

## **Bonding XXL**

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Adhesive bonding as most of us experience it is largely dominated by relatively small-scale lab work. Tensile tests according to DIN EN ISO 527 and lap shear tests according to DIN EN 1465, two of the workhorses of adhesive characterisation, is performed on samples that easily fit into pockets of lab coats. Corresponding tests are mostly performed with testing machines that fit onto tables, and corresponding forces are countent in Newtons. In civil engineering, however, where dimensions of structures are counted in tens of meters and load in meganewtons, testing can get XXL.

This talk will present projects related to adhesive bonding dealt with at Fraunhofer IFAM for which the scales of mechanical testing have been exceeded. It will present issues associated with conceptualisation, planification, manufacturing, handling, and testing of such joints with examples drawn from structural steel engineering for which adhesive bonding was considered as a load bearing joining technique. It will also show that, despite the hugeness of their size, some fundamental questions posed at any dimension remain valid, and that it is yet possible to establish and formulate some fundamental mechanical principles resulting in predictions made possible.