

Presentation: Automatic wall concreting

A. WIĘCKOWSKI. *An integrated automatic wall concreting system*. *Gerontechnology* 2012; 11(2):424; doi:10.4017/gt.2012.11.02.519.00 **Purpose** Ja-wa refers to the construction of reinforced concrete sandwich walls, with variable production capacity for small and large buildings or colonies of houses, with an integrated system of automatic design and control of one-sided concreting with ongoing control of implementation quality; in the context of sustainable development, it includes minimization of direct investments and management costs and limited capital intensity of the devices applied. The ja-wa is a unilateral application system for a wandering automatic machine. **Method** The method is characterised by inverted order of building partitions in comparison to standard methods. The manner of building partitions with the ja-wa system is, firstly, to install e. g. target curtain coating, or a pneumatic tent, or a facade cladding layer or insulation, which is a lightweight, single-sided stay-in-place formwork. This becomes the base for the construction part. The material is applied in layers using the 'wet-on-wet' method, which ensures their monolithic character. The material is placed at intervals allowing the use of the growing strength of the previously made layers in order to transfer loads from the coatings applied later (Figure 1, top). This allows the construction of even a massive barrier at low load of the forming surface by a lightweight, folding scaffolding system (Figure 1, middle). The automatic, computer-controlled manipulator moves with desired speed at intervals and on a fixed route fitted to the design of the object and developed in the ACAD or according to the route of either an individual program or a route introduced for repetition. The computer also controls the preparation of materials, controls the time when layers should be applied to different points of the implemented layers, checks the technical quality of works performed and in case of incompatibility intervenes to stop the works. **Results & Discussion** The paper contains a general description of the ja-wa system, the analysis of conditions for timely incorporation of the construction material and a comparison of the properties of the proposed partition to other solutions (Figure 1, bottom).

Keywords: housing, office and industrial building, construction information technology

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Full paper:

doi:10.4017/gt.2012.11.02.519.750

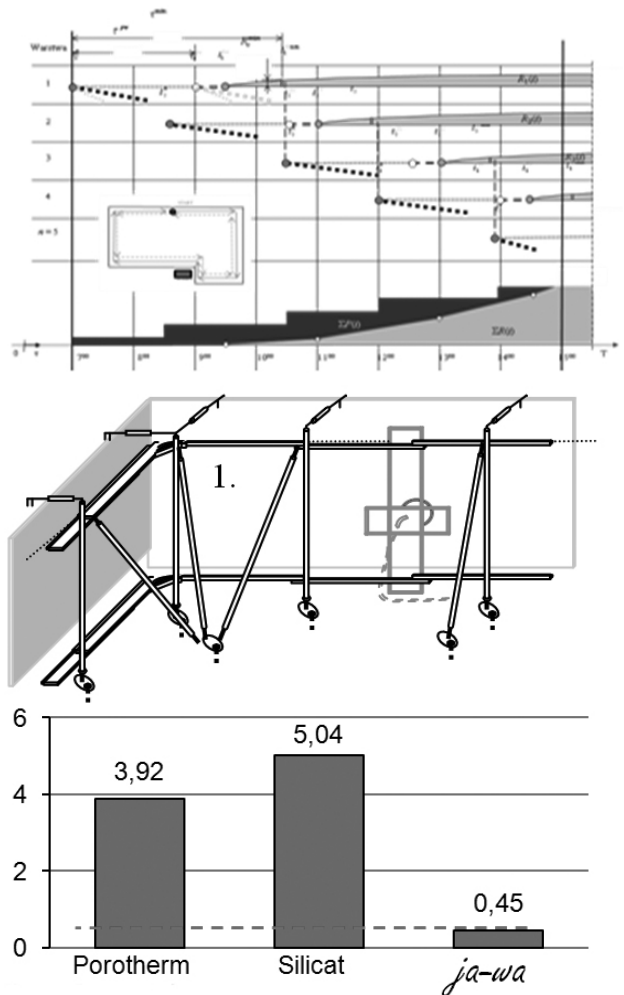


Figure 1. Times of material application and reduction of the load of the forming surface (top); Ferry running gear and automatic manipulator (a), applying the construction material (b), at the same time stabilizing the stay-in-place formwork (c) (middle); Unit labour expenditures (below)