



The why and how of material efficiency

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## All roads lead to material saving

**Hasselt, March 2, 2023** - The subject of climate change is rightly omnipresent. It is also no great secret that the construction sector has a large share of CO<sub>2</sub> emissions, partly from manufacturing building materials and products such as steel, cement and glass.

It is therefore key to use materials in an efficient way on the one hand and to put effort in efficient waste management on the other hand.

Even if the climate goals are not on your priority list, it's worth paying attention to material efficiency. In the current economic climate with a huge material shortage due to price inflation, ~~energy price rises~~ and the conflict

in Ukraine, material efficiency has a direct financial impact on all those involved in a construction project.

Reason enough to have a critical look at the planning phase as the foundation of a construction project and optimise the use of materials. As a structural analysis software, SCIA Engineer has several tips to achieve this goal.

### **How can you achieve efficiency from a material perspective when performing a structural analysis?**

**Calculation speed combined with parametric design** might be a good solution:

- either take advantage of parametric definition of your model (geometry, loads, ...) directly in SCIA Engineer
- or add a dedicated parametric modelling application like Grasshopper into your workflow and optimise the model for any required criteria

This can help you to evaluate several variants of the design in a short time and optimise the shape of the structure and size of individual elements to get the most economical final design.

More info, help and examples for **parametric design**:

- [Watch the webinar on Parametric Design](#)
- [User story: Terraced Tower by Besix](#)
- [User story: Al Janoub Stadium by Aecom](#)

Next to that, the latest versions of SCIA Engineer brought other improvements that make the **concrete** design smoother and more effective, such as more automation in input, clearer output, new templates, etc. One improvement that stands out is the new procedure for the **automatic design of concrete beams** that takes into account the serviceability limit state conditions such as stress limitation, crack control and deflection check. This procedure produces an optimal design of reinforced concrete 1D members (beams, columns) in one go, without the need to do any manual or semi-manual optimisation.

More info about the new procedure:

- [Webinar](#)
- [Factsheet](#)

### How to save 10% of steel with SCIA Engineer?

- Check out the recommendations from recent research around **SEMI-COMP+**, which integrate flawlessly with the Eurocode. In line with this, you can make use of the [“Design with utilisation factor”](#)
- **AutoDesign** optimises the dimensions of cross-sections taking into account the code regulations in every step.☒
- Also the **advanced types of analysis** can help achieve more economical design. If these advanced types are applied, you can skip some conservative formulas from the code covering certain phenomena (like buckling) and get a more economical result.

Additional savings can be achieved if SCIA Engineer is used together with other cost-friendly applications, like IDEA StatiCa.

**Are there any other methods that you apply which lead to material efficiency?  
Let us know! You can reach out via email.**

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Publicly listed since 1999 and quoted on the MDAX and TecDAX, the company generated revenues amounting to EUR 801.8 million and an EBITDA of EUR 257.0 million in 2022.

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