

Building method for concrete tower structures

Tower structures | precast concrete elements | continuous reinforcement | fast erection

The new building method for reinforced concrete tower structures combines the advantages of precast element construction and climbing formwork. Important features are the usage of half-precast elements providing continuous reinforcement, an easy transport to the building site and a fast building progress.

Background

Tower constructions can be erected using climbing or sliding formwork as mould for in-situ concrete, whereby the building progress depends on the time needed for the concrete to harden. Another common erection method is characterized by the usage of fully bodied precast element construction, here the main weaknesses can be identified in the transport of the big elements and the discontinuity of the reinforcement.

Technology

The new building technology comprises:

- Precasting of double wall elements with heights up to 13 m
- Integrated connecting embedments for vertical reinforcement and elements or rails for fastening the leverage equipment
- Assembly of double walls to polygonal structures on the pre-assembly site
- Integration of horizontal reinforcement
- Subsequent filling with concrete
- Lifting of the rings to their final position

Advantages

- Combining in-situ and precast technologies
- Accelerated building process
- Continuous steel reinforcement
- Flexibility of floor plan
- Lower pressure stress of the concrete

Potential applications

The technology is especially suited for the construction of tower structures, where fast erection and high fatigue resistance are asked for. It is therefore especially suited for high buildings and industrial buildings coping with oscillation or cyclical stress like in wind power plants.



Fig. 1: Prototype construction

State of development

Proof of concept, prototype financed by bmwfw, funding programme PRIZE

IPR

Patent pending; AT, US patents granted

Options

License agreement, sale, R&D cooperation

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