EK4 SteelWorks is the first SolidWorks® based solution completely dedicated to the design of steel constructions

Warehouse, Latticed works, Staircases, Bridges and any type of industrial and non industrial constructions

EK4 STEELWORKS streamlines the workflow to design metallic carpentry with SolidWorks. Totally and perfectly embedded in SolidWorks, EK4 STEELWORKS has been conceived to accelerate the modeling, editing and management of structural steel components and to produce and share Building Information Modeling data. EK4 STEELWORKS is designed according to the latest BIM (Building Information Modelling) criteria. In this way the user can, through the network, create, manage and share information concerning all the stages of the building process, including general arrangement, detailed or fabrication drawings and bill of materials. It includes a SQL database that allows an advanced and organic management of contracts. The first stage of the work implies the 3D modeling of the geometric support which the user can define in different ways, remaining completely integrated in the SolidWorks environment.

The user can either work on a parametric wireframe, which can be covered with the desired building components like profiles, joints, welding, etc., or use a library of intelligent, parametric and associative components. In this way the user can quickly model a whole structural subsystem and adapt it to the context in which it has to be used.

For example a truss, a staircase or a brace can be designed just once and re-used with other parameters. There is no limit to the customization and re-use of the components designed and managed in the 3D environment. In this way complex wizards or insertion dialog boxes, usually proposed by competitors for the modeling of braces, trusses, staircases, portals or lattices can be abandoned.

The designer is therefore not affected by software limits, he can in fact freely design any type of structure, associate any behavior useful for the re-use and add the structure to the EK4 STEELWORKS library, thus making it available for other jobs and/or other users.

Since EK4 STEELWORKS is totally integrated in SolidWorks, it is always possible to utilize all SolidWorks tools. There is maximum flexibility in the use of all components, starting from profiles; apart from the industrial ones, even if not commonly in use, generic sections are provided as well. From here it is possible to couple or arrange profiles in various configurations. The same flexibility is available in the joint management, as joints are difficult components to be restrained within predefined configurations.

Any type of joint, even custom, freely defined by the user is added to the model through the same interface. EK4 STEELWORKS suggests compatible joints featuring the outlined conditions.

The joints libraries, standard and custom, are the right support for the user along with other personalized files available in EK4 STEELWORKS. These include bolts, ribs, plates and other components of mutual interest, including complex substructures used in the same project or in different works.

Two-dimensional Drawings and construction details are also managed and automatically linked to the model. In this way, users can obtain views, plans, sections, perspectives, assembly drawings, fabrication drawings, building construction drawings and construction details. To make this possible, various drawing formats are provided, and users can create many more.
The 3D system is largely used in EK4 STEELWORKS, in light of its immediacy and profitable potential. Every change on the model implies an automatic and intelligent adjustment of the involved parts, as a result of a parametric and associative setting of the structure in EK4 STEELWORKS. All the necessary geometric checks are performed with the purpose of offering a full guarantee on quick building and assembling of the structure. EK4 STEELWORKS includes a very powerful SQL engine allowing multi-user work. It brilliantly solves outsourcing management through a check-out/check-in mechanism, functioning via Web too.

The client version can be connected via Web to the server to work on authorized orders. Furthermore, the administration tool allows the user to organize and classify library components and orders according to a personalized logic (i.e. calculation code, customer or place) and to set access rights for each user. Drawings and constructive 2D details are produced and automatically linked to the model. The drawings can be associated to the model and automatically reflect every model update, thus avoiding human errors.

**Layout based design and management**

The Layout assembly provides a straightforward parametric control of the whole geometry. EK4 STEELWORKS Layout assembly is an intelligent component which can be driven by configurations. Any different configuration can change the model appearance, therefore geometry typology of a composite structural element can be modified just by modifying the active configuration.

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The Grid component is another EK4 STEELWORKS tool useful to enhance user productivity. It creates a parametric grid, planar or three-dimensional. Like all others EK4 STEELWORKS tools the grid insertion pane is perfectly embedded into SolidWorks and very easy to use. The user has to just specify the length and the number of the span in each direction. The parametric behavior of the grid helps the user to change the dimensions of the spans whenever necessary. In fact sometimes dimensions can change throughout the development of a project. The parametric behavior permits to automatically adapt each part of the structure - built on the grid - to the new geometry.
Cost-effective components-based design

EK4 STEELWORKS streamlines the SolidWorks components-based design of steel structures. So why reinventing the wheel? In just few minutes a brand new job can be created from reused custom components (in the picture a reusable, fully parametric, stair flight). The designer can add a parametric and associative behavior to the models and then the latter could be easily modified to fit new layout requirements. All custom components modeled with EK4 STEELWORKS can be stored in the job or fabricator library, shared and reused, even through the computer network. EK4 STEELWORKS enhances designing skills, while significantly reducing the time from the screen to the market.

Standard and custom joints management

EK4 STEELWORKS features a Standard joint library, including various typical joints. All joints have been verified on the basis of the applicable design code. Standard joints are smart and flexible, that is to say that, when modifying associated profiles, joint dimensions will also change in compliance with the design code specifications. Moreover, when modifying the profile slope, the joint will automatically adapt to follow the new direction. The user can change any joint parameter at any time, thus making it a custom joint which can be stored in the custom joint library. The same can be done with a user joint. A user joint is an assembly of correlated SolidWorks. Once a user joint has been created, it can be stored in the custom joint library.

Advantages to outperform on the market

- Easy approach to design: less training, more guessing
- 100% parametric model
- Fully scalable and customizable application
- Progressive smart behavior
- Full interoperability with SolidWorks
- Layout, modeling and detail configuratio management

Advantages over competitors products

- Fully embedded in SolidWorks
- Fully customizable component library
- Fully parameterized model according to production needs
- Smart object management according to the context
- Conceived for job verification and optimization
- Definition of custom joints
- Compatibility with PDM Works Enterprise and other add-in applications
Interoperability

The interoperability pack allows smooth interaction between EK4 STEELWORKS and any generic FEA software. Processing the created structural model becomes very easy thanks to the possibility to export data in SDNF (steel detailing neutral file) and CIS/2 (CIMsteel Integration Standards) formats.

Furthermore, EK4 STEELWORKS integrates with STAAD.Pro®. A structural model can be created within the STEELWORKS environment and be transferred to STAAD where structural analysis can be performed. The model can then be updated inside SteelWorks and vice versa.

Detailing

Marking and drawing management is performed according to the requirements of the steel construction industry, therefore, without exiting the SolidWorks environment, single and composite marks, workshop drawings, single and composite marks drawings can be obtained. As it usually happens in metallic carpentry, workshop drawings are out of scale.

EK4 STEELWORKS™ STANDARDS

- AISC American Institute of Steel Construction
- AS/NZS Australian/New Zealand Standard
- BS British Standards
- ISO International Organization for Standardization