**Digital engineering at its best**

**Alternatives to CAD programs in factory equipment engineering**

**CAD (computer-aided design) is a fundamental design tool in mechanical engineering, architecture and other sectors. 3D CAD software produces a three-dimensional, realistic model that is used for simulation testing, as a manufacturing framework or for visualising designs. In factory equipment engineering, design engineers also use CAD systems to design benches, racks, side carriages and other technical components for operational processes. However, most CAD programs are far more sophisticated and complex than is necessary for these tasks. Alternative digital design tools, such as the** [**item Engineeringtool**](https://welcome.item24.com/engineeringtool/utm_source=website-uk&utm_medium=slider&utm_campaign=engineeringtool)**, offer clear advantages in carrying out standardised engineering work. What’s more, there are situations where the two design tools complement each other perfectly.**

Is CAD the ultimate design engineering solution? When it comes to creating bespoke products and design freedom, combined with maximum flexibility, the answer is a resounding “yes”. There are various CAD programs that are specially tailored to individual sectors and their requirements. However, using CAD systems frequently involves high investment costs and very complex software. That is why, when it comes to designing factory equipment, it can be helpful to use alternatives that are easier to handle and less expensive.

**Ease of use instead of complex work processes**

Staff usually need extensive induction training before they can use conventional CAD systems. And if the software is updated, additional training is often required. The administrative IT outlay is also immense. In contrast, the Engineeringtool from item does not require detailed specialist expertise – the steps for designing simple frames are fast to learn. Digital tools make designing factory equipment much easier. They are intuitive to use and offer a large working surface that supports online 3D designs. Users have an extensive catalogue of products at their disposal from the item MB Building Kit System and Lean Production Building Kit System to help them complete their projects.

**Rapid creation of basic frames**

The properties for the individual parts in your construction are easy and convenient to define and can be modified at any time. It doesn’t take long to select the appropriate fasteners and accessories, meaning simple frames can be designed in next to no time. CAD systems are often far more sophisticated and complex than is necessary for basic constructions in factory equipment engineering in particular. For instance, if design engineers are looking to create a design from item components using a CAD system, they need to load the individual products onto their system and add relevant metadata such as the supplier or article number. They then create connections to determine the position of the products in a three-dimensional space. This process needs to be repeated for each profile and all connections and is complex and time-consuming. Incorporating machining steps for connections into a design by adding drilled holes and threads, for example, is often not considered due to time constraints. In contrast, the item Engineeringtool automatically adds drilled holes and necessary profile machining and accurately positions them as appropriate to the relevant fastener.

**Launch directly in a browser and share results easily**

The item Engineeringtool is free of charge and can be used without a licence. CAD programs, however, are expensive – licences are frequently linked to specific computers and have to be extended in good time. The integrated data management of the item software is another economic benefit. CAD systems often offer only limited options for storing and retrieving CAD data, other than using Windows Explorer. If a different solution is called for, a product data management system has to be used, and that brings procurement and maintenance costs of its own. The item Engineeringtool is based on cutting-edge web technology, doesn’t need to be installed and doesn’t rely on a plug-in or app. This intelligent software can be used on any PC, smartphone or tablet. By contrast, CAD systems are usually limited to workstations, and displaying results on other end devices, such as mobile phones, requires complex conversion steps. Sharing engineering results and communicating with colleagues or partners is also only possible using additional systems, such as a CAD viewer, or manually exported STEP data.

**Project documentation made quick and easy**

In a CAD system, users have to manually create the views, cross-sections and detailed illustrations needed for derived drawings. They also manually enter dimensions, tolerances and other information such as the position and the size of machining work. The parts list often needs to be specially prepared. “It’s not uncommon for it to take two hours or more to create a dimensioned drawing, the parts list and the machining plan,” says Christian Thiel, a product manager and online tools expert at item. “This time can be used more profitably – i.e. for the design process itself.” The straightforward and time-saving project documentation of the item Engineeringtool is thus a major advantage. At the touch of a button, the intelligent software generates a parts list, a detailed machining plan, a multiview projection, an isometric view showing all dimensions, an exploded view and an assembly guide that explains step by step how the construction is built.

**CAD system and item Engineeringtool – a perfect synthesis**

CAD systems and the item Engineeringtool offer the ideal combination for specific workflows. If, for example, products from other suppliers are to be combined with item components, the item Engineeringtool can be used as an initial foundation. In this case, the design engineer simply transfers the design to his/her usual CAD environment. Designs created in the Engineeringtool and all 400 item products can be exported in fifteen neutral data formats, such as SAT, STEP and IGES, and direct insertion drivers are available for 28 CAD systems in a wide range of versions. Users download the neutral data via the CAD Download Center and import it into their CAD system for processing. An additional data export option is available via the “Direct insert” function in the item Engineeringtool. The design is imported directly into the CAD system without having to first save a separate file somewhere else. Metadata such as the project name is incorporated directly in this step. “This variant is reserved for registered users,” says Thiel, adding: “It saves them time, as there’s no need to go via the Download Center or manually import anything.”

**Fast design using item components**

In specialist mechanical engineering, designs are created using components from various manufacturers and often need to be adapted to new requirements. The item Engineeringtool is ideal for producing an initial model that is worked on further in the CAD system. Constantly switching between the item Engineeringtool and the CAD system is not constructive, as too many links would need to be adapted for each change, however minor. “We’re continuously expanding the item Engineeringtool,” Thiel explains: “In the near future, we’ll also be enhancing the software with components and functions for specialist mechanical engineering.” An initial small step has been taken with a fixed coordinate system at the origin of the design, meaning that a great deal of time can be saved when re-importing. Currently, the focus of the item Engineeringtool is on speeding up the design process for factory equipment. The market leader in building kit systems for industrial applications thus ensures processes are efficient. The result is a digital workplace for all engineering tasks using item components. “In my view, both systems – CAD and the item Engineeringtool – have their place,” Thiel notes: “While the item Engineeringtool makes it easier to create basic constructions, CAD systems impress in terms of individuality and design freedom.” The simplicity of the data export function from the item Engineeringtool to CAD systems opens up a whole range of new possibilities for design engineers. They can combine the advantages of the item Engineeringtool with those of CAD systems and thus benefit twice over. All products designed in the item Engineeringtool are assigned an internationally unique project number. Engineering results can therefore be easily shared with colleagues, collaboration partners and customers by email – an additional IT solution is not required. Short delivery times and the high availability of components from the item Engineeringtool enable users to complete their constructions within a short time frame, cutting stock levels and warehousing costs.

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**Caption 1:** The item Engineeringtool is based on cutting-edge web technology, doesn’t need to be installed and doesn’t rely on a plug-in or app.

**Caption 2:** In the Online Product Configurator from item, parts can be positioned using drag and drop. For example, roller conveyors can be added at the required angle with the utmost ease. The software adds the appropriate stops automatically.

**Caption 3:** Parts can be grouped and duplicated together. Fasteners, including the necessary machining, are positioned automatically depending on preselection.

**Caption 4:** Christian Thiel is a product manager and online tools expert at item.

**About item**

item Industrietechnik GmbH is a global market leader in building kit systems for industrial applications and employs around 500 members of staff. It has been designing and marketing construction solutions for machinery, fixtures and plants since 1976. Today, the item product portfolio comprises more than 4,000 high-quality components designed for use in machine bases, work benches, automation solutions and lean production applications. Thanks to the inclusion of transport solutions and dynamic elements, the company’s products can cover virtually all working processes, from manual production to automated manufacturing. The highly skilled employees work day in, day out to develop innovative solutions for state-of-the-art mechanical engineering and also offer exceptional consulting services. item is headquartered in Solingen, Germany. Eleven branches and support centres ensure the company is always close to customers in Germany. The group has wholly owned subsidiaries in the USA, China, Mexico, Italy, Poland and Switzerland.

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