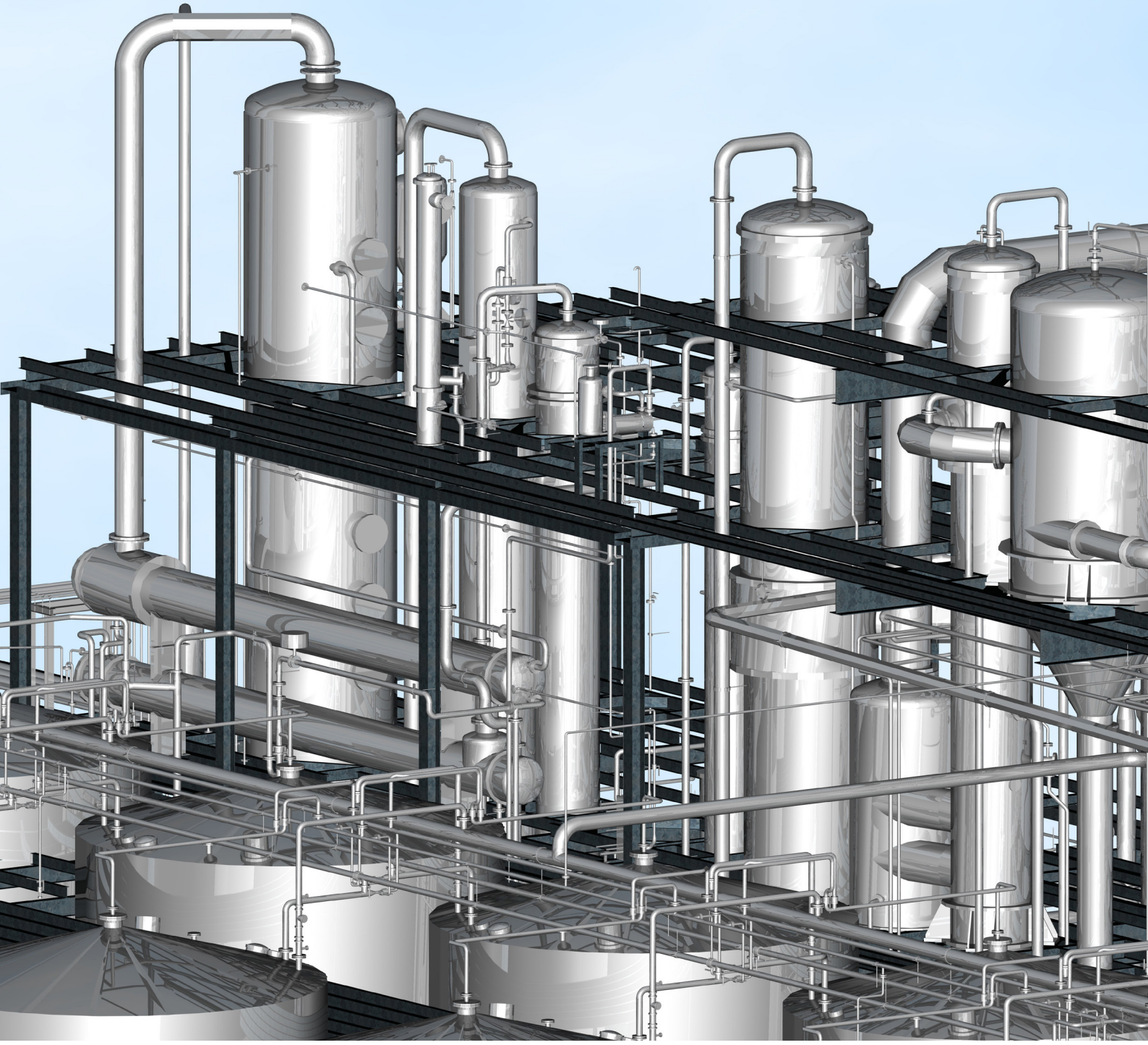
Issue 2017 | 11

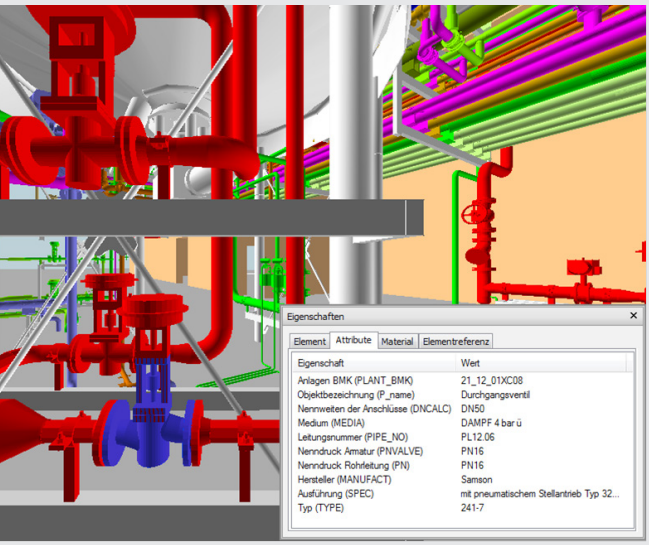
CADISON® WORLD

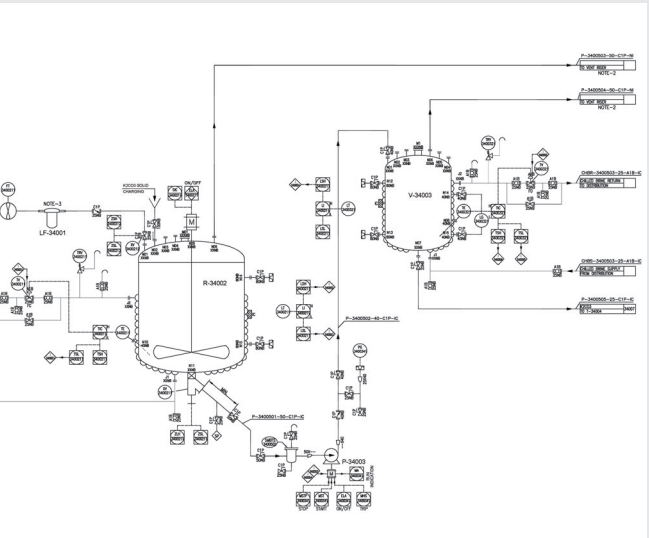
EXPERIENCES & NEWS

ReUse of Multidisciplinary Modular Designs a reality in....CADISON®



Improved GA Drawings Functionality and Pipeline Routing Capability to reduce Engineering Hours





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https://www.linkedin.com/company/cadison

https://www.youtube.com/user/ITandFactory

https://www.facebook.com/cadison

https://twitter.com/ITandFactory


Ralf Lehmann


Ajit Joshi


Michael Brückner

"With CADISON® R17, we have improved GA drawings functionality, improved the integration between P&ID and 3D-Designer modules, made Pipeline Routing more efficient and have made ReUse of modular designs a reality. In CADISON® R17 there are 26 enhancements (features & functionality) that CADISON® users will be happy to see".


Stefan Kraus


Falko Meier


Prashanth Chunduri

Dear Customers,

Welcome to CIC 2017! In a world where consolidation and purchase of companies by Private Equity investors is common, ITandFactory & CADISON® has remained stable, user-oriented and focused on improving engineering efficiency.

While many software companies have changed their business models and increasingly focus on annual leases (doing away with perpetual license sales) thereby increasing the cost of ownership for you over a 7-10 years period, ITandFactory | Neilsoft have focused on reducing your cost of ownership and on reducing your engineering cost of projects.

As discussed during CIC 2016, CADISON® R17 will deliver significant enhancements related to 3D-Designer, GA drawings functionality and Project-Engineer, all with an intent to reduce the engineering hours required on projects.

Also in CIC 2016, we had a pre-release demo of the CADISON® Equipment Simplifier, a module that allows you to import equipment models from different mechanical softwares into CADISON®. A key strength of the product is in its data reduction algorithms which brings performance and efficiency in a multi-CAD design environment. We subsequently released this product in early 2017 and already have few customers deriving benefits from the same.

We are pleased to have your presence in CIC 2017 and assure you that we will continue to listen to your needs and pain areas, and improve our solution in future releases to best meet your needs.

Enjoy the Conference!

ITandFactory

10 Key Developments for Users in CADISON® R17

MPL Styles for creation of Pipe Runs & Schematics

This new enhancement of line types in CADISON® R17 enables the User to use MPL styles (entities) for creation of pipelines/pipe runs and electrical schematics effortlessly. Pipe crosses automatically get created and updated while the User continues with the native AutoCAD line type for drawing or modifying the pipelines. It also gives Users the flexibility to configure the MPL line styles as per their organization requirements (in addition to the available/default MPL line types) by mapping it with AutoCAD line types. (for e.g. mapping "**stylemapping.cfg**" @...\CADISON\Data\Config\MPL folder).

Benefits

- It eliminates the manual process of creating and assigning the MPL styles for each line and saves time.
- It also assists the User in creating P&ID and schematic drawings without additional efforts.

Integration improvement between P&ID and 3D Designer and Electrical-Designer modules to prevent errors

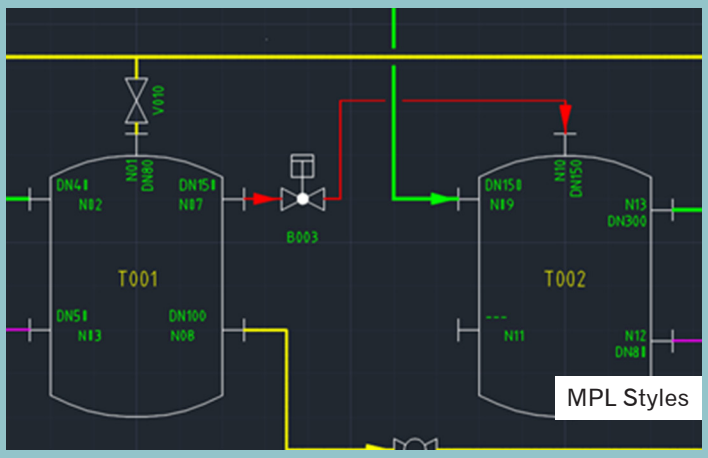
CADISON® R17 provides drawing comparison feature to ensure that a P&ID drawing matches with a 3D installation drawing and vice versa; furthermore, it also verifies if the objects are placed and connected in the same way in P&ID and 3D drawing. For e.g. it validates nominal size of pipelines (**DN Comparison**), flow direction and connection details, etc.

In addition, the placement of the objects in different drawing types is also synchronized, and the system will display the graphical elements in predefined colours to visually inspect the disparities between the two drawings (for e.g. P&ID & 3D or P&ID & Schematic, etc.).

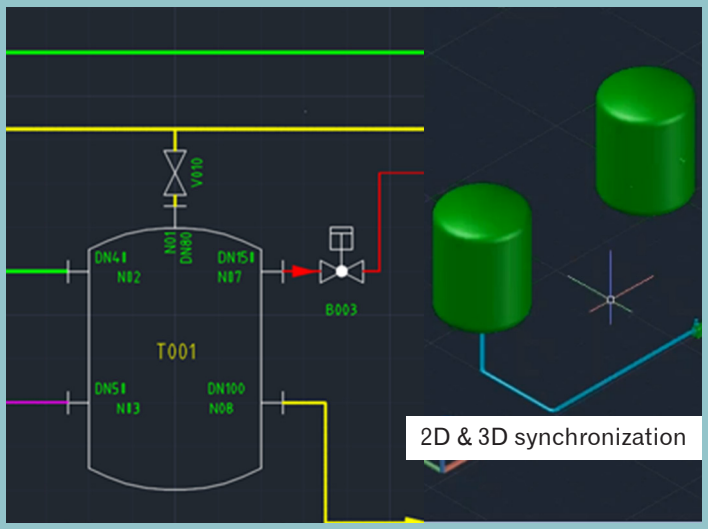
Color Coding to visualise differences or missing objects:

- **Green** means – objects are present in both drawings and everything is ok
- **Orange** means – objects are present in only one of the drawings and they need to be added to another drawing
- **Cyan** means – objects specific to one discipline, which need not be present in both the drawings

With this feature, Users can now focus on orange objects, and add them to other drawings (by simply dragging and dropping it from the CADISON® tree).



MPL Styles



2D & 3D synchronization

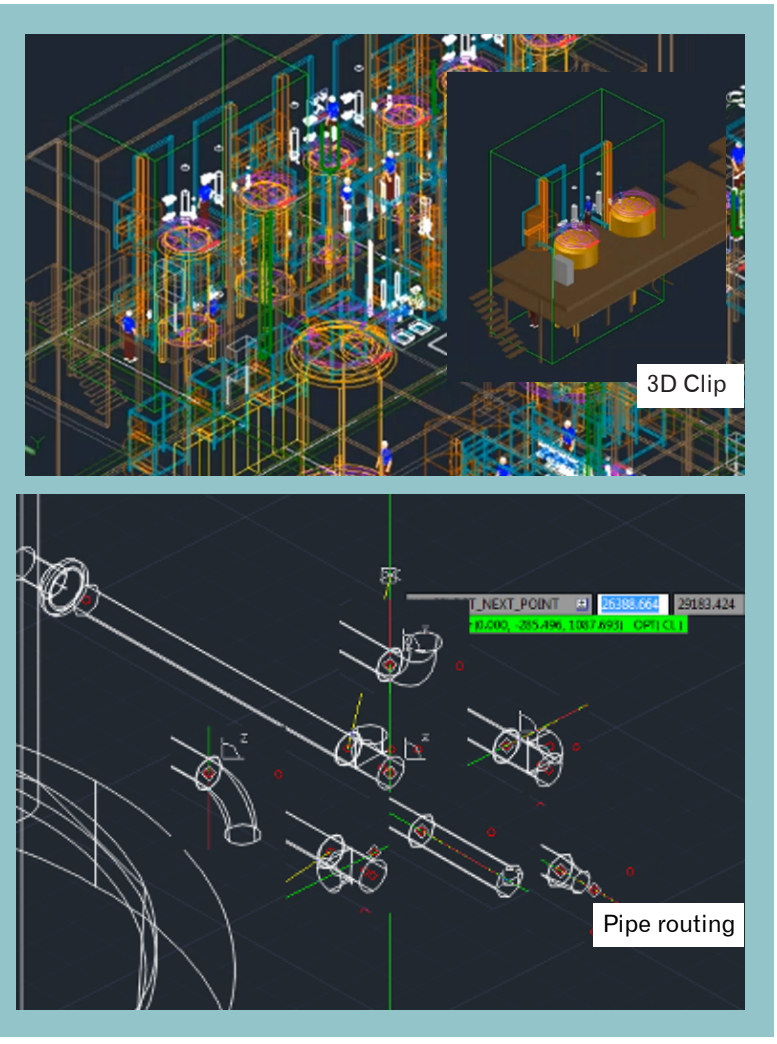
Benefits

- It improves the accuracy of pipeline or schematic construction
- It improves the consistency between P&ID, Schematics and 3D drawings
- It improves the accuracy of BOM, MTO, etc.

Improved 3D-Designer Functionality

In CADISON® R17, a new feature gives the Users the option to isolate specific 3D areas where design work or editing needs to be done. This enables User

to clip a 3D space in a (bigger) drawing and visualize the graphics within the 3D clip and hide the rest -of- the drawing. It also provides the flexibility to switch back and forth between 3D clip area and drawing to readjust the focus area.



Benefits

- 3D Clip functionality improves drafting/editing efficiency of large and complex drawings.
- Improves the overall performance of a system by reducing the time taken for rendering the complex drawing.

3D Pipeline Construction made Easier in CADISON® R17

With CADISON® R17 enhancements, pipe routing is improved in 3D-Designer. It enables the Users to create/route the complex pipeline in an intuitive way. This new option (Partwise Pipe Routing check box in the pipeline UI) has built-in intelligence that auto-suggests the next component for routing based upon the cursor position on the drawing. As the cursor position changes, the system will identify the possible options and display the appropriate piping component objects at the tip of the cursor (for e.g. straight segment, elbow-left/right/up/down, etc.) for quick routing. More details on (Page-11).

Benefit

- This new enhancement enables a User to complete the entire pipeline routing (end-to-end) in an efficient way. It is intuitive and guides the pipe routing process

Freezing of 3D Pipeline Constructions

Once an isometric drawing of a pipeline is created and the status is marked as ‘approved’, the system can freeze (lock) the 3D pipeline in model space and block any further modifications/updates. This enables a 3D User to identify which pipeline constructions are approved (already), and which can still be changed. User can enable/disable this feature with ‘Isosyslockpl’ property in 807-ISOGEN sheet.

Benefits

- Users can avoid unintended modifications on 3D pipeline for which isometrics are already created, approved and/or delivered to construction
- Brings certainty to the process and avoids errors

Improved GA Drawing Creation

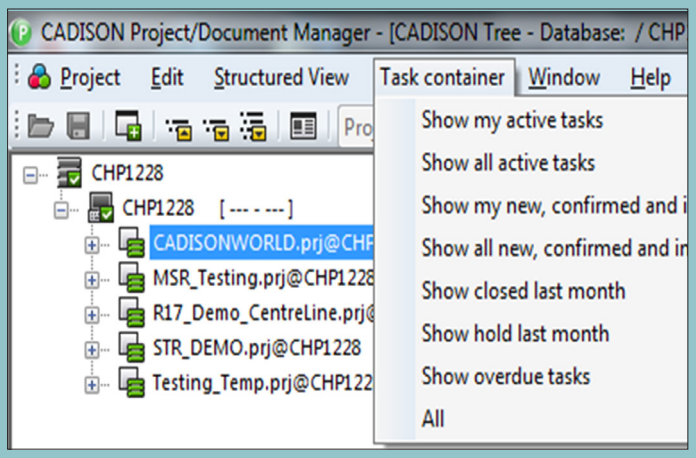
CADISON® R17 provides a new set of commands to assist in quicker completion of GA drawings:

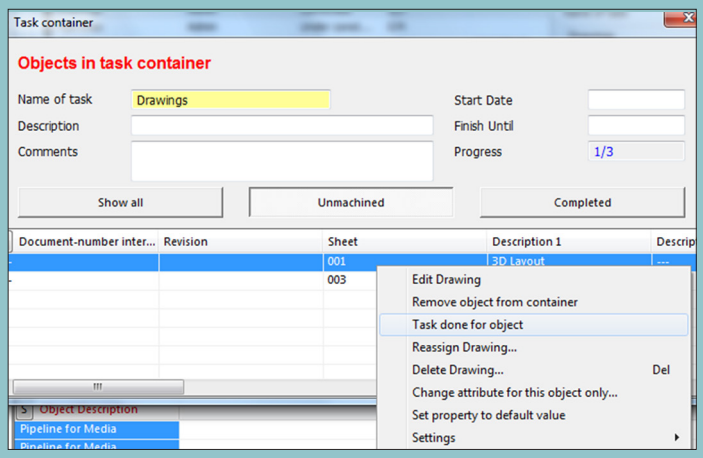
- It is now possible to hatch the building elements (of view port) with a single command. It is also now easier to delete hatches in view port or recreate them as per the model changes
- With the new enhancement, it is now possible to create hidden line representation of selected objects. Hidden lines created do have associativity with the objects and the

10 Key Developments for Users in CADISON® R17

'Update Command' will recreate the hidden lines as per the revised model

- It provides an additional option to display end cut symbol in fill & unfilled modes. A new YinYang symbol is also added
- The Centerline representation feature is enhanced to draw associative centerlines of selected pipelines or all pipelines in a view
- An additional option to ignore pipes which have less than a specified nominal diameter will improve clarity of GA drawings when a User desires less clutter
- The 'Update Centerline' command will update all the centerlines drawn using 'Representation with Centerlines' command as per the changes in the model





- Another neat feature allows the Users to save AutoCAD XREF layer settings of a drawing (detachment), so that at a later time re-attaching the same (detached) XREF can automatically restore saved XREF layer setting

Benefit

These new set of commands will improve efficiency for completion of GA Drawings

Improved Task Container Functionality for Task Assignment and Monitoring

1. The improved task container enables the project leaders to plan, create and monitor the project data. It helps to organize work and assign them to the project team (who can see the project wise tasks assigned to them). Project managers can monitor all active, in-progress, overdue and confirmed tasks to update the schedule.
2. It is also possible to have (customizable) predefined filters

Benefits

1. Easier to view, open/close/all tasks in a container with a single click
2. Easy to use context menu for updating task status
3. Provision to assign/record - start date and end date for each task container
4. Easier filtering of a task container with start date & end date, etc.
5. Leverage and maximize PDM capability of CADISON® and save the cost and effort of managing and monitoring projects with other tool

Enhanced Nozzle Assistant to Support Planar, Conical and Flat Dished Head Surface

Nozzle assistant wizard is enhanced to support Planar, Conical & Flat Dished head surface. The wizard-based UI will display the appropriate parameters (to be entered by a User) based on the selection of surface to add/create nozzles. Users can also edit the nozzle with the same UI used for creation of a nozzle.

Benefit

Flexibility to add various types of nozzle based on vessel types

Improved Import/Export to Excel Functionality

CADISON® 'Excel import/export' feature is used to apply technical specification to the chosen components in a batch mode (mass edit). Typically, the User exports the selected object(s) into Excel, updates the specification/properties in Excel and imports the revised list back into CADISON®. In some cases, the properties of the exported objects might get revised in CADISON® (while the User is still working in Excel). This leads to data discrepancies and forces the User to manually update it again in CADISON®.

With this improvement, User can verify the differences between CADISON® data and the Excel sheet data in 'Data Verification Dialog'.
This enables a User to choose the most appropriate information to be used (with the help of a click). Users also have an option to sort, and filter data based on the Excel or CADISON® properties for quick review of the differences and decide future course of action.

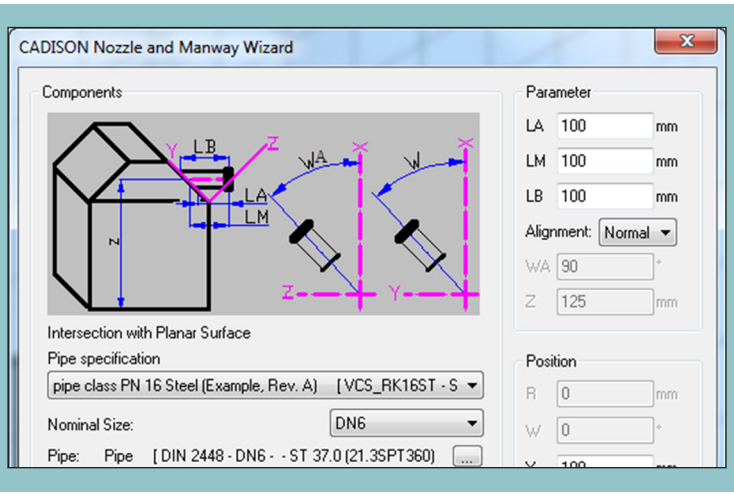
Benefit
Facility to merge the concurrent changes in CADISON® & Excel eliminates data loss and reworks and ensures that the latest data is being used for the project

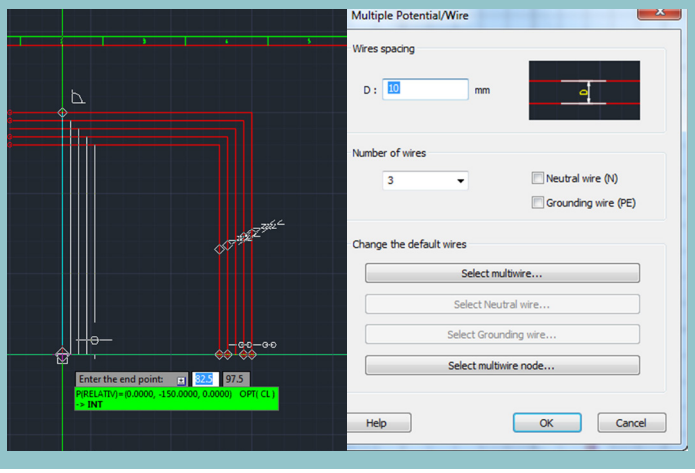
Electrical-Designer Enhancements

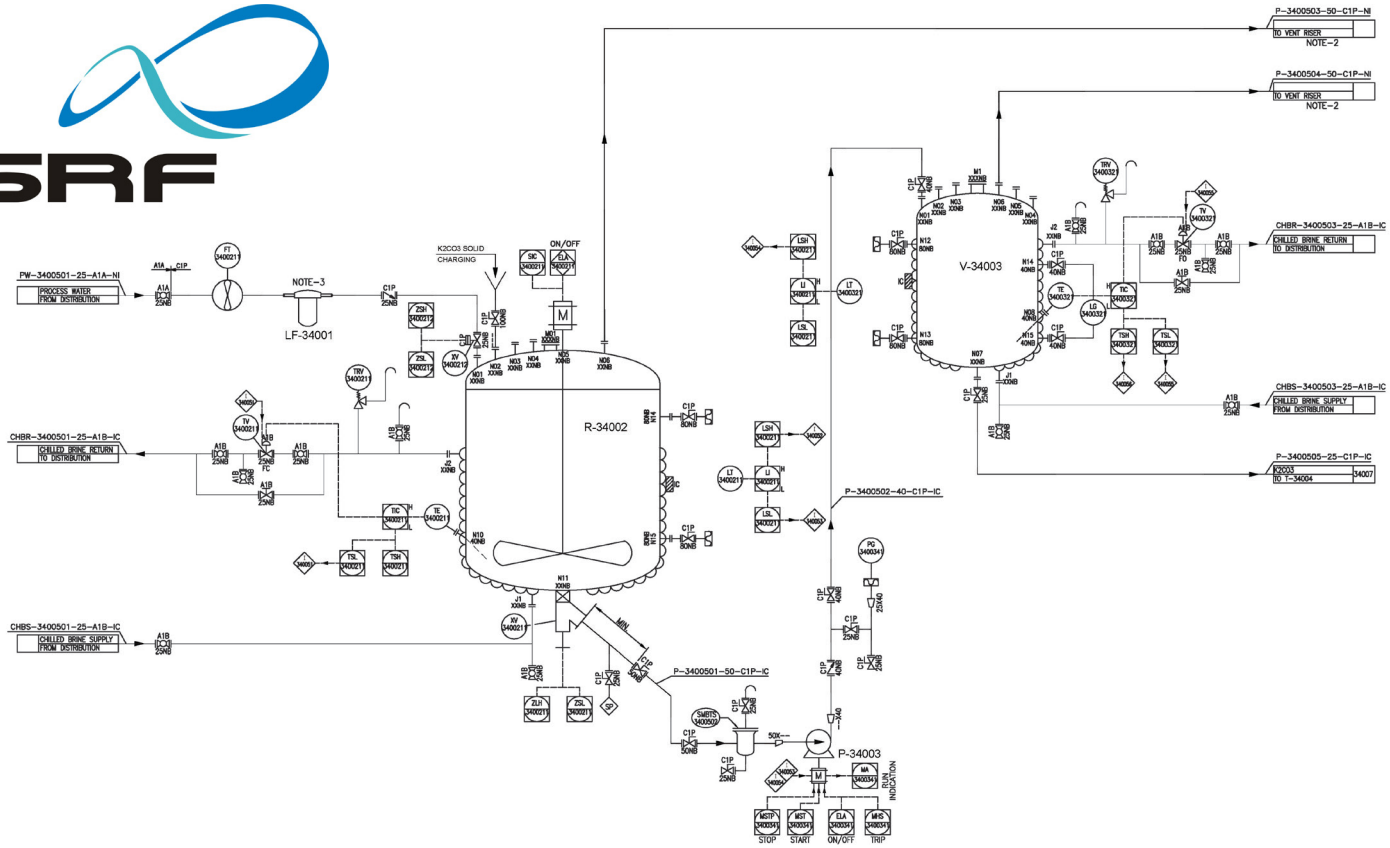
With **'Multiple Potential Wires'** function added in R17, Users would be able to draw 3 phase wiring in schematic diagrams more quickly and in a guided manner. The User has an option to specify wire spacing, select neutral wires, and/or grounding wires in addition to the number of potential(s) specified. Also, an option to select various wires and nodes (to be used) enables the system to add nodes automatically at an intersection of new and existing wires.
Other usability features included - Easy to start (new) wires or continue existing wires, branching-out from existing wires, or crossing existing wires with jumpers being added automatically at wire crossing, mirror option to switch wires (in either direction), 'Undo' option to go back to last point, etc.

Benefits

- It reduces the number of click(s) required to complete multi-wire routing
- System-guided routing assists the Users to add objects (nodes, jumpers, etc.) for accurate schematic drawings







Creating an Enterprise-level Process Knowledge Repository and Reusability with Intelligent CADISON® P&ID Solution

SRF Limited is a chemicals based multi-business entity engaged in the manufacturing of industrial and specialty intermediates. Winner of two Deming prizes for operational excellence, equipped with state-of-the-art R&D and technology scale-up capabilities; SRF has filed 114 patents for R&D and Technology.

SRF Specialty Chemicals business caters to organic intermediates for Agrochemicals & Pharmaceuticals through its flexible & dedicated manufacturing facilities. For commercial campaigns, flexible manufacturing facilities are reconfigured at very high speed. For large quantity production, dedicated new facilities are created in a very short span of time. Shorter product time to market with quality is the key success factor in SRF's growth & sustainability.

Earlier SRF was using basic CAD tools for creating their BFD/PFD and P&IDs for basic engineering. However, the CAD tools lacked specification/library creation abilities. Moreover, modifying and maintaining P&IDs was a tedious and time-consuming task. Extracting reports was a nightmare!

To overcome some of these challenges, SRF evaluated few P&ID solutions. After evaluating many smart tools available in the marketplace, we reached to a conclusion that merely having a high-end tool with smart functionalities is not going to meet our objectives. We needed a solution, which apart from giving intelligent features enables organization-level standardization in a cost-effective way. It was important to consider an existing engineering environment, available skill sets, and do an optimum math between new investment(s) (tool, hardware, supporting IT infrastructure, manpower, training, etc.) and returns vis-à-vis organizational goals. Also, investing in a few high-end tools require drastic changes in the existing engineering environment, a move away from our existing CAD platform (AutoCAD), re-training of existing manpower,

acquiring new talent to reach productivity, etc. Also, our core business and focus is to do R&D of new materials, perform basic engineering and create assets in the form of intelligent P&IDs for comparison of results, future reference's, reuse, training, etc.

Altogether - CADISON® Fits the Bill!

After looking at CADISON® Solution, we realized that; this is one tool, which has a perfect balance of (key) intelligent features, engineering workflows and alignment to our existing engineering environment. Its object-based technology with easier specs creation capabilities that too based on AutoCAD platform tempted our engineers to go deeper and evaluate CADISON® further. Moreover, automatic change management capabilities, uniform tagging, data consistency across P&ID drawings, faster turnaround of P&IDs for review and approval with excellent report generation capabilities convinced us about this solution. Our objective of embracing a new P&ID solution for building organization-level knowledge repository, enhancing our existing skill sets with an intelligent tool (without changing our base platform) and getting value for money is reality with CADISON®. 'We could relate to CADISON® immediately and got a confidence that this is the RIGHT solution that fits the bill'.

'We could achieve 10% improvement in overall engineering efficiency in our first project itself!'

Just after CADISON® rollout, our team has done a dedicated commercial plant (commissioning in a short span of time) where the CADISON® software contribution was commendable.

Following are some of the key benefits:

- Significant reduction in time for report generation. Line list, Instrument Process Data Sheet (IPDS), Special Material Data Sheet (SMDS), Equipment Lists are prepared automatically
- Reduction in 'check & validation' of drawing objects; faster review and approval process (> 5% time saving)
- Avoiding massive re-work on drawings
- Reusability of drawings
- Repository of drawings managed systematically via built-in PDM and central database.

CADISON® made engineer's life simpler to focus on high-value jobs.

Chander Shekhar Devra
AVP – IT & CIO, SRF Ltd.
Chemicals Technology Group

"CADISON® has changed our way of working over engineering drawings. Now we are able to respond faster on drawing changes & reviews. The comprehensive P&ID functionality, catalog & spec creation tool (MATPIPE), hassle-free report generation and pre-defined quality checks provided by CADISON® P&ID-Designer played an important role in our decision to acquire the software; however, we particularly like the value for money the solution represents, and the support provided by Neilsoft during the evaluation and implementation phase."

Improved General Arrangement Drawing functionality to increase Productivity

With a mission of improving project engineering efficiency, we have been adding and enhancing new features and functionalities, which will assist Users to deliver quick and error-free deliverables. General arrangement drawings productivity has been one of the key focus area for this release and we have made significant improvements. This article covers the key features added in CADISON® R17 for GA drawings creation in lesser hours.

Hatching Building Elements in GA Drawings

With latest enhancements, it is now possible to hatch the building elements (in a viewport) with a single command. It is also made easier way to delete hatches in view port or recreate them as per the model changes.

With these two new hatching commands (for creation and deletion), the new object (for e.g. ITF_BLDE) for building element can be added so that a User can define the specification of hatching (for e.g. colour, layer, pattern, etc.). The new function called '**Link new objects to graphics**' is added to link building elements with graphics. It will also take care of view port clipping, so that the hatch will extend/terminate at the boundary of viewport (if building models go beyond viewport).

The User needs to call the 'Create Hatching' command to recreate the hatches if there are any changes in the model. 'Delete Hatch' command assists a User in deleting the hatches from the viewport.

Benefits

- It eliminates the manual efforts of adding hatches to a GA drawing
- Significantly reduces the rework time as the hatches created using CADISON® command(s) will get updated based-on the model changes
- Change management become simpler and intuitive

Hidden Line Representation

With this new enhancement, a User can create hidden line representation of the selected objects. Two new commands '**Create Hidden Lines of Components**', and "**Update Hidden Lines of Viewports**" are introduced in CADISON® R17.

Hidden lines created do have associativity with the objects (for which they are created) and all the hidden lines will be placed on a specific layer enabling User to hide the lines as per the selected layers. An 'update command' will recreate the hidden lines as per the revised model as part of change management.

Benefit

It enables a User to create hidden lines for different objects (in different views) and reduces the rework of manual addition/updating of hidden lines.

Improved Layer Management

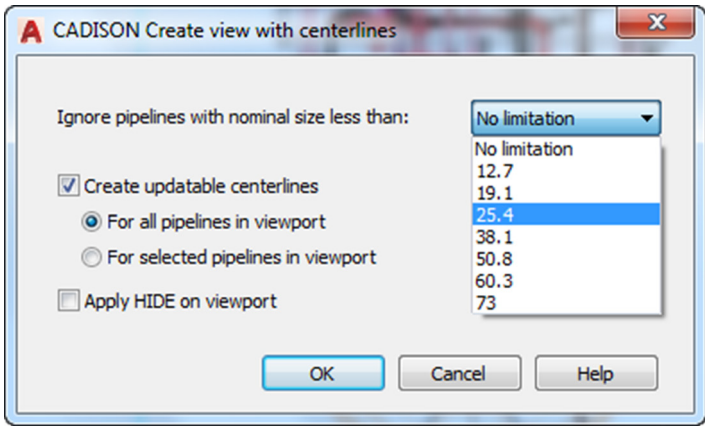
CADISON® R17 has improved layer management which allows the Users to save AutoCAD XREF layer settings of a drawing (detachment), so that at a later time re-attaching the same (detached) XREF can automatically restore saved XREF layer setting.

Benefits

- Eliminates manual efforts of layer management settings/reconfiguration for every reattachment
- It improves overall efficiency of GA layout creation by saving User-specified layers for future use

Improved Handling of Pipeline Centerlines in Layouts

Now User can draw centerlines of selected pipelines (or all pipelines) in a view with a single command. An additional option to ignore pipes with less than a specified nominal diameter will improve clarity of GA drawing by avoiding unwanted centerlines in a viewport. Update centerline command will update all the centerlines drawn using 'Representation with Centerlines' command as per the changes in the model. It also recognizes the manually deleted or 'out of view' centerlines and adds new centerlines for visible (new) pipes in a view.



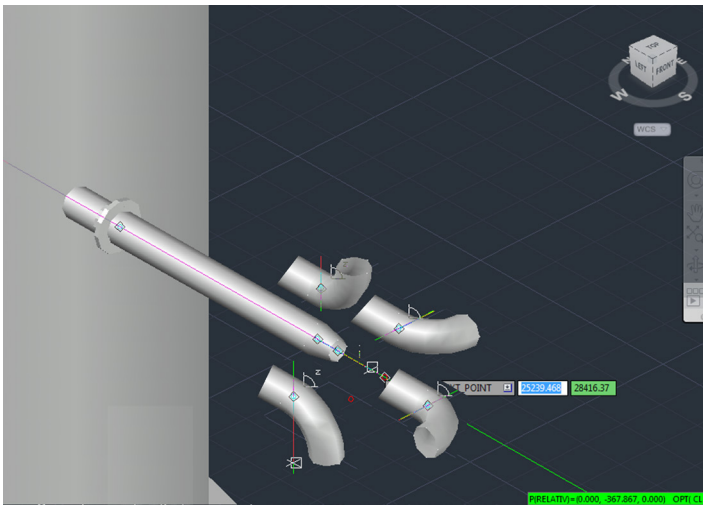
Benefit

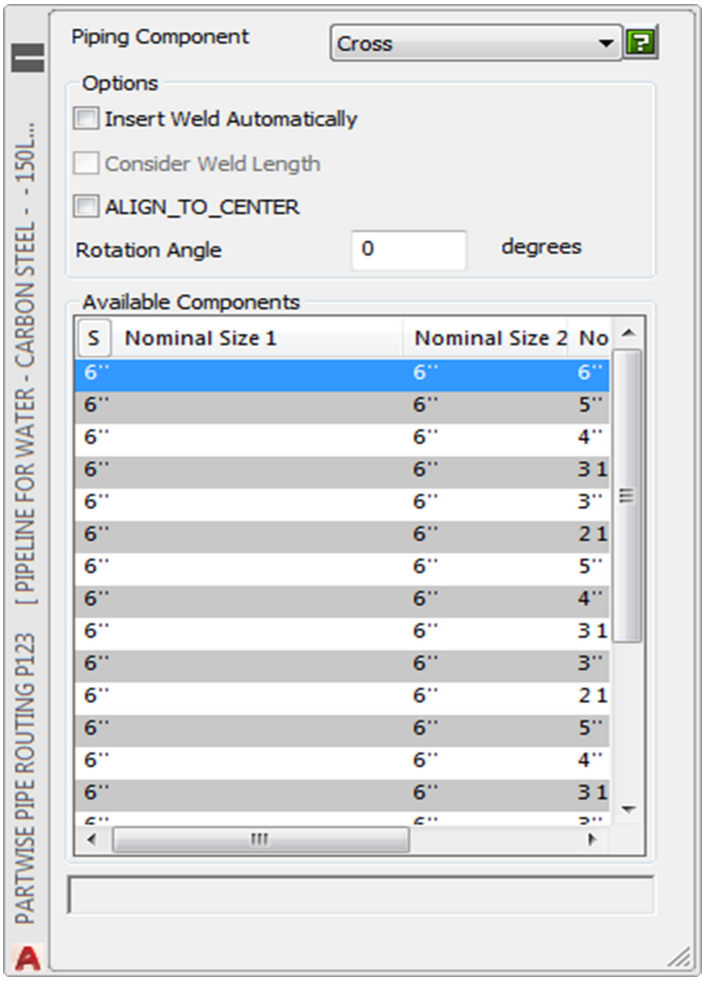
It eliminates the manual efforts required to draw/re-draw the centerlines every time the model changes after creation of a GA drawing

Creating Pipe routing is much easier now in CADISON® 3D-Designer

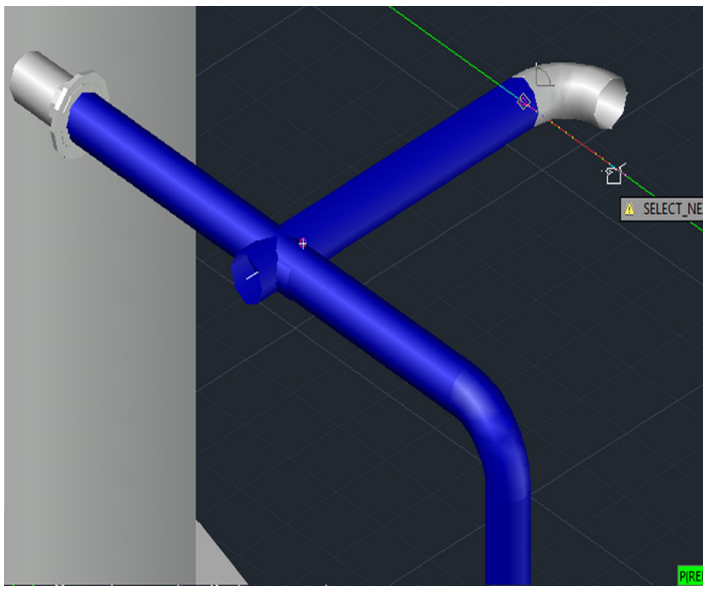
With CADISON® R17 enhancements, pipe routing is simplified in 3D-Designer. It enables the Users to create/route a complex pipeline with an intuitive interface. This new option (Partwise Pipe Routing check box in a pipeline UI) has built-in intelligence that auto-suggests the next component for routing based upon the cursor position on the drawing. As the cursor position changes, the system will identify the possible options and display the appropriate piping component objects at the tip of the cursor (for e.g. Straight segment, elbow-left/right/up/down, etc.) for quick routing.

Users have an option to select the specific objects/ parameters (in a dockable dialog) such as sizes of components, alignment options, weld insertion, weld length, etc. while continuing with pipe routing. This enhances the flexibility to add the reducers or enlargers on the fly and allow a User to continue routing with a new nominal diameter without any additional inputs. It is possible to define the branches by adding Tee, Cross, Y-Tee and continue routing on a main line or branches by selecting the location of junction to continue.





Modifying or Re-routing: This command is also useful for modifying or re-routing of a pipeline. Dynamic options to add **Tee**, **Cross, Y-Tee** at any selected point of an existing pipe empowers the User to create branch quickly. Moreover, system fetches the required information for creating branches and suggests the suitable options based upon the location of the mouse cursor, so that the User can continue routing without selecting or entering multiple parameters as an input.



Benefits

- This new enhancement enables a User to complete the entire pipeline routing (end-to-end) in a single command with fewer clicks
- All the required input's parameters (such as nominal diameter) will be fetched from the system automatically based upon the location of branching elements
- Improves productivity and guides the User to complete the routing in an efficient manner

Plant Design & Equipment Engineering Solution

CADISON® Project-Engineer is the module for project planning & management, costing, administration, work-flow management, status review and document management.It allows project managers to create and control the project data without any CAD/Graphical interface. It also provides bidirectional interface with MS Projects to plan and track the project status in CADISON®.

CADISON® P&ID-Designer is a spec-driven module for creation of intelligent PFD/P&ID, instrumentation (measurements, hook-up's, etc.), specifications and reports (BOM, Datasheets, lists, etc). It supports various standards (DIN, EN, ISO 10628, ISA 5.1, ANSI, etc.) and also allows the Users to conform to company standards. CADISON® enables pipeline Sizing and Utility Pump Sizing calculations for optimum selection of equipments at P&ID stage.

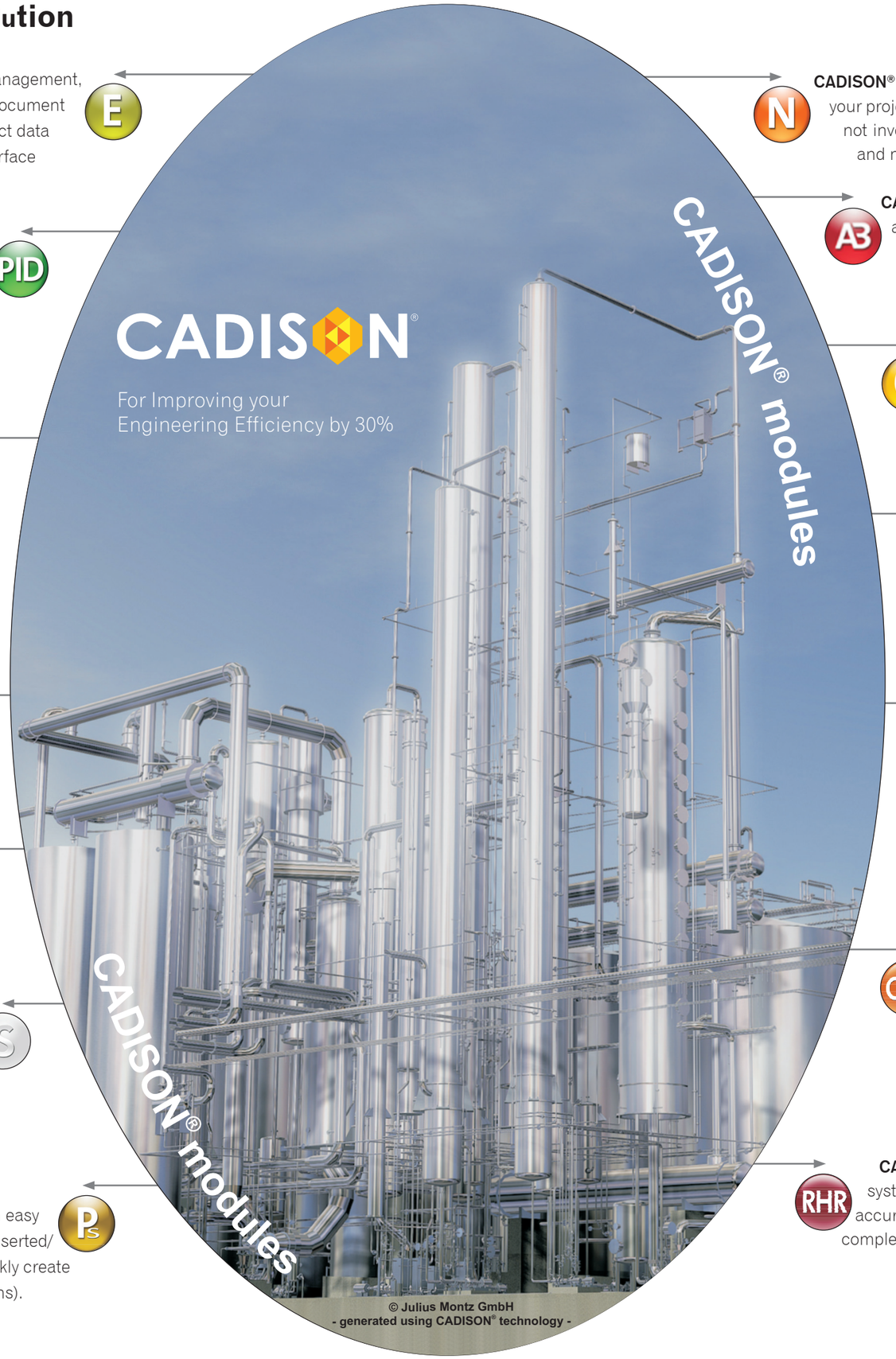
CADISON® 3D-Designer is the module which allows the Users to build plant layouts, pipeline routing and equipment modeling. It also provides various design assistants/wizards such as 'Tank Assistant', 'Nozzle Assistant' for creating 3D vessels and tanks. It uses ISOGEN for extracting isometrics and enables the Users to automatically generate orthographic (GA) drawings for construction documentation. Its integrated report generator enables the Users to generate various types of reports (BOM, MTO's, Datasheets, etc.).

CADISON® Electric-Designer is a comprehensive solution for schematic & controls design, sizing calculations (Cable, Transformer & Battery sizing, and Earthing calculations), 3D cable tray & panel layouts, automatic report generation, bill of materials (BOM) and material take-offs & lists.

CADISON® MATPIPE is an independent module for development and management of pipe classes, creation of parameterized 3D components, preparation and integration of manufacturer's catalogues and maintenance of up-to-date catalogue data in the system with import & export functionality of MATPIPE

CADISON® Steel Layout is a tool for planning and creating 3D steel structures and custom assemblies (ladders, staircases, platform, hand rails, pipe supports, frames, etc.). The Users can also extract GA drawings and generate Bill of Material (BOM) and quantities (BOQ) required. Its SDNF export features allow the Users to the export steel structures to Tekla and Advance Steel for further detailing.

CADISON® Pipe Support Modeler is a wizard which assists the Users to create and edit different types of predefined secondary supports in an easy and intelligent manner. Hook-ups can be generated automatically and inserted/ displayed in the documents (drawings/ Isometrics). Users can also quickly create non-standard pipe supports manually using steel profiles (beam/columns).



CADISON® Project-Navigator is a 'viewing Tool' for accessing engineering data of your projects. The navigator has been designed for the teams which normally are not involved in planning & design of a plant but are responsible for operation and maintenance (i.e. mere data consumers).

CADISON® Archiver The CADISON® Archiver allows you to swap and archive completed projects from the CADISON® productive environment. Archived project data/information can be quickly and easily viewed with the CADISON® Archive-Browser without a need to retrieve it from the productive environment.

CADISON® Engineer2Web CADISON® Engineer2Web enables the Users (at remote location/site) to gain direct web access to CADISON® object data. The data and structures generated by using Project-Engineer, P&ID-Designer, 3D-Designer and other modules can be viewed, edited or re-integrated over a standard web browser.

CADISON® ERP-Interface CADISON® provides an access to the known ERP systems (Enterprise-Resource-Planning) for dynamic data exchange via an open ERP Interface. This bidirectional interface combines the ERP and engineering workflow for creation of a highly integrated system. For instance, orders can be directly released and controlled from the engineering workflow.

CADISON® Inventor Interface The CADISON® Inventor interface enables the Users to import an Autodesk Inventor part or assembly into CADISON® environment as a CADISON® object. Add-on menu in Inventor will assist the Users in exporting Inventor part or assembly file into SAT and XML format. The interfaces have a provision to define connection points on planar face of any shape (in Inventor as well as in CADISON® import wizard) enabling the Users to import objects with or without connection points.

CADISON® CAESAR II Interface CADISON® provides an interface with industry standard CAE software CAESER II for quick and accurate analysis of piping system subjected to wide variety of loads taking in to account weight, pressure, thermal, seismic and other static and dynamic conditions based on User defined variables and accepted industry guidelines. CAESAR II interface adds the ability to export pipeline or selected pipe data form CADISON® 3D-Designer to neutral ASCII–format.cii file.

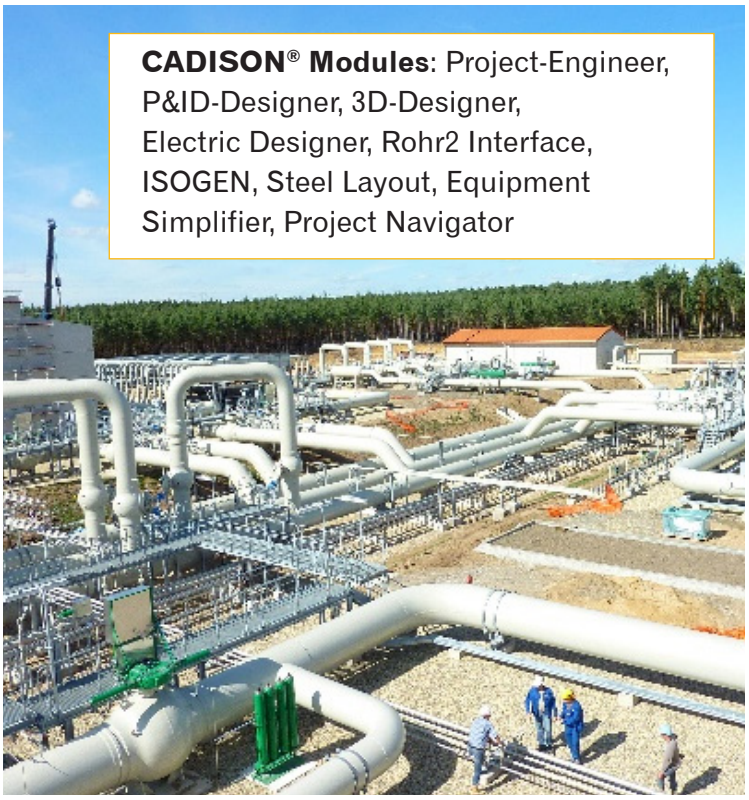
CADISON® ROHR2-Interface makes it possible to transmit all pipeline systems created with CADISON® 3D-Designer to ROHR2 for quick and accurate analysis of piping system. All the required nformation will be completely transmitted in the form of NTR files for analysis.

CADISON® Comprehensive Engineering Solution along with Interfaces and centralized PDM helps GASCADE to plan and build plants efficiently

GASCADE Gastransport GmbH plans, builds and operates one of the largest natural gas infrastructures in Germany. GASCADE offers customers competent and comprehensive transport services with a pipeline system based on the highest technical standards.

CADISON® is used for the generation of P&IDs, layout plans, isometrics, reports and 3D models. Information from CADISON® is further supplied to Rohr2 and E-Plan via interfaces. A significant benefit is the fact that data and information are only entered once and are available up-to-date at all times & disciplines of CADISON®. With interfaces to non-CADISON® programs, such as Rohr2, errors due to manual transmission are avoided.

information, which helps our plants to be planned & built efficiently".



CADISON® Modules: Project-Engineer, P&ID-Designer, 3D-Designer, Electric Designer, Rohr2 Interface, ISOGEN, Steel Layout, Equipment Simplifier, Project Navigator

"CADISON® is the central repository for all data and information, which helps our plants to be planned & built efficiently".

Christian Manshausen
Dipl.-Ing / Construction / CAD / Engineering

Get more Benefits by using built-in Instrumentation Capabilities of CADISON® P&ID-Designer

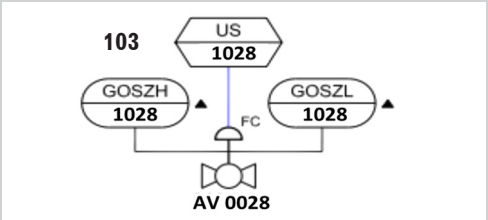
The documentation of process instrumentation and controls along with associated field instrumentation is normally created by the engineering teams that design a plant. The instrumentation department of an engineering firm is responsible for the selection of field devices(for e.g. selection of the transmitters, type and sizing of valves, etc.) that best matches the process design requirements. The P&ID drawing acts as a directory to all field instrumentation and controls that will be installed on a process and thus is a key document to the control engineer.

There are multiple practices followed by the Users to trace the instruments from P&ID. One is to show the controls in the P&ID drawing itself with lines connected to the field instrumentation. In some cases, process controls are illustrated at the top of the drawing (like legends) by mapping graphically or by giving reference to the field instrumentation shown in the P&IDs. Either of these approaches complicate the drawing further, if one tries to give installation instruction of the instrument. Moreover, maintaining instrumentation details in a P&ID drawing is a challenge as the process control design may change with plant operational requirements in the due course.

For seamless information flow between process and instrumentation disciplines, you need a system which will link P&ID with instrumentation details (instruction). With CADISON® P&ID-Designer, process engineer tag (unique identification number assigned to a field device) an equipment with instrumentation and control associated with it, and instrumentation department look for the required signals and I/O's.

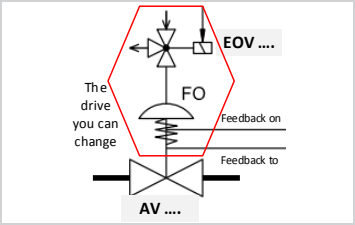
CADISON® has a provision to define the structure and interconnection of the individual components of an instrument - to be pre-defined in the form of a 'Typical'. Once the measuring point is specified by the process engineer in a P&ID drawing, Instrumentation engineers assign 'Typicals' for further detailing. It is possible to assign a 'Typical' to one or several measuring points in a single step. As 'Typicals' are assigned to each instrument, User can create hookup drawings automatically. CADISON® P&ID-Designer act as a single system for both process and instrumentation engineers to extract information/reports as per their needs.

A hookup drawing created in CADISON® does show the 'Typical' instrument with necessary steps for installation (this ensures an accuracy to prevent any issues that could affect the performance of an instrument), and piece list of all the objects integrated in a 'Typical'. In addition, the measuring point names linked to the 'Typical' are indicated on the right-hand side of the table for quick reference during construction.



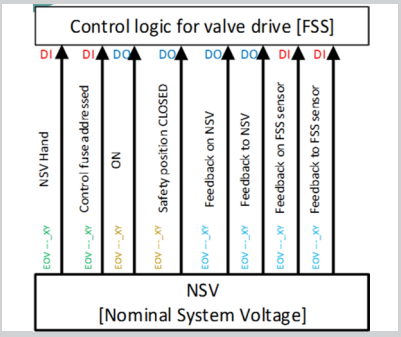
Define a Valve and all required measurement points. Assign a typical number (for e.g. 103).

Step 1



Create 'Typical' with details such as controls, signals, functions, etc.

Step 2

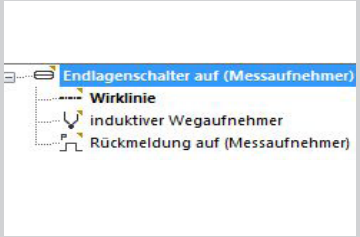


Before you can start assigning the logical component to the 'Typical'; build the structure as shown in the figure.

Step 3

This logical structure (valve view) created in step 3 in visible in the CADISON® Tree

Step 4



A fully configurable 'Typical' shows following details:

- Measurement point
- Drive, Signals (Relation)
- Signal connections
- Limit switches, Sensor, etc.

Step 5

Finally, to get all this information you have to run 'Hookup' command to generate hookups and extract different reports, such as Signal/IO List/ Measurement Point Lists and or Measurement Data Sheets and Purchase Specification.

Digital Plant Information Modeling & Multidisciplinary Integration

Reusability through Extensible Construction Set

Intelligence, integration, quick reactivity, and modularity are the major future plant trends. The trend towards modular plant design and object-oriented software for plant design makes for engineering cost reduction and faster plant engineering. During the design and engineering phases, a variety of independent planning stages and multiple specialist disciplines (process, piping, electrical, structural, etc.) are involved. The modular approach can achieve accelerated engineering by the reuse of engineering information across the disciplines. For e.g. Project Structure, Templates, reusable models/assemblies, uniform tagging methodology, etc. Hence, **Multidisciplinary Modularity is a Key!**

Modular Process: Even so, as plant engineering becomes more competitive, it forces engineering departments to improve efficiencies and workflows by linking all disciplines with a single database - resulting in reduced reporting, fewer errors and faster engineering output. Accomplishing this requires an intelligent and integrated plant information modeling process that uses objects in a single, centralized database where design data is stored in a structured way – as 'intelligent objects' filled with information and properties that can be shared and worked (reused) on collaboratively by all disciplines across a single object model.

Engineering System that enables 'Reusability & Modularity': An engineering system needs modularization framework and processes, which will enable the Users to do faster plant planning/designing due to reuse of information and workflows. Single object-oriented technology of CADISON® brings in the flexibility to the Users to create object models that have intelligence, graphics and engineering data as 'one source of truth' which avoids synchronization of multiple databases. While this seems minor, maintaining multiple databases, which synchronize (even every 5 minutes) create the potential for redundancy and duplication. When all objects are held in one place, updated in real time, with no synchronization required, there is only 'one source of truth' between all disciplines resulting in reduced efforts, fewer errors and less rework.

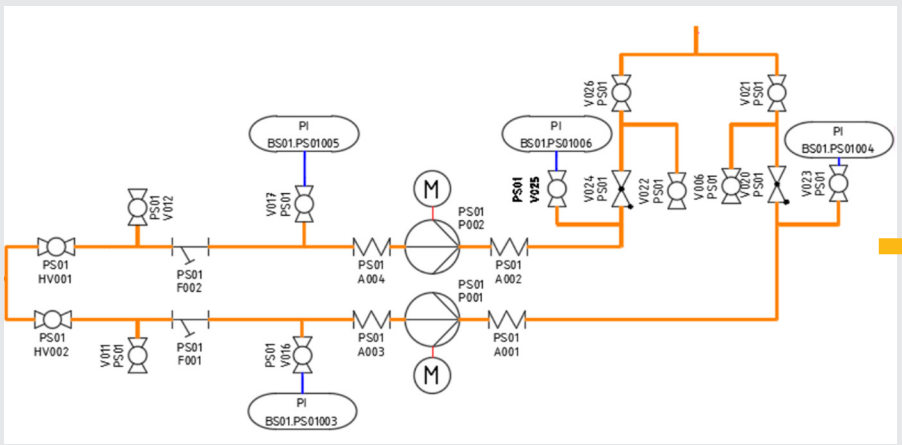
Reusability Example: Each discipline uses specific methods, tools and objects. In order to properly span multiple disciplines and dependencies; project structure and object data must be transferred in a format appropriate to individual tools. CADISON® uses modular architecture, enabling single project structure (work-break-down-structure) across all disciplines with objects having multiple representations (discipline wise).

Example 1: **Creating modular sub-assemblies (construction set):** The Users can create a sub assembly called 'Construction Set' in CADISON®, which is an assembly of objects (for e.g. pipeline, pump, motor, instrument, etc.) created in a drawing and stored as standard object/stencil for reuse. Typically, other tools copy graphics and reuse it in the same drawings but in CADISON®, a construction set can be extended to have multi-disciplinary information & representation (for P&ID, 3D Designer, Electrical-Designer). The multi-disciplinary sub assembly is called **'Extensible Construction Set'**, which can be reused across disciplines, due to multiple (object) representations.

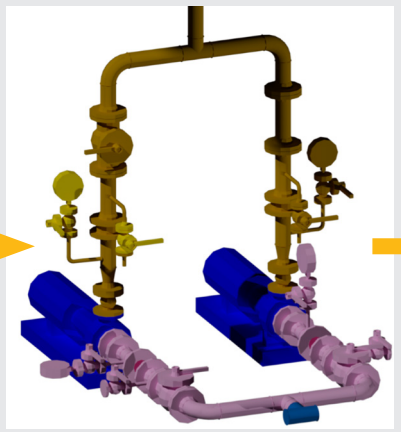
Following example shows the process of creating multi-disciplinary modular 'Construction Set':

As part of project planning, all the departments work together and define the different construction sets

Each discipline uses the result from previous team and creates a multidisciplinary construction set.



Process Team creates standard Pump group



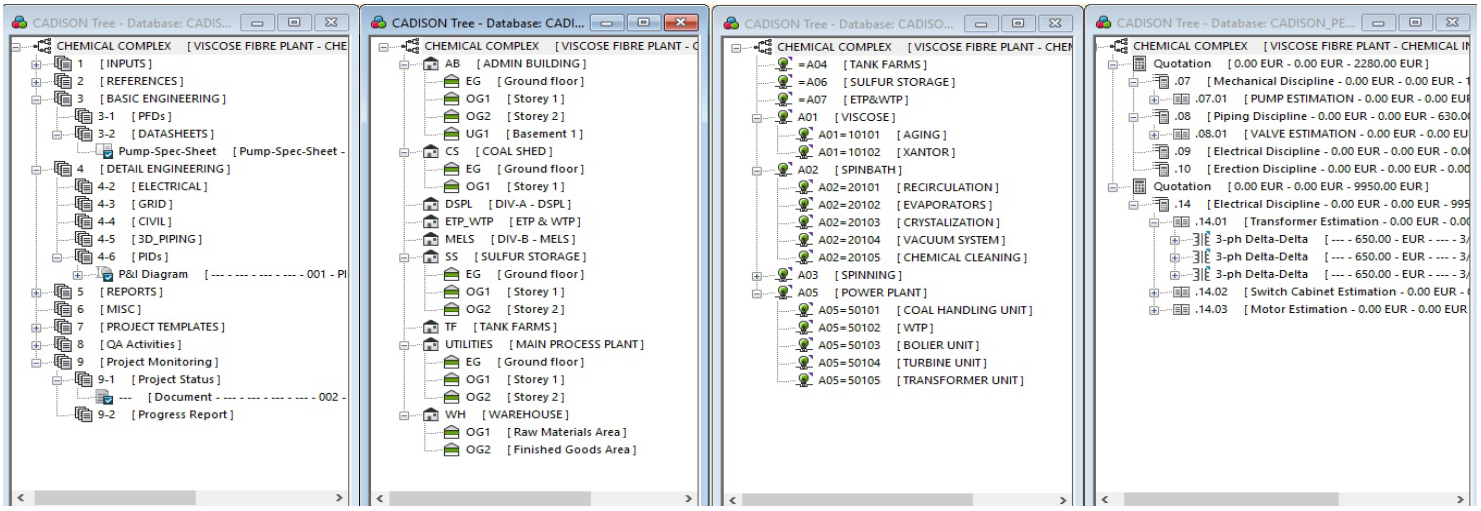
Piping Team create the Pump group in 3D (by using the data from P&ID)

(which are reusable). The team of different departments can start creating discipline-specific construction sets as the project progress.

Example 2: Multidisciplinary Project Structuring

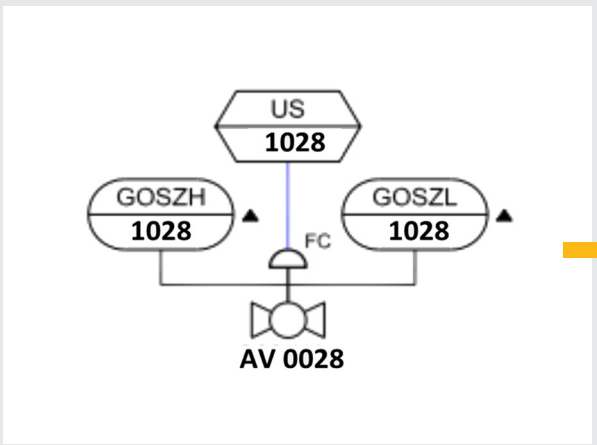
- Project grouping/structuring with plant areas, drawings and documents in ‘document/folder groups’ in a hierarchical manner (Parent-Child Relationship of objects)
- Single Tree Structure across disciplines/modules (Project-Engineer, P&ID, 3D, Electrical-Designer, etc.)
- Easy input of data attributes/documents through Object Inspector
- ‘Drag & Drop’ of objects from CADISON® tree in to drawing area
- Revision Management & Control
- BOM & Reports for various document group’s

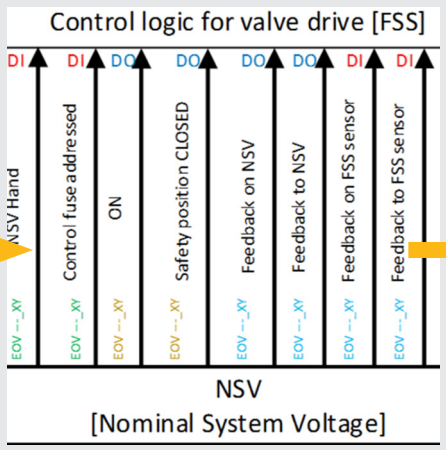
Document Structure | Building Structure | Plant Structure | Costing (Quotation) Structure

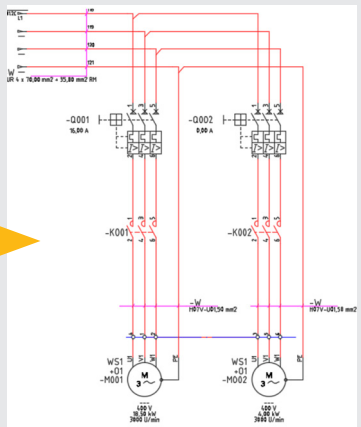


Advantages:

- Better planning and more accurate engineering throughout the project lifecycle
- A consistent system of data management increases flexibility of the overall process and enables parallel collaboration
- Because data and objects exist only once, errors as-a-result of redundant data are eliminated.
- Modifications introduced by other Users quickly flow to all associated objects, which virtually eliminate object redundancy and conflict





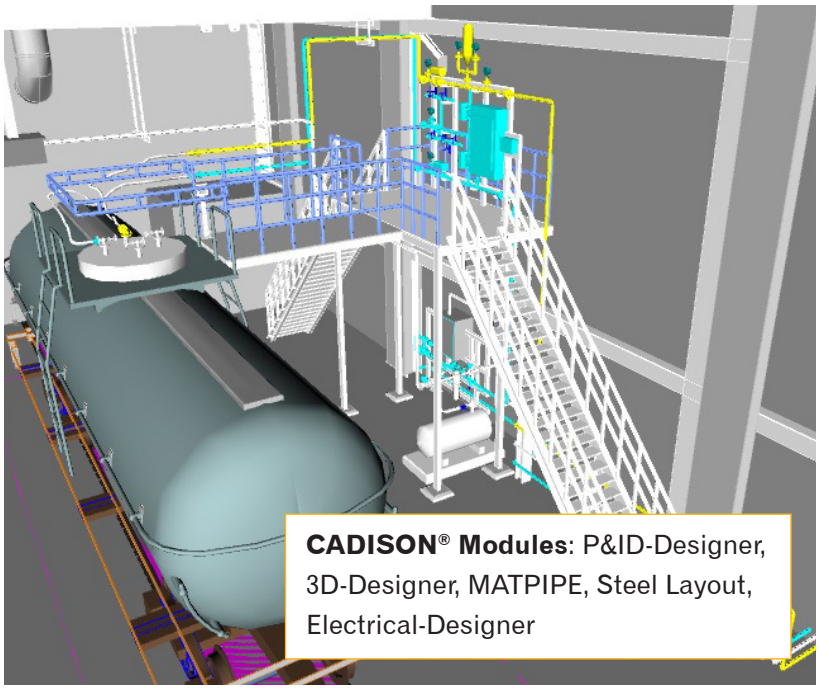


Instrumentation Team modify the measuring point with devices and signals

Electrical Team create the part of SLD/Circuit diagram

KGI ✓ Automatic Change Management and Clash Detection in an integrated project saved huge efforts and time for KGI - Houston, USA

Kalluri Group Inc. (KGI) provides planning, engineering, project management, construction management and regulatory services to a wide variety of public, private and industrial clients for water treatment plants.



CADISON® Modules: P&ID-Designer, 3D-Designer, MATPIPE, Steel Layout, Electrical-Designer

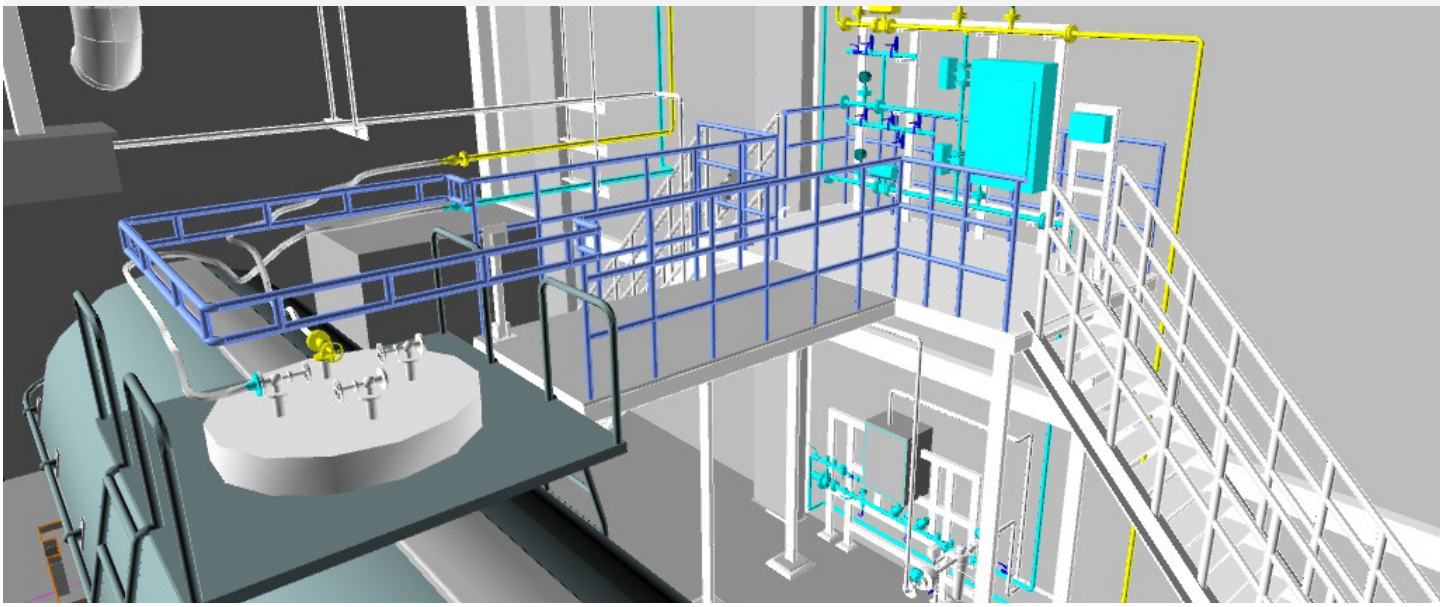
Project: Revamping the Chlorine disinfection system of municipal water treatment plant. Chlorine is the most widely used disinfectant in water and wastewater treatment plants. Chlorine unloading system is used in for offloading chlorine from railcars and use it in the disinfection process. This chlorine unloading module/ skid was done in CADISON® using P&ID, 3D, Electrical and steel layout modules.

This project included creation of P&ID drawing and 3D Piping and modeling of Skid, equipment's, instrumentation, steel structures and air ducting. An integrated CADISON® solution provided an added advantage to model the entire skid in one system. Any changes in one particular area were automatically updated across the system.

All auxiliary objects (like static Rail Car 3D model, Building, etc.) were imported in CADISON® and intelligent objects (for e.g. manway) were added to connect it with chlorine disinfection skid (for unloading). Entire system was checked for clash detection through CADISON®-Navisworks interface.

"With CADISON® MATPIPE, we could customize the catalogs and specifications easily. 3D Model from other system (DGN format) was easily imported in CADISON® environment for clash detection. The visualization of the entire unloading system (with other auxiliary units) made it easier for understanding the operation."

- Ramesh Kalluri
CEO, Kalluri Group Inc., USA

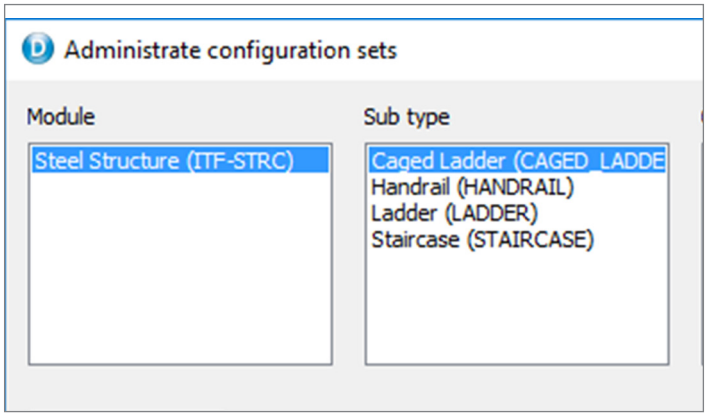


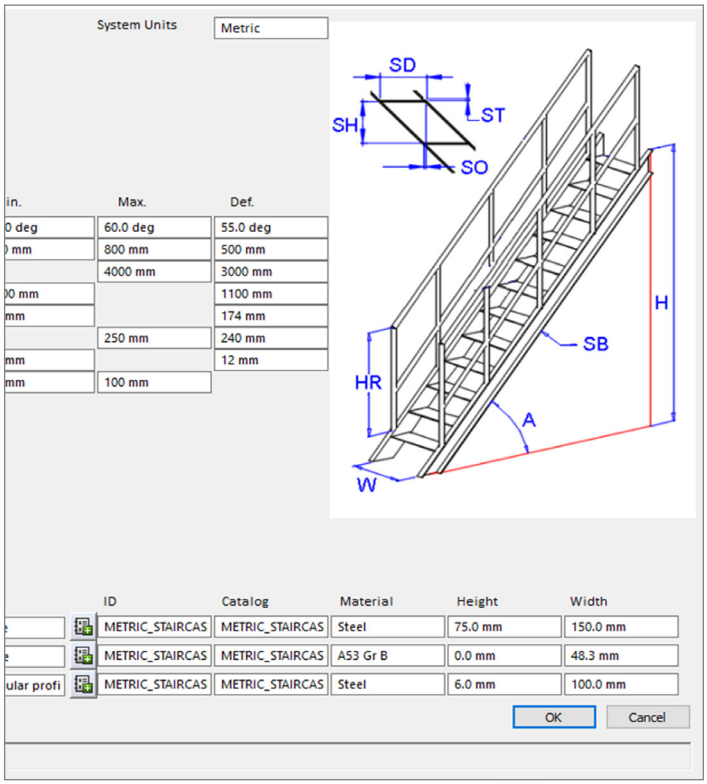
Plan & Visualize Steel Structures as per Standards with CADISON® 'Steel Layout'

This section of the article focuses on how to get maximum benefits from creating Steel Structures (Ladders, Staircases, Handrails, etc.) as per the industry standards (for e.g. DIN, ISO, ANSI, etc.), organization's own standards or adapting new standards at a project level. CADISON® Steel Layout has wizards, which help the Users to create the steel structures with fewer inputs and meet the standards without any additional efforts. Since the steel structures are validated and as per the selected standards, it ensures error-free deliverables (such as BOQs, MTOs, GA layouts, etc.).

Configuration of Standards in Steel Layout

The standards can be configured by an administrator using configuration set functionality (as per the guiding values) and made available for use in a project. User can also create company's own standards or create new standards for selected structure type (or sub type). Steel Structure Wizards will validate the values entered by the Users with the guiding values from a standard. The standards will be saved as configuration sets in the project database. It is also possible to export the configuration sets to use it across the projects and for future references.





The 'Configuration Set' allows a User to control the following settings in the objects

- Set unit of standard, for e.g. metric or imperial
- Set default values for required parameters of structural elements
- Set the maximum and the minimum limit to validate the structure elements
- Select valid catalogs' shapes and types of objects for the components to create structures

Edit Standards in Steel Layout

To avoid settings for each (new) structure or project User can also copy existing standards and fine-tune it using 'Edit' option available in 'Administrate configuration set' UI. Delete option enables a User to remove unwanted standards from the project. This empowers the users to adopt required changes and fine-tune the rules without depending on software vendor.

Overall the flexibility to adopt, define any new standard or own standards makes the steel layout a productive tool.

Benefits

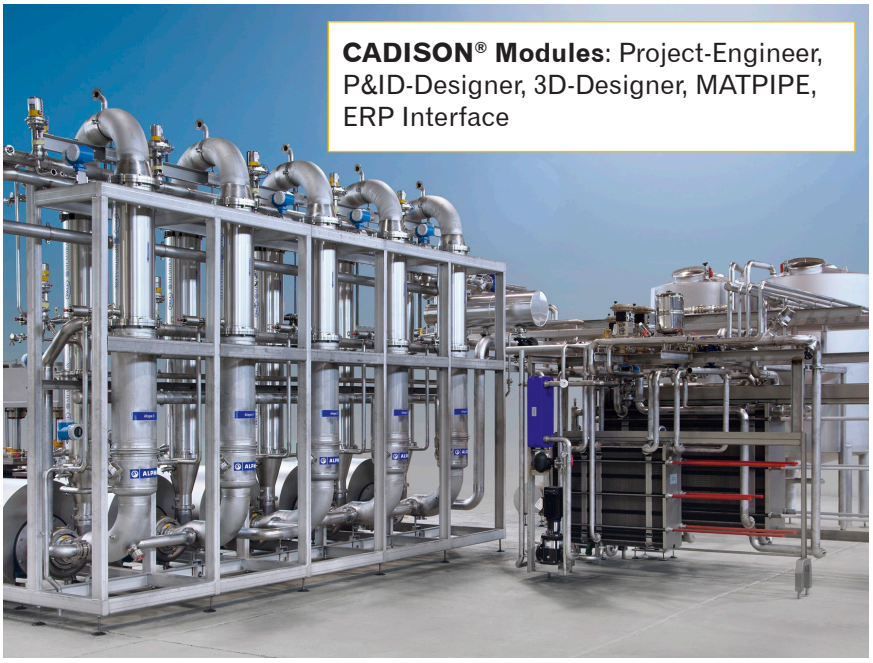
- CADISON® Steel Layout Module provides significant time-saving in creation and visualization of complex structures for space planning & collision control
- Better representation of Steel Layout with additional standards
- Accurate BOM generation from the layout drawing's
- Export drawing in SDNF format to Tekla/Advance Steel for further engineering/analysis

CADISON® STEEL Layout is a comprehensive tool for planning and creating 3D steel structures efficiently in plant design. The Steel Layout has wizards for error-free creation of Ladders, Staircases, Platform, Rails and Water tanks, etc. It allows the Users to quickly create, edit, and detail custom assemblies like caged ladders, towers, pipe supports, frames, gratings, roofs, etc. The module also provides Users the ability to extract GA drawings of the structures created and generates reports for Bill of Material (BOM) and quantities (BOQ) required. Its SDNF export interface enables a User to export steel structure data to Tekla & Advance Steel for further detailing.

ALPMA leverages CADISON® from Planning to Installation & Commissioning of Food Process Systems

ALPMA Alpenland Maschinenbau GmbH is a globally successful mechanical engineering company which produces machines and installations for the dairy and food industry.

Its Process Technology, Cheese Production Technology and Cutting and Packaging divisions offer customers and partners a unique range of products from machines which lead the field both technically and technologically, to the processing and packaging of food, to complete system solutions for dairies.



CADISON® Modules: Project-Engineer, P&ID-Designer, 3D-Designer, MATPIPE, ERP Interface

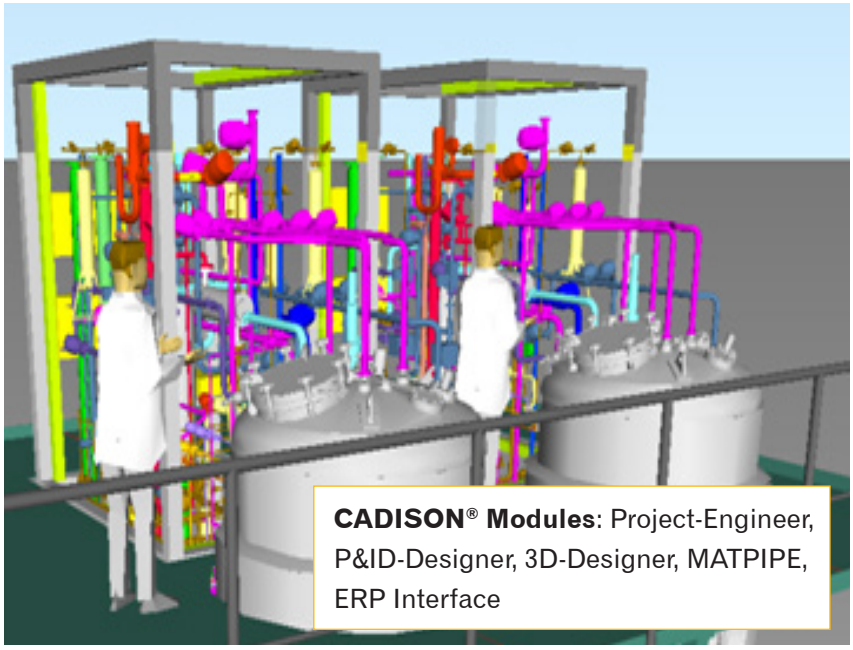
Since 2004, ALPMA started using CADISON® mainly for planning & proposal engineering and extended it for integrated plant & equipment engineering. They also use the CADISON® ERP interface for transferring planning information to ERP system for effective supply of accurate installation data.

"Today, CADISON® is a complete solution for our projects. We have benefitted from its integrated platform from engineering right up to the ERP system"

- Andreas Hiegelsberger
Project Manager
ALPMA Alpenland Maschinenbau GmbH

engineering for a better world

Flexibility & Easier Customization of CADISON® helped GEA in improving Project-specific Standardization



CADISON® Modules: Project-Engineer, P&ID-Designer, 3D-Designer, MATPIPE, ERP Interface

Serving the global pharmaceutical and biotech industries, GEA Group designs, develops and manufactures state-of-the-art solutions to produce solid and liquid dosage forms.

GEA provides the services that the pharmaceutical industry needs: test facilities, technical know-how, process evaluation, product development, market-leading technology, project management and ongoing support.

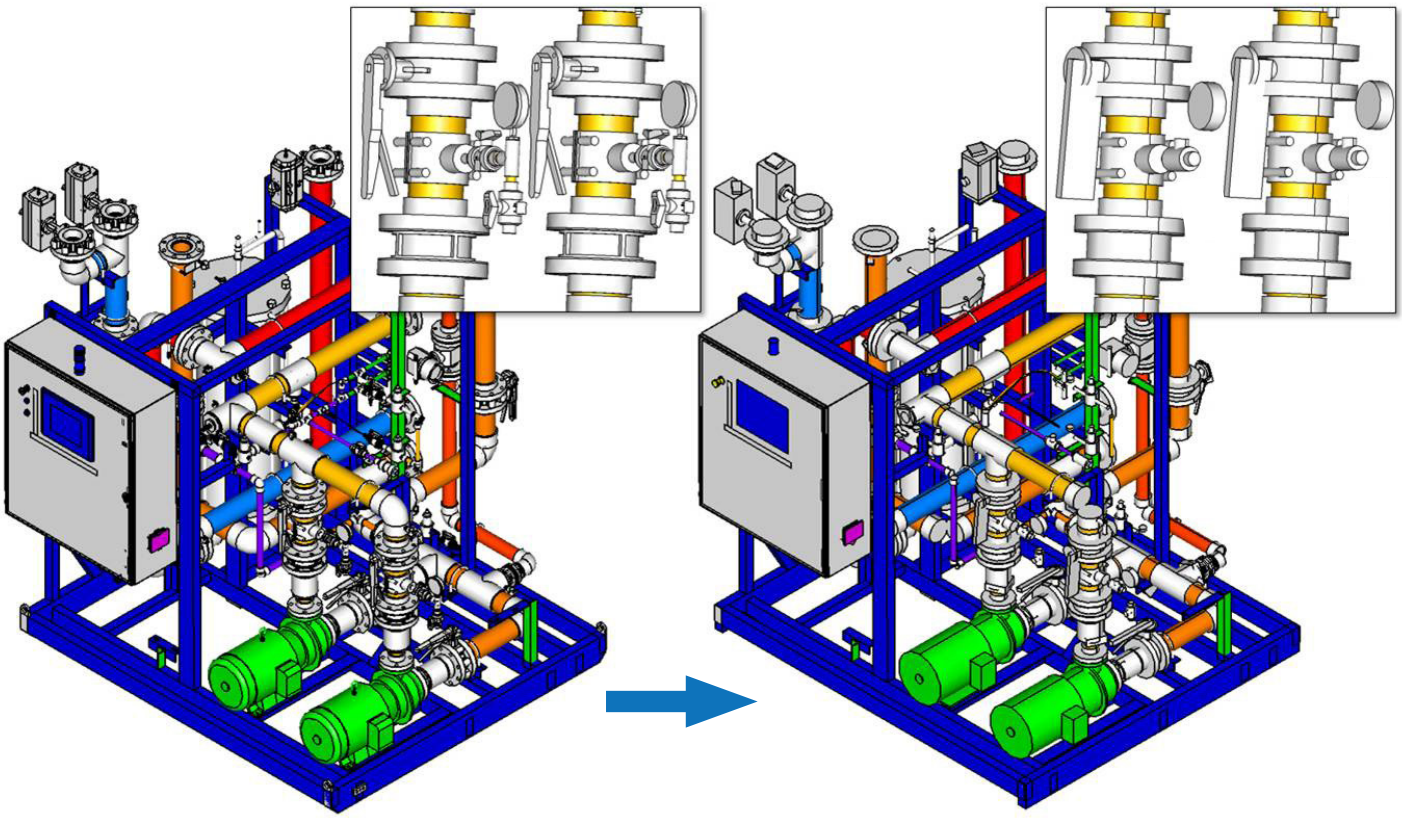
For more than a decade, GEA uses CADISON® for integrated planning, detail design, and documentation of Pharma Biotech & Liquid Dosage applications.

Leveraging the flexibility and customization capabilities of CADISON®, GEA worked closely with the consultants and development engineers of ITandFactory to customize the software to meet our specific requirements.

"With the powerful MATPIPE Catalog System, CADISON® 3D-Designer is ideal for detailed design work. In addition to 3D Models and 2D Layouts, we are able to create more than 1000 isometric drawings for a single project."

-Udo Hoffmann
Project Engineer/CAD Administration

CADISON® Equipment Simplifier with Data Reduction Algorithm for all Mechanical Modelers



Import | Simplify | Export (to CADISON®)

CADISON® Equipment Simplifier is a customised wizard designed for the automatic simplification of large equipment models. It is a standalone product to reduce the file size(s) from different CAD formats with (interactive) manual or auto mode and export the results in DWG format to CADISON®.

Benefits: Remove the features that are not required for plant modeling | Reduces file size drastically Efficient complexity reduction of large equipment assembly models | Improves model legibility| Improves system response, memory usage and stability.

CADISON® Equipment Simplifier Supports -

- Native CAD: CATIA | NX | Wildfire/Creo | Inventor | SolidWorks
- Neutral Formats: IGES | STEP | ACIS SAT | Parasolid | DWG | STL | JT

CADISON® Training and Webinar

Below is the training schedule for all CADISON® modules at our Bad Soden office. Please check our website (www.cadison.com) for the detailed training calendar. If you are interested in participating or arranging for trainings for your team, please contact us at: training@itandfactory.com.

Training Schedule

Topics	Date
CADISON® Project Engineer (2 Days)	14.11.-15.11.2017 16.01.-17.01.2018 06.02.-07.02.2018
CADISON® MATPIPE (2 Days)	27.11.-28.11.2017 08.01.-09.01.2018
CADISON® P&ID-Designer (2 Days)	05.12.-06.12.2017 10.01-11.01.2018 01.02.-02.02.2018 01.03-02.03.2018
CADISON® Administrator (2 Days)	12.12.-13.12.2017 30.01.-31.01.2018 27.02.-28.02.2018 21.03-22.03.2018
CADISON® 3D-Designer (3 Days)	23.01-25.01.2018 20.02.-22.02.2018 13.03.-15.03.2018
CADISON® 3D – Electrical Designer (2 Days)	08.12.-09.12.2017 08.03-09.03.2018
CADISON® Object model (3 Days)	21.11.-23.11.2017 13.02.-15.02.2018
CADISON® Reports (2 Days)	18.01.-19.01.2018

Webinar Schedule

Topics	Date
CADISON® - an integrated solution (P&ID, 3D, etc.)	Every Friday (13:15-13-45 CET)
CADISON® Electrical-Designer	Every Friday (14:15-14:45 CET)

Note:- All webinars will be on the 1st Friday of every month.

Language:- German (English webinars will follow later)

Register:- https://www.cadison.com/de/support-services/webinare

Visio-based Intelligent PFD/P&ID Solution

Get to know more about this new solution - www.visiopid.com

Attend VPID Webinars on Every Friday (11:00 AM- 11:30 AM CET)

Register:- http://visiopid.com/de/news-event/webinar-de

Please visit us at Hall 9.2, Stand C1

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it and factory solution provider

Neilsoft