

# V3

## Composite Beam

The V3 application allows the calculation of single-span beam systems in accordance with

- DIN EN 1994-1-1,
- ÖNORM EN 1994-1-1 and
- BS EN 1994-1-1.

### Cross sections

**Beams:** The composite cross sections are generated from standard rolled-shaped sections or welded steel sections in combination with any floor slab structure.

**Slab:** The following cross section types are available:

- Solid slabs
- Haunched concrete slabs
- Filigree floors
- Slabs supported by profiled sheet metal

In addition, user-defined profiled sheet metal is available.

### Loads

Available for the load definition are distributed, uniform linear, concentrated and block loads.

### Verifications

The verification of the ultimate limit state is performed automatically at all critical points. The interaction of bending and shear force is taken into account. The calculation of the required number of shear connectors (bond protection) is performed for full and partial bond. The distribution of shear connectors can be in line with the shear force behaviour or at equal spacing between two critical sections. The cross sectional bearing capacity is assessed on the basis of the limit internal forces in the fully plastic state if the selected cross section class allows this.

In the serviceability limit state, creep and shrinkage is taken into account in the calculation of the deformations. The beam camber is calculated from the individual deformations according to the criteria preset by the user.

In addition, the hot design (R 30, R 60, R 90, R 120 and R 180) for encased steel beams is performed in accordance with EN 1994-1-2.

The software application calculates automatically the load case combinations from the defined loads in accordance with the selected standard. Available standards are DIN EN 1990, ÖNORM B 1990 or BS EN 1990.

The entered loads are assigned to action groups as per EN 1990. The assembly state of the beam is also verified if the beam was cast without auxiliary supports.

