

DGK

Hip Rafter / Valley Rafter

The application allows the user to verify hip rafters and, optionally, valley rafters.

Available standards

- DIN EN 1995
- DIN EN 1991
- ÖNORM EN 1995
- ÖNORM EN 1991
- BS EN 1995
- BS EN 1991
- UNI EN 1995/NTC
- UNI EN 1991/NTC
- EN 1995
- EN 1991
- DIN 1052
- DIN 1055-4/5

The calculation is performed in the same way as for a beam under

bending stress. The verification of the cross-breaking strength is based on the assumption that the attached jack rafters have sway supports at the eaves side.

Variants

- Single-span beam
- Multi-span beam
- Cantilevers on top/bottom
- Asymmetrical loaded areas are definable
- Loaded areas can be defined independently of supports
- Ground projections with angles other than 90° are also possible

Definition

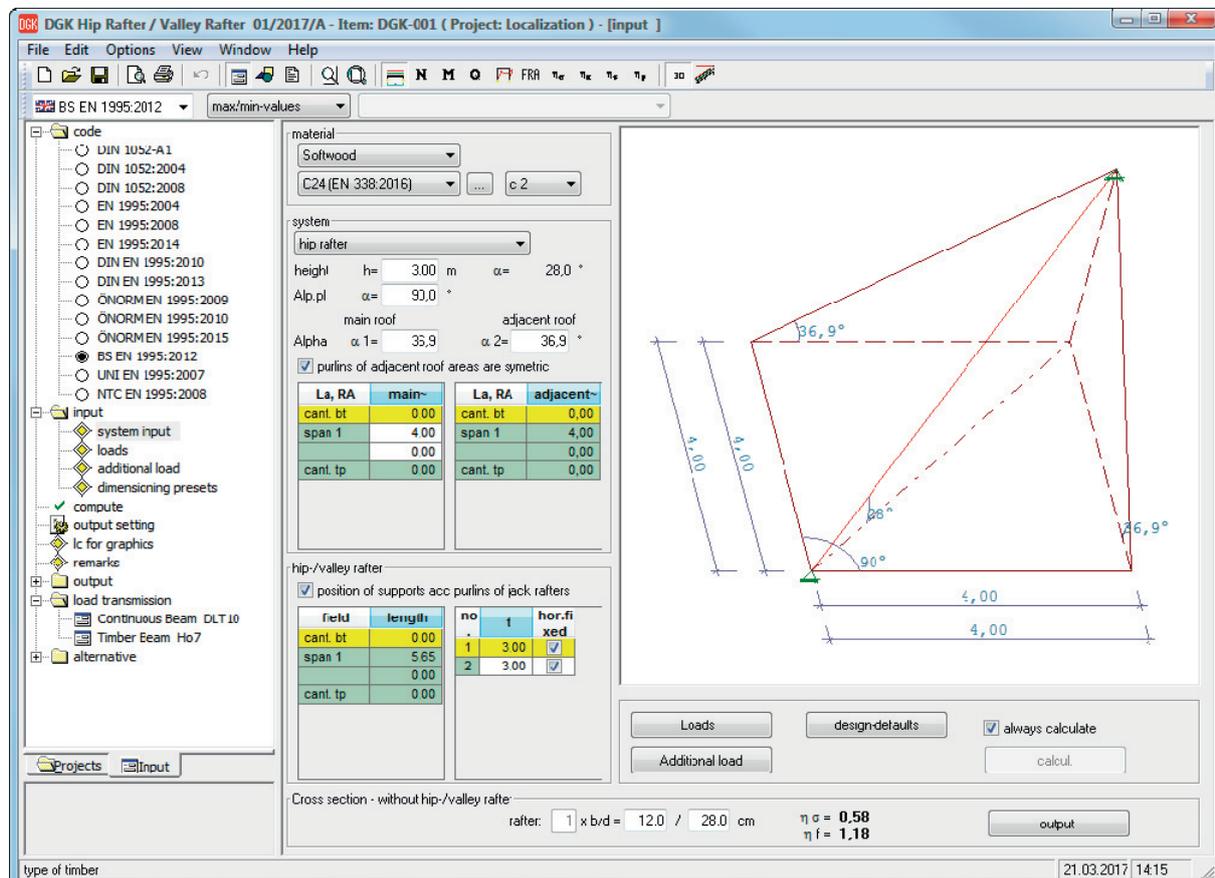
The following dimensions must be defined as basic border conditions:

- Height of the hip/valley rafter
- Inclination angle α_{GR} between the two eaves/ridges in the ground projection
- Inclinations α_1 / α_2 of the primary and secondary roof

The following parameters are calculated automatically by the software:

- the lengths of the outer edge of the jack rafters area and the hip or valley rafter in the projection
- the lengths of the eaves or ridge sections up to the intersecting point with the outer edge of the jack rafters area
- the length of the hip or valley rafter and the corresponding inclination

The other values are aligned to this frame geometry.



Purlins

The user can define purlins for both roof sides.

The purlins are defined by specifying their distance to the eaves in the jack rafter projection.

As a standard, the purlins of the secondary roof are placed by the software application automatically in such a manner that they intersect in the same points on the hip or valley rafter.

Optionally, the user can define the purlins of the secondary roof independently of the primary roof.

Supports

As a standard, the software assumes the supports at the intersecting points of the purlins and the hip or valley rafter.

The user can optionally position supports individually and independently of the purlins, however.

Loads

The typical area loads for roofs such as weight, snow and wind loads are available and can be applied to the jack rafters.

Wind loads cannot be distinguished according to aerodynamic areas. Always the maximum wind load is assumed as required by conservative concepts.

The software computes the triangular loads on the hip/valley rafters via the special loaded areas of the jack rafters.

Uniform linear loads, concentrated or trapezoidal loads are available as additional loads and can be assigned to action groups.

Load transfer

The implemented interfaces to the Frilo applications DLT and HO7 allow the design of the purlins.

Verifications

The verifications can optionally be based on DIN 1052:2008 or EN 1995-1-1 in combination with the relevant National Annex.

The load assumptions can optionally be based on DIN 1055, P 1-5 or EN 1991-1 in combination with the relevant National Annex.

DIN 1055-100 only applies in combination with DIN 1052:2008.

If EN 1995 or EN 1991 was selected, combinatorial analysis is based on EN 1990.

The supporting forces are put out separately for each group of actions.

The supporting forces can optionally be put out either as characteristic values of the individual actions or design values of the maximum and minimum combinations.