# Technical and economical optimized timber frame construction

The research report follows up the target of giving support for the transposition in dimensioning essential components of timber frame to increase the acceptance for the new technical standard OIN 1052 and the change in structural design.

First of all, the safety concept underlying the new technical standard DIN 1052 is introduced and explained more precisely. Then, some common construction variants are described separately in the component groups of roof, ceiling and wall. Besides a short introduction, the necessary static proofs are explained in more details and the requirements are compared in a tabular form to the technical standards. Each chapter closes with comparative examinations between the technical standards and, if necessary, gives indications for possible optimization approaches. To give an example, the chosen rafter distance of roof components has a considerable influence on the total costs. With a minimum-cost execution, economizations of up to 20% can be reached. For the wind load, the essential proofs of blackboards as well as roof and blanket panels are explained and compared comparatively in accordance with an old and new wood construction standard. The essential proofs of the old as well as the new technical standard are compared in detail again in a final synopsis. Flowcharts for frequent assessment situations complete the work.

Furthermore a tool, based on the table calculation Excel, which permits the structural design of components according to the old and new technical standard, is provided. The expected costs are also determined at selected components. To be able to react on changes, for a further development of the tool and for the ability to adapt the needs of the users, the tool follows the central idea of 'Open source'. Although a large part of the cells is protected by cell protection against an unintentional overwriting, however, the cell protection itself can be lifted without a password. It is any time possible to download the tool in the current setting under www.ibw-kassel.de.