

Building of the replica of medieval crane for the Castle of Tocnik in Central Bohemia

1. Identification data

Project:

Replica of medieval wooden crane from the period of years 1390 - 1400 as a part of the exhibition "Charles IV, the Emperor by grace of God"

Location:

The City of Prague - Prague Castle

Date:

02-20-2006 - 10-01-2006

Client:

Management of the Prague Castle, Hrad, I. nádvoří 1, 110 00 Praha 1, Czech Republic

Authors of the project:

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Contractor:

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Cooperation with:

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Financial support:

ČSOB

Management of the Prague Castle

Town of Hluboká nad Vltavou

Lesy ČR

ASTRON Buildings S.A., Luxembourg

Experts:

Academy of Science of the Czech Republic, Institute of Theoretical and Applied

Mechanics, ARCCHIP Centre of Excellence

Czech National Heritage Institute

Handhouse studio, Norwell, Maine, USA

2. Intentions and objectives

Authors intent to built a replica of a medieval crane operated by human force as a part of the exhibition "Charles IV, the Emperor by grace of God", which will be installed in the location of Prague Castle from February until May 2006. The crane will be constructed according to ideological reconstruction of pictures in the Bible of Wenceslas (1390-1400) and knowledge obtained during a research on preserved thread-wheels abroad and in Czech Republic (locations: Karlštejn, Schwäbisch Gmünd, Strasbourg, Beauvais). The construction work will be performed by medieval technologies, using the hand-crafted wood, and are open to public in Prague Castle and in the Synagogue in Prague - Libeň.

The event objectives are to demonstrate a forgotten construction skill of our ancestors, applied on a real functional object, and by means of that to motivate the interest of public in cultural heritage.

3. Broader context

The exhibition "Charles IV the Emperor by grace of God" dedicated to the art of the last generation of the Luxemburg dynasty, i.e. Charles IV, Wenceslas IV and Sigismund

(www.hrad.cz; www.karel-IV.cz) has been installed from October 2005 until January 2006 in the Metropolitan Museum of New York, where it was called "Prague, The Crown of Bohemia, 1347-1437" (www.metmuseum.org). The exhibition contains more than 160 precious medieval masterpieces, provided by collection from Czech Republic, Slovakia, USA, Austria, Germany, Italy, Belgium, Great Britain and other countries.

The crane presentation on the exhibition in Prague is a part of a technical-historical experiment of "Using a wooden construction crane operated by human force in contemporary construction procedures". After the exhibition, the crane will be used under conditions of practicable construction for truss repair works in the Royal palace of the Točnick Castle, where the crane will be finally installed.

We have considered the utilization of a wooden crane operated by human force according to our recurrent experience in moving of oversized load within castle architecture environment. The castle courtyards are often inaccessible for modern heavy transport vehicles. The transport of necessary objects is usually the essential part of total construction budget. The historic transport technology will be very easy to use and probably very profitable for the truss reconstruction Točnick Castle. The ecological and energetic aspects attract our attention to these machines, which work on the base of fundamental mechanics. We assume that the utilization of such machines in this contemporary work experience might have a very essential benefit.

The objective of this experiment is to verify the verity of historical, iconographical sources, discovery of the machine technical parameters, comparison of the productivity, production and energy costs, ecological burden with comparable construction mechanization and discovery of use possibilities of these simple machines, operated by human force, in contemporary construction procedures. The designer has already successfully used replicas of historic wooden tools for the construction of a wooden bridge in the location of the Krakovec Castle and for lifting of a new bell into the monastery bell tower in Sázava.

We start the common pan-European effort to save the carpenter craft arts; therefore we have invited carpenters and blacksmiths from abroad to this event. Our partners from Massachusetts College of Art in Boston test the function and the correct measurements of the tread-wheel. They and their students have already constructed a functional replica of the Perronet baroque crane from the year 1750. Our partners will participate in the crane raise up procedure at the end of the assembly. Teachers and students of Czech technical and art colleges will participate in the event, as well. The event is performed in cooperation with the Academy of Sciences of Czech Republic and the National Monument Institute. We have performed background researches of similar events in Europe and USA and we can certify that there was no such event of this extent in the past. Some cranes were constructed, assembled and presented to the public, but they were assembled by modern technology. These cranes were never used on common construction site and in many cases they are partial functioning models only.