

A. WIĘCKOWSKI, D. GÓRSKA. **Time limitations in automatic wall concreting and investment outlays.** *Gerontechnology* 2012;11(2):425; doi:10.4017/gt.2012.11.02.761.00 **Purpose** We reveal effectiveness of an automatic wall concreting system (Ja-wa) as regards deadlines for work completion with automatic wall concreting and effectiveness of the system in the context of two solutions available to low building construction. **Method** We present characteristics of time analyses of processes carried out on-site, performed by a manipulator's computer on an ongoing basis, for the purpose of determining the requirements for making the layers monolithic and for the laid material to achieve the strength necessary to transfer loads to the layers laid later. Furthermore, rationality and reduced outlays on labour, materials, and performance costs in Ja-wa are pointed out, as well as weight reduction of the wall and improvement to its thermal insulation properties as compared to other systems. **Results & Discussion** The presented Ja-wa characteristics point to the following favourable properties of the solution: it frees people from hard physical labour (as compared to traditional wall-bricking) and limits the supervisory function to the concreting of the wall by the automated manipulator controlled with inbuilt computer; unit outlays of labour at the site are low and amount to 0.45 working hour per m^2 of the wall; it has a favourable thickness (26 cm) and comparatively small unit weight (176 kg) with architecturally interesting possibilities of perforating an opening in the space between the poles, e.g. during building retrofit; the thermal conductivity of $U=0.19$ W/(m^2K) leads to a favourable reduction of the direct unit cost factor of energy for heating the building as compared to other solutions analysed.

Keywords: ja-wa, housing, office and industrial building, construction information technology
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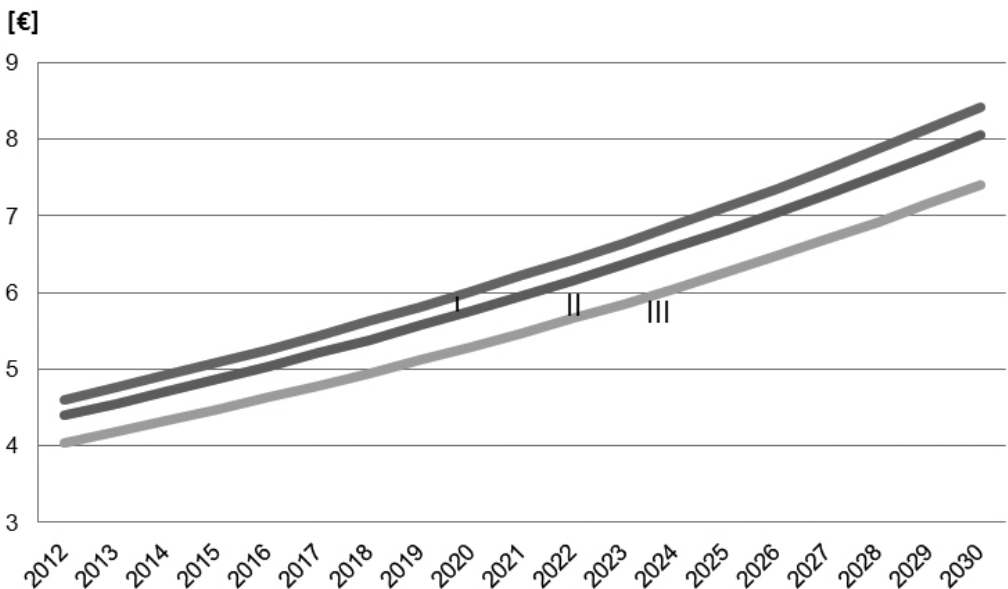


Figure 1. Updated direct unit costs of energy permeating through $1 m^2$ of wall surface in the heating season for 3 analysed wall variants: I - Single-layer wall of ceramic hollow bricks, II - Double-layer wall of silicate blocks, III - Ja-wa wall with light structure of reinforced concrete. [own study]