

## Abstract

The report deals with the interaction of the internal forces, bending moment and normal force, of semi-rigid connections.

The basis for calculation and design of semi-rigid connections is EC 3, Annex J (now EC3-1.8). There are rules for the calculation of the ultimate moment capacity. But the application of this code is limited in some cases. For example there is limitation of possible normal force. The normal force is limited to 10% of the ultimate normal force of the connected members. There is no problem for multi-storey buildings due to this limitation, but for the single-storey buildings. Multi-storey buildings have got different bracing elements like plates or staircases. Elements of halls have got larger normal forces, because of bracing systems. The resistance limit of the connection is completely get of separate internal forces.

Therefore a suitable interaction between bending moment and normal force (compression or tension) is necessary.

At first limits are defined in order to get the interaction relation between internal forces. These limits are the ultimate resistance's of tension or compression actions and the ultimate moment capacity of the connection.

The ultimate moment capacity is calculated with the Annex J. Up to now there aren't regulations for calculation of the ultimate resistance's for tension or compression action. In this report, suggestions of calculation are introduced.

According to this ultimate resistance's, the interaction is calculated. The interaction relation describes the allowed ratio of internal forces for maximum loading. To get sure of keeping loading capacity a linear interaction between the respective limits was chosen.

In order to compare the calculations, FE-computations were carried out. The suggestions were affirmed of the FE-results predominantly.