



Impulses, Ideas, Inspirations

Autodesk® Revit® and SOFiSTiK pass the “endurance test” at IDK Kleinjohann Cologne

Autodesk Revit and SOFiSTiK underwent an endurance test at the IDK engineering office in Cologne, as they were used for planning and calculating the extension of their company’s building. The results were convincing: for the purpose of structural and reinforcement planning, the software is exactly what is needed when it comes to efficiency and effectiveness. The possibility to create parametric components allows for new-found flexibility; and an innovative partner such as SOFiSTiK fits perfectly with the business philosophy of IDK.

“We are willing to stay one step ahead and try new things”, says Christian Richert; one of the partners of IDK Cologne. With more than 50 employees in Cologne, Berlin and Düsseldorf, the company has carried out numerous large-scale projects over the past 55 years. Thereby, their focus is on the “balance between economy, ecology and technical per-

formance”. The persistent willingness to change is part of the company’s DNA and the enthusiasm of the company’s management is contagious, positively influencing their employees.

The convincing SOFiSTiK-Revit-Interface

Their first contact with Autodesk Revit is almost ten years ago, but only after an increasing number of architects began working with Revit in the field of Building Information Modelling (BIM) the decision was made to purchase it. Additionally, SOFiSTiK was purchased to carry out structural calculations. “The advanced interface had us convinced”, says Christian Richert. The implementation of the software consisted of a compact training for all employees, followed up with ‘learning by doing’. Questions were gathered and later addressed in a refresher training. New employees, who alrea-

dy had experience with BIM, Revit and SOFiSTiK strengthened the team, increasing both know-how and enthusiasm.

Virtual Communication

Today, it goes without saying that branch offices and various project members interact via Skype and Microsoft Teams. Concerns about this manner of communication have been overcome: the possibility of working together with abroad project partners on a digital model and discussing critical issues in real time with them significantly increases both efficiency, as well as effectiveness.

The Endurance Test

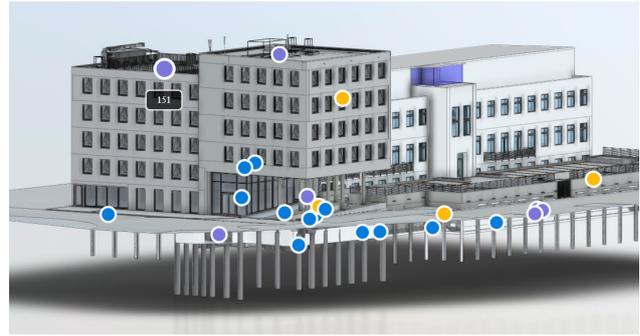
Since long before their first steps into BIM, IDK has envisaged the expansion of their office. The Cologne office on Sechtemer Street is located in a former industrial building. An additional level will be added to the building and a side extension will give it a L-shape. The lower level of the extension will be turned into underground parking; Columns will bear the weight of the upper levels. The existing 2D-plans will be adopted in a BIM-project.

Astonishing Realizations

The time gap, approximately six years, between initial planning and execution not only lead to new ideas, but also mistakes which were noticed when the information was transferred to Revit. "We have often asked ourselves why, during the initial planning, some things were unknown to us, or why other things had been overlooked," recalls Christian Richert. "After all, we had created the original plans with the same precision as we do now." The answer was clear: as far as BIM is concerned, numerous questions need to be answered sooner and more importantly, must be answered collectively by several project members.

Teamwork with one Digital Model

The new project team was, geographically, widely spread out: The architects, the IDK structural engineers and building contractors were based in Cologne, the technical building equipment was planned in Berlin, and the execution plans originated in Bosnia. For a start, this meant that roles and processes had to be redefined to be suitable for

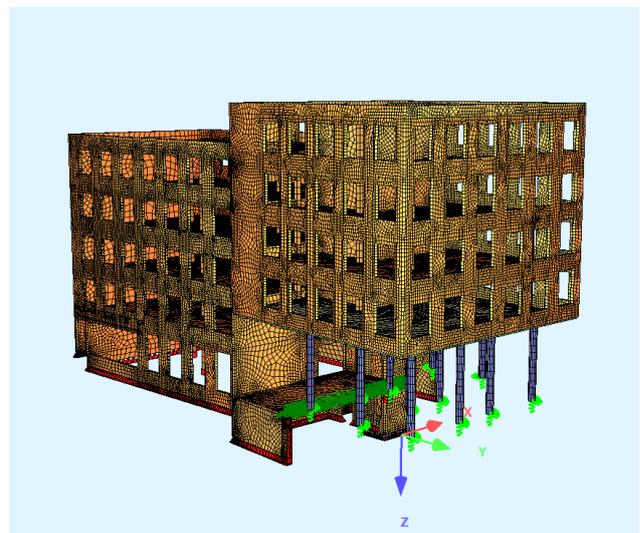


Each dot indicates an 'issue': The project partner with the assigned color gets a specific date, on which he has to change or correct something at the marked location within the model.

BIM. The creation of the construction model was 'centralized' within the office. The various models were merged with the help of Autodesk BIM 360. The digital model became both the 'single source of truth', as well as the tool for project management. Communication took place exclusively in the digital project room. This way every discussion was goal-oriented, arrangements, deadlines and responsibilities were clear, and every process was completely comprehensible.

One Model - Numerous Calculations

A crucial advantage of SOFiSTiK is the possibility to consider construction stages in calculations. During construction of the extension with the underlying underground parking, the load conditions are constantly changing. Based on the digital model, these redistributions can be swiftly calculated for any construction phase in SOFiSTiK. This guarantees maximum safety at any time.



SOFiSTiK creates a FEA-model based on Revit-data.

Mistakes? – Certainly!

Indeed, you also make mistakes when it comes to this kind of planning. It became apparent that several foundations were not situated within the excavation pit – a collision that would have been horror for the people at the construction site and catastrophic for accounting. Now, we were able to not only rectify the mistake in time, but also retrace it to an incorrect description. This will never happen again!

Flexibility through Parametric Design

Much of what the team learnt during their own project has been carried over into other projects. Since then, the engineers have further pushed the limits of the connection between Autodesk Revit and SOFiSTiK. Parametric building components can be used e.g. to swiftly create sensible variants for competition projects.

In this project, parametric steel beams were used for the roof structure. These beams were fixed at coupling points. If you moved these coupling points, the software would automatically adjust the dimensions and distances of the steel beams. Each variant generated an input file for the SOFiSTiK calculation software. This allowed us to check static viability of the variant with just a few clicks.

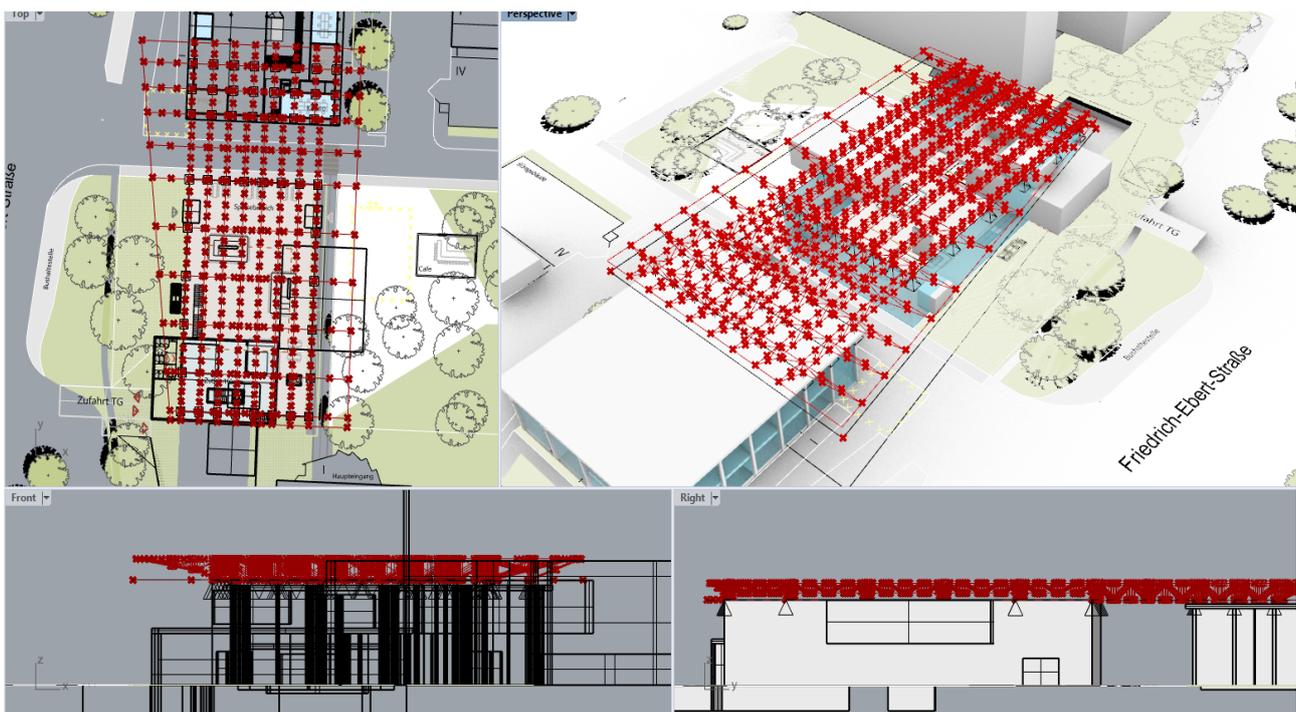
SOFiSTiK as a Sparring Partner for Further Steps

Whoever practices innovation and progress, like the engineers at IDK, will be constantly seeking contact and exchange. SOFiSTiK proves to be an essential sparring partner. At SOFiSTiK user questions are seen as an opportunity to discuss new solutions and improve the software. That is why it is possible today to calculate T-beams correctly and without excessive preliminary work – only one of many recent improvements. Construction and calculation appear to merge ever more closely, what makes work for the engineers noticeable easier.

Better Planning Reduces Building Costs

After the experiences with their own company building, Christain Richert can rebut a good number of arguments made by BIM-sceptics: “Our project showed what kind of mistakes could have occurred at the construction site without BIM. Correcting these would have been significantly more expensive than the additional planning cost.”

At IDK, we are convinced to have chosen the right method and the right partners, to provide technological and qualitative excellence.



Parametric building components allow for fast creation of sensible variants both in the aspect of construction and static.



The extension of the company building is growing. Thanks to Autodesk Revit, SOFiSTiK and well-coordinated planning, everything on the construction site will run smoothly.



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