

News

Kammennoostrovsky (Stone Island) Theatre Reconstruction Project Awarded Gold Medal

Prof. Vladimir Ulitsky, Dr. Alexey Shahkin, and Dr. Michael Lisyuk
*NPO "Georeconstruction"
Saint Petersburg, Russia*

On 17-20 November, Leipziger Messe Exhibition Hall hosted its biennial Denkmal event – European Trade Fair for Conservation, Restoration and Old Building Renovation under the patronage of UNESCO. Out of 440 exhibited projects a gold medal was awarded to Kammennoostrovsky Theatre Reconstruction, currently being completed in St. Petersburg, whereby the theatre is upgraded to serve as the Second House of Tovstonogov Academic Drama Theatre.

The theatre was constructed as a wooden structure by Architect Shustov in 1828 and renovated by architect Kavos in 1843. Modern reconstruction of the theatre commenced three years ago.

The Theatre Overhaul Project implied provision of works sequence unique in international practice – whereby a new fully functional underground area had to be provided under the authentic historic timber superstructure, accompanied by its simultaneous restoration. The project featured the first implementation of the famous “top-down” construction method in its particular restoration modification: structural restoration of historic elements proceeded upwards, whereas the new underground areas were excavated downwards.

The chief designer for the project was Georeconstruction Institute, Corporate Member of ISSMGE (Director General – A.G.Shashkin, Scientific Advisor – Professor V.M.Ulitsky). The restoration design as such was delivered by Spetsprojektrestavratsiya Institute; Theatre Set Workshops Company (TDM) served as the designer of Stage Management Technologies. The General Contractor was “City Colours” Restoration Company, and the Subcontractor for the underground sections – Geoizol. The client was the St. Petersburg Directorate for the Preservation of Historic Monuments. Scientific and methodological supervision, as well as monitoring of design and restoration works, were provided by State Committee for Inspection and Historic Monument Preservation (KGIOP), headed by Director V.A. Dementieva and Deputy Director I.L. Grishin.

The chief designer was given a seemingly insuperable task: how it would be possible to house new stage management equipment, set storage areas, state-of-the-art noise-free air conditioning rooms serving the main auditorium, wardrobes, foyers, and cafes for the attending public in a building which had been constructed as a summer-time (unheated) structure. Neither adjoining new structures nor adding to the superstructure was permitted, as any such alterations would have distorted the historic appearance of the building. It was there that the contemporary geotechnical engineering was close at hand: all new addenda and enhancements required by a modern state-of-the-art theatre could be located underground, immediately underneath the historic theatre superstructure.

Old foundations were first underpinned with piles, following which walings were provided along existing masonry foundations for the piles to be able to assume loads from historic structures at minus 2 m a reinforced concrete slab was then placed upon the piles connecting them as with a stiff disc. Following construction of a cofferdam along the underground area perimeter and upon connecting it with the slab, excavation commenced, and the entire building was suspended on thin piles which were tied together into spatial structures as excavation was advancing. At the level of 6.5 m the bottom slab was cast, serving as the pile cap. After this the walls and the columns of the underground floor were constructed, and the piles now unnecessary in the underground area were cut off. In this way a new spatial scope appeared, four times exceeding the existing historic theatre square area. The settlement of the historic superstructure was never in excess of 24 mm and displayed remarkable uniformity, while the settlement of a closely located Baron Kleimichel’s Memorial Mansion reached max. 7 mm over the entire construction period (being as of today the best result in St. Petersburg). This geotechnical design was made by the professionals of Geotechnical Design Department at Georeconstruction and the contractor Geoizol.

News

Kammennoostrovsky Theatre Project (continued)

Stage management equipment was placed on a steel frame developed by one of the Georeconstruction's Design Departments, which was able to fit the new structure between the existing timber walls and struts.

The professionals from Spetsprojektrestavratsiya Institute developed restoration design which enabled conversion of a summer theatre house into a heated all-season facility; a unique element-by-element restoration of the timber superstructure was carried out mainly by City Colours.

The project of furnishing the theatre with new stage management technologies, designed and implemented by Theatre Set Workshops Company (TDM), will cater to imagination of a most demanding theatre director: the stage is equipped with nine lifting platforms; it is also possible to configure the orchestra pit to various requirements - be it for a chamber or a symphonic orchestra; the stalls floor can be adjusted at changing angles.

Nowadays there is a battle of opinions as to whether reconstruction of historic sites is possible at all, or whether we should confine ourselves at all times to mere restoration. Kammennoostrovsky Theatre Overhaul is a serious project suggestive of the former argument being true: not only is reconstruction possible but also it is necessary to preserve monuments for posterity. No compromises disfiguring the historic outlook should be bargained for, as everything new can go underground.



Figure 1. General view of the theatre during reconstruction



Figure 2. Construction of the underground part of the theatre

News

Kammennoostrovsky Theatre Project (continued)



Figure 3. Suspension of the building on Titan piles to provide construction of the rigid disc slab



Figure 4. Underground construction outside the theatre footprint



Figure 5. Underpinning piles support the whole structure