

# AUTOCAD & Inventor MAGAZIN

Konstruktion | Mechanik | Anlagenbau | Architektur | Bau | GIS | Infrastruktur  
Software | Hardware | Dienstleistung | Werkstoffe | Komponenten

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Digital Prototyping mit der Factory Design Suite

## Zeit und Kosten sparen in der Fabrikplanung

English version of the article:  
**Komplexität beherrschen**

**TOOL-CD:**  
mit Top-Tools,  
LISP- und .NET-  
Programmen  
sowie Demo-  
versionen für  
AutoCAD und  
Inventor

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## **Tackling complexity**

Industry 4.0 is the basis for competitive mechanical engineering when it comes to the industrial world of the future. The networking of machines, information and people is providing German mechanical engineers with the opportunity to venture into new dimensions. Alongside much-discussed topics such as safety and networking, there are further significant drivers and challenges when it comes to successfully organising the fourth revolution: automation, personnel and complexity. By Christian Fehringer

Anyone involved with Industry 4.0 first needs to ask themselves the following question: Who is going to decide what happens in the field of German mechanical and plant engineering in the future? Will it be the mechanical engineers as is the case today or will the IT companies play a greater role in a few years? The question has already been answered in the automotive industry: Google and Apple want to build their own cars. Even a few years ago, hardly anybody would have believed that a software company would venture into a world that has been traditionally characterised by engineers. Even though mechanical engineering is less attractive due to lower quantities and the requirement of specialist knowledge, companies such as Tesla or SpaceX are illustrating that established sectors can be changed.

## **Information technology is underestimated**

For many years, information technology has fast become more important in terms of mechanical engineering - especially in the field of special mechanical engineering. For far too long, the significance of software in the sector has been underestimated even though the networking of information and data has a considerable impact upon productivity and quality. Industry 4.0 ensures that the perception of software will drastically change in the mechanical engineering sector.

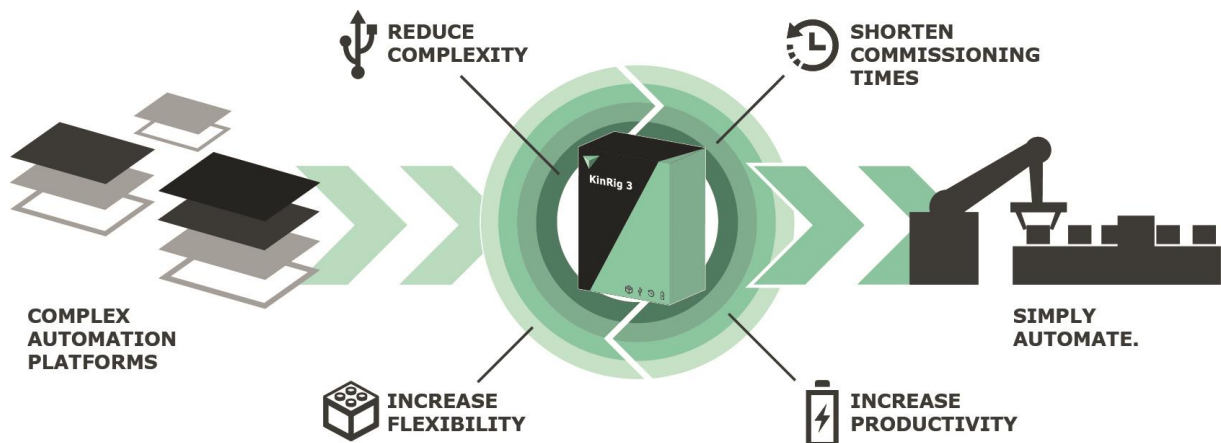
## **Mechanical engineering and software in medium-sized companies**

With his medium-sized companies, Klotz and Kinmatec, entrepreneur Peter Klotz is illustrating just how future-oriented mechanical engineering can be in Germany: classic mechanical engineering combined with information technology. This is where Mr Klotz believes the future for his sector lies. The roots of the mechanical engineer can be traced back to the field of test bench construction, an area where information technology traditionally plays a role. Dealing with information and data in an innovative manner was always an important task for Mr Klotz. The more complex the plants and the greater the amount of data involved, the more important it is to automate processes and procedures. Over the years, more functionality on the one side also lead to more effort in terms of commissioning and operation. Therefore, the team at Klotz set themselves the target of making the complexity more manageable. The result was Kinmatec – the subsidiary for automation software. At Klotz and Kinmatec, there are now more employees working in the software and automation technology sector than in all other sectors put together.

## **Automation technology as the nucleus**

The original impetus for automation was rationalisation. Automation has now become an important factor in terms of quality. A growing demand for quality is now the reason to automate production processes, even more so than rationalisation. In the future, obtaining data will make the automation of processes even more essential and lucrative - but it will also make it significantly more challenging. Many people associate automation with fully-automatic production lines or robots. Both are impressive but, for

Industry 4.0, progressive automation is decisive for all production processes. Each process generates and processes large volumes of data.



Automation platform – the KinRig machine.

Even a single screwing process can be extremely complex and generate large volumes of data. Therefore, the result is not necessarily “more” automation but “more intelligent” automation. In the home, each shutter having its own switch is now also a thing of the past: the shutters can be networked and comfortably controlled via a smartphone app. Taking it one step further, a sensor recognises if a shutter is not closed correctly and the app contacts the maintenance service. Switch-controlled shutters and the fully-monitored version on the bus system are poles apart, even in terms of the commissioning times and the requirements placed on the user interface. This is illustrated by the importance of the subject in an ever-increasing digitalised world in which networking and control are an everyday occurrence. Industry 4.0 would not be possible in the field of production without deeper automation because the project was designed for networked factories. The machine and plant data can be automatically analysed, evaluated and used in order to increase production. It is no exaggeration to say that automation really can be described as the nucleus of Industry 4.0.

### **Innovative culture for the new generation of employees**

If mechanical engineers are to automate, they require employees that come from both worlds: mechanical engineering and IT. Handling data and, in particular, the development of human-machine interfaces represent particular challenges that cannot be found in a technician’s manual. Anyone wishing to tackle the aforementioned complexity requires mechanical engineers and software specialists. Mechanical engineers are somewhat conservative and offer a classical working world with working hours and structures that more-or-less firmly defined. For computer experts, worlds collide: processes instead of creativity, time account instead of freedom, assembly hall instead of innovation lab. However, mechanical engineering requires exactly this type of employee. Achieving this cannot be completely ruled out: many computer experts appreciate the proximity to the “hardware”. Where algorithms only control programs in pure software companies, things can actually be moved in the mechanical engineering sector. Medium-sized companies must take advantage of this fascination with technology to obtain creative programmers. To do so, it is not enough to address the needs of the computer experts as this would lead to an imbalance in the team. The corporate culture in the field of mechanical engineering needs to change and become

more of an innovative culture. The most popular employers in the world include groups such as Google, Apple and Facebook who provide freedom for creativity and innovation. Finding new solutions and accomplishing challenges is something that has always characterised German mechanical engineering. It is now time to integrate the new discipline of IT into the corporate culture and create the framework conditions for this.

### **KinRig – making complexity manageable**

Mechanical engineer Peter Klotz has recognised this and, in the shape of Kinmatec, has established a subsidiary that concentrates fully on the programming of tools for the field of automation. The team of experienced mechanical engineers and computer experts has set itself the task of reducing complexity in the operation and programming of automation solutions. The result is the KinRig software which represents an interface between existing platforms and the machines and plants. The aim of KinRig is for companies to be able to concentrate on the commissioning and operation of the machines and spend as little time as possible dealing with software development. The automation specialist no longer has to concern themselves with software algorithms. Commissioning times and error handling are significantly shortened and complexity is made manageable. Even without special programming knowledge, the specialist is in a position to automate machines and plants. The result: A simple-to-operate piece of software, faster automation, lower learning effort. However, KinRig is nowhere near reaching its final destination. The programmers and technicians at Kinmatec are already working on the next generation of a human-machine interface that should adapt to the requirements of the user even better. The objective is to further reduce complexity and to keep the programming effort of the users low. The shift from a pure working culture to an innovation culture is a personal goal of Peter Klotz and the chosen direction is the right one.

### **Three questions for Peter Klotz**

Mr Klotz, what is the most important task that the field of mechanical engineering faces within the context of Industry 4.0? Peter Klotz: Mechanical engineering is facing the great challenge of integrating itself into the quickly-developing world of IT. Mechanical engineers must be able to master IT or they will be of limited use in the future. Corporate culture is also important here. Good mechanical engineers act in a more conservative manner, otherwise they would not have survived in the past. This attitude is usually reflected in their working methods. German mechanical engineering must become more exciting and attractive. You attach great importance to the topic of personnel in terms of Industry 4.0. Why is the topic so important to you? Peter Klotz: Mechanical engineers now need good computer experts and programmers to solve the new tasks posed by Industry 4.0. If the decision is made to rely on IT and automation, which is what Industry 4.0 is all about, then it is necessary to go the whole distance and implement the project. The fields of mechanical engineering and IT are growing together and this needs employees that, given the choice of Google, Microsoft and mechanical engineering, will choose us. How do you manage to motivate computer experts to come to Kinmatec? Peter Klotz: To achieve this, a cultural shift is required without losing one's own identity. Mechanical engineering is exciting, the employee immediately sees how real products are created on the basis of things that they have programmed. We create freedom for our technicians and computer experts that is not the norm in the field of mechanical engineering. We also target people and speak to them.

### **New user interfaces at SPS IPC Drives 2015**

Kinmatec will be presenting the new version of its automation software, KinRig 3, at the SPS IPC Drives trade fair which is taking place between 24 and 26 November in Nuremberg. Visitors to the Klotz and Kinmatec booth will be able to experience the interaction between mechanical engineers and computer experts. In addition to the software itself, new user interfaces will be presented that display the required information for the users depending on the context and the location. In order to do so, three test machines that can be controlled via app will be on hand. From November, visitors to the trade fair will be able to download the Kinmatec app free of charge from the [messe.kinmatec.de](http://messe.kinmatec.de) page.

Internet: [www.klotz.de](http://www.klotz.de), [www.kinmatec.de](http://www.kinmatec.de)

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