Labour-saving construction of large span double curved shell structures

Vienna University of Technology has developed a new labour-saving construction method for double curved shell structures. In a first step the casting material is poured into individual shell segments on a flat plate. In a second step the segments are bent and lifted into their final position using wedge-shaped air cushions as pneumatic formwork.

**Background**

Double curved shell structures are strong and material saving structures. They can be built with exceptionally big diameters. The state of the art in the construction of shell structures is characterised by high labour input. Therefore shell structures may not be built too frequently unless labour-saving construction methods are developed.

**Technology**

The novel labour-saving construction method is starting from individual flat plate segments. The challenge of forcing a flat plate into a double curved shell structure requires large strains in the middle plane of the flat shape. The novel method solves this problem with pneumatic formwork using wedge-shaped air cushions.

**Advantages**

- Quick and labour-saving construction
- Shell structures with diameters up to 50m
- Free form geometry
- Suited for a variety of casting materials
- No residues of formwork material

**State of development**

Proof of concept, simulation, prototype

**IPR**

Patent pending, AT511.948 granted

**Options**

license agreement, sale, R&D cooperation

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