

AutoBarSizer – cutting optimization software for linear materials

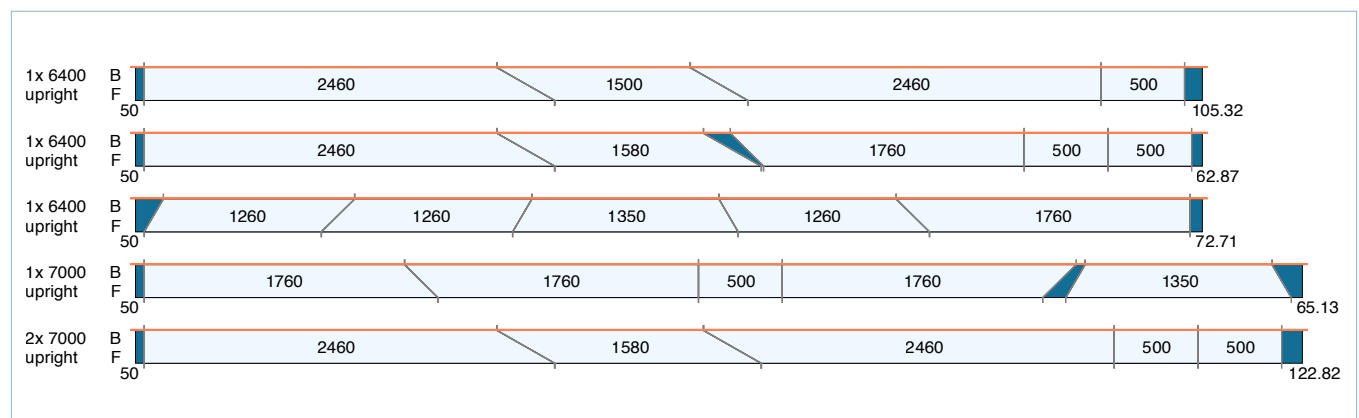
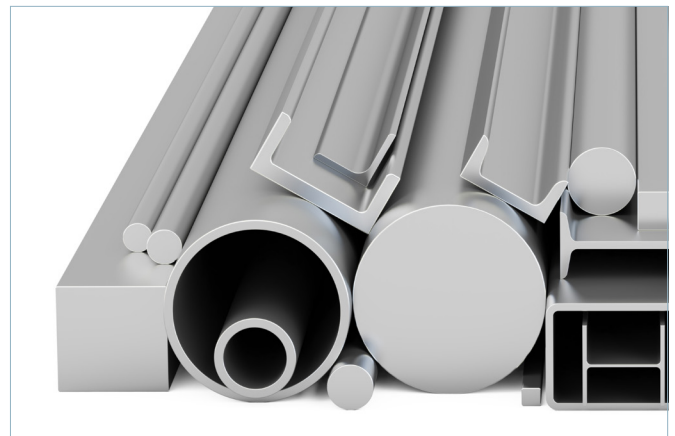
The software AutoBarSizer generates optimized layouts for the cutting of stock items, namely steel profiles (metal beams) and other bars and rods, into shorter pieces. The generated layouts achieve an extremely high degree of material utilization (yield), i.e. the cutting waste is minimized. Furthermore, various configurable constraints are taken into account. The planner can also use different parameters to balance yield and additional organizational effort caused by the reusable remnants produced.

Optimize miter cuts in seconds

When layouts with miter cuts are created, AutoBarSizer also optimizes the interleaving (nesting) of the parts. For this it is sometimes useful to rotate some of the parts. The planner can allow or forbid specific rotations depending on material symmetries and production requirements. AutoBarSizer solves planning questions not only from rolling mills and steel traders,

but also from the woodworking industry and manufacturers of material strips of all kinds.

The computation of one common sized cutting layout is completed in a few seconds to a few minutes at the most.



Cutting layout with miter cuts, computed by AutoBarSizer.

Benefits of optimized cutting layouts

The computer based optimization of length combinations for cutting bars and rods leads to the best possible avoidance of waste and can thus save considerable amounts of expensive material.

Resources are saved and production costs are decreased without affecting the quality of product or service. By individual assessment of remnant usage and remnant production, AutoBarSizer allows the user to better manage the stock and avoid unnecessary storage costs for remnants.

Features

Optimization

- optimization across multiple materials with distinct properties
- adjustable runtime and optimization quality
- key performance indicators support evaluation of computed solutions

Machine

- front and back trim (non-usable sections at the start and end of the stock items)
- saw blade thickness

Parts and material

- any number of different parts
- any number of different stock items
- optional maximum of stock item lengths used simultaneously
- individual availability per stock item

Remnants and wastage

- one- or two-stage evaluation of produced remnants with distinct minimum lengths
- weigh remnant production against yield
- preferred usage of existing remnants
- optional maximum length of produced waste per material

Miter cut

- material-specific profile symmetries that have to be considered when rotating parts for miter cuts
- minimum lengths for trapezoid waste parts between two mitered parts
- any miter angle is possible
- orientation of mitered parts (flat or upright)
- designated saw side, on which a specific side of each part and stock item must be placed

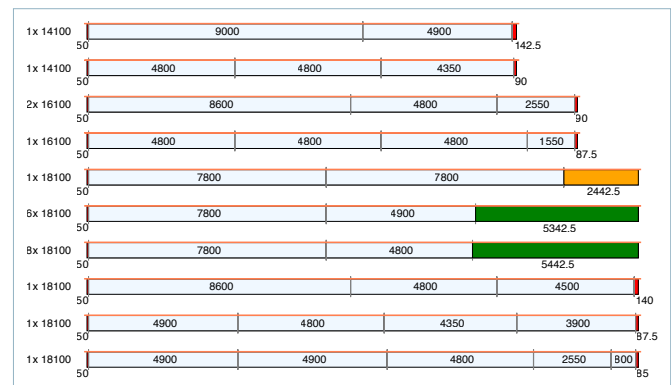
Integration into existing software

AutoBarSizer is a compute engine that can be embedded into other applications, e.g. plant control or systems for enterprise resource planning, through an XML-interface. It is available for all current Microsoft Windows operating systems. Alternatively, AutoBarSizer is usable through a file interface or as server application.

Based on the latest research results, Fraunhofer SCAI constantly improves and enhances AutoBarSizer. This is facilitated by the institute's long-standing experience and wide-ranging knowledge of optimization algorithms. Furthermore, Fraunhofer SCAI reacts to the needs of its customers by delivering new versions with additional features or by developing custom software involving the service portfolio of AutoBarSizer.

AutoBarSizer addresses two groups of customers,

- software solution providers who want to integrate an optimization into their application and
- companies that are willing to program a corresponding connection to their IT systems or ask their IT service provider to do so.



Cutting layout with reusable remnants, computed by AutoBarSizer. Red: waste, yellow: short reusable remnant, green: long reusable remnant.

Contact

Fraunhofer Institute for Algorithms
and Scientific Computing SCAI
Schloss Birlinghoven 1
53757 Sankt Augustin
Germany

autobarsizer@scai.fraunhofer.de
www.autobarsizer.com

