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## Release 2023-2: FRILO presents new program for the calculation of member models in reinforced concrete construction

Stuttgart, 09.05.2023 - FRILO Software GmbH has successfully delivered version 2023-2. With this update, the provider of innovative solutions for structural analysis and structural design is launching a new program that allows the calculation of beam models in reinforced concrete construction. In addition, three solutions have been equipped with the modern PLUS interface. The new interface between SCIA Engineer and FRILO extends the possibilities in the design of timber truss nodes.

FRILO version 2023-2 provides structural engineers with a new program, BSM+, which in its first version enables the generation of stiffness-optimized member models for any reinforced concrete components. In the process, frameworks for rectangular structures with freely selectable re-entrant corners and recesses are determined. In addition to classical concentrated loads, linear and trapezoidal loads can also be defined by the user, which are automatically converted into equivalent concentrated loads by the program. All member forces can be output with the resulting horizontal and vertical load shares. "Common standard design methods cannot easily be applied to static and geometric discontinuities such as cracks and recesses. That's why we developed BSM+ for reinforced concrete. Because we provide structural engineers with a tool for generating simple member models in reinforced concrete construction, they no longer have to rely solely on their experience in areas for which standard design is not applicable," explains Peter Fritz, Head of Product Management and Customer Success at FRILO.

### **Continuous beam with further updates**

After the continuous beam DLT+ had already been generally overhauled in Release 2023-1, the most widely used FRILO program underwent further updates in the current software version. For example, the possibility of biaxial design including reinforcement of reinforced concrete beams was added as an additional option. The calculation is based on one reinforcement placement per corner for the ultimate limit state and the serviceability limit state. In addition, the new program version enables users to customize the crack width and select restraints at end supports on a percentage basis. In addition, for nonlinear creep of reinforced concrete beams, the resulting creep index can be automatically increased.

### **Three programs with new PLUS programs**

With cross-section check steel SQN+, cross-section check reinforced concrete B2+ and timber construction details HO12+, three central FRILO solutions have been equipped with the modern PLUS interface. The SQN+ (formerly ST7) performs the cross-section verification of steel cross-sections in the ultimate limit state. The design is performed in accordance with Eurocode 3, while the B2+ (successor to the B2) can be used to design cross sections for bending with longitudinal force and for shear force. Furthermore, crack width and stress verifications can be carried out or the effective stiffness can be determined. The new PLUS program HO12+ (successor to HO12) is suitable for the calculation and design of notches (solid timber and glulam) and openings (glulam) in timber beams. The internal forces and dimensions required for the checks are entered by the user. It is possible to carry out

checks of the absorbable tensile force, the residual cross-section and the reinforcement.

## **Interface between SCIA and FRILO for timber design**

Furthermore, a new interface between SCIA and FRILO in timber design has been created. Starting from a 3D model in SCIA Engineer, users can in future simply select individual truss nodes and transfer them to the FRILO program Truss Node Timber HO13+. During the transfer, all information on materials, cross-sections, load combinations and their internal forces already known in the 3D model of SCIA are automatically taken into account. This means that the data does not have to be entered manually in FRILO again. This saves time and reduces sources of error in timber design. In HO13+, the corresponding verifications for the structural safety of the truss nodes can then be performed easily and reliably in 2D. "The new interface underpins our ambition to leverage synergies between SCIA and FRILO solutions. The workflow brings us one step closer to our goal of making the way structural engineers work more efficient and productive," says Markus Gallenberger, CEO of both companies.

### **About FRILO**

FRILO has been offering both powerful and user-friendly software solutions for structural calculations for over 40 years and has become a leading provider in this field on the German market. Thanks to the modular system underlying the innovative product portfolio, the load-bearing capacity of individual components of different design and material variants can be verified separately and precisely. With more than 140 calculation programs, it is ensured that the available solutions accurately meet the requirements of a structural engineer's everyday work. Since 1999, FRILO, headquartered in Stuttgart, has been integrated into the Nemetschek Group as an independent brand. In 2022, FRILO acquired DC Software and expanded its portfolio in foundation engineering. Further information at [www.frilo.eu](http://www.frilo.eu).

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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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