Formfinding, Statics and Cutting Patterns of Lightweight Structures

Easy.

Easy.**Form**   Easy.**Beam**
Easy.**Stat**   Easy.**Vol**
Easy.**Cut**

technet GmbH · gründig + partner

Easy.

Be a part of our net – your advantages at a glance:

The design of free forms, the statical analysis and the following cutting pattern generation is guaranteed by the software. Easy is a fully comprehensive suite of software modules for the complete design of light-weight structures.

➤ Over 30 years of membrane structure experience

➤ Professional assistance in all work steps

➤ Branch-specific and interdisciplinary know how

➤ Best performance provided by sophisticated high precision algorithms

➤ User-friendly programs

➤ Specialised, individual solutions for customers based on the standard software package
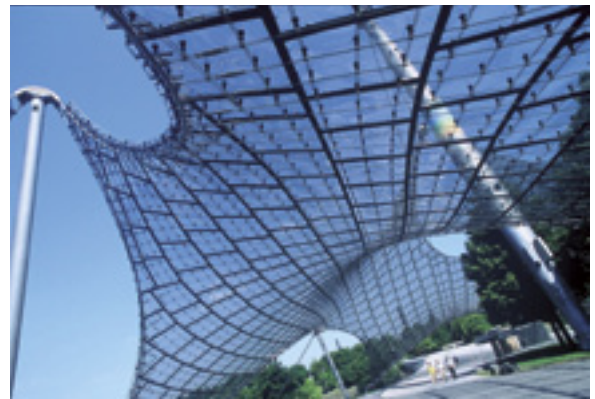
Easy.
An Ideal Combination of
Creativity and Efficiency

Because of the close correlation between the form and the internal forces of lightweight tensile structures, their shapes cannot be determined in a purely geometric way. The design of these forms, a process called Formfinding, is accomplished by calculating a state of structural equilibrium. In the case of inflatable systems, forms are generated by differences in pressure.

Because the stability of lightweight structures has to be guaranteed, the resulting internal stresses and deformations from external forces (wind, snow) must be carefully considered.

An essential part of the computation of textile membranes is to calculate and describe the flat cutting pattern.

Unlock your creativity. With Easy discover the optimal and economic solutions for the planning and design of lightweight structures.

Easy.Form

Formfinding

➤ Determining the flow of forces as support for the design process

➤ Formfinding as a function of internal stress

➤ Textile structures, cable net structures, hybrid structures, inflatables and tensegrity structures.

Easy.Stat

Statics

➤ Non-linear calculation

➤ External loads generation

➤ Material properties assignment:

  ➤ Precise material laws with finite triangular membrane element with warp/weft-stiffness including transverse extension and shear stiffness e.g. for foils

  ➤ Simplified material laws for orthotropic fabrics described by warp/weft-stiffness

➤ Membrane-specific visualisation of stress and force

➤ Result analysis with reports

➤ Tools for additional analysis:

  ➤ Contour lines

  ➤ Slope lines for a fast drainage dimensioning

  ➤ Forcefinding for prestress optimisation

Easy.Cut

Cutting Pattern Generation

➤ Calculation of cutting patterns in consideration of maximum pattern width (cut-off minimisation)

➤ Design for manufacturability (compensation, border allowance, welding marks)

➤ Export to cutting machines

➤ Fully automated optimisation of pattern width in standard case

➤ Small flattening distortion caused by the use of map projection theories

Easy.Beam

Geometrical Non-linear Beam Analysis

➤ Holistic approach for the static analysis of hybrid truss structures including membranes

➤ Flexibility ellipsoids for an easy evaluation of truss structures

➤ Calculation of eigenfrequency and natural mode

➤ Export to current steel software

Easy.Vol

Calculation of Pneumatic Structures

➤ Forceformfinding in consideration of a volume created by inner pressure

➤ Statical non-linear calculation subject to various types of physical laws:

   ➤ Constant volume

   ➤ Constant inner pressure

   ➤ Constant product of inner pressure and volume

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