

A new philharmonic hall near Moscow's Red Square

By Marc Quiquerez

A new concert hall is currently under construction in the center of Moscow, Russia. Concealed under the new Zaryadye Park, Moscow Philharmonic Hall will offer more than 1,500 seats in a vineyard layout.

A brief history, and the background of the project

Zaryadye District is a central and strategic location in the heart of Moscow, along the bank of the Moscow River and a stone's throw away from famous Red Square, St Basil's church and Kremlin. From its early days as a trading settlement in 12th-13th centuries, the area has a long history of changes, destructions and reconstructions, and in the first half of the 20th century, it endured several planned demolitions. In the 1960's, a vast complex was erected, Rossiya Hotel, which held the record for largest hotel in the world until the early 1990's, before closing its doors in 2006 for complete demolition. To replace it, a first project led by Foster + Partners proposed a development with hotels as well as a symphonic concert hall and a multipurpose theater, but was later abandoned. At the time, Nagata Acoustics participated in the acoustical design of the performing arts venues.

The idea for a public park on the 13 hectares of the site publicly surfaced in early 2012, setting out to be the first new park in Moscow in over 50 years. From April 2013, an international competition was held for the urban and landscape design of this new Zaryadye Park, which will be financed in full on the city of Moscow's budget. With the goal of creating not only an urban park but also a cultural district, the competition entries were required to accommodate a new Moscow Philharmonic Hall on the site, with world-famous conductor Valery Gergiev appointed as Artistic Director for the project and future concert hall. In November of that year, the concept submitted by a consortium led by New-York architecture firm Diller Scofidio + Renfro was awarded first prize.

Nagata Acoustics was soon solicited by Maestro Gergiev to participate in the acoustical definition of the concert hall project, but it was not until the summer of 2015 that we were officially appointed as the acoustical consultant for the room acoustics of the new Philharmonic Hall to begin the design, with Moscow-based architecture firm TPO Reserve (runner-up in 2013 park competition) serving as the designer of the hall and under project management by Mosinzhproekt.



Figure 1: New Zaryadye Park Rendering
(©Diller Scofidio+Renfro, Hargreaves Associates, Citymakers)

Architectural and acoustical design of Moscow Philharmonic Hall

Nested under a glass dome near the eastern border of the park, with a landscaped artificial hill as its roof, and with foundation slabs already just about to be poured, the design of the project started with strong constraints in time, height and footprint. Through our initial studies, we were able to quickly secure the necessary dimensions to accommodate a world-class concert hall for more than 1500 seats, before developing room shape and interiors in details.



Interior of New Concert Hall Rendering
(©TPO Reserve)

With orchestra concerts in natural acoustics as its primary program, the hall develops around a large stage area (16m in depth and 21m in width), capable of accommodating large musical ensembles of over 100 musicians, as well as smaller ensembles with choir on stage. Mechanically-operated risers will create a compact semi-circular stepped ensemble layout, and provide acoustical support. The audience in the parterre stretches towards the rear of the hall with a progressive rake, securing unobstructed sight-lines to the stage. It is divided with terrace walls carefully adjusted to effectively provide sound reflections to the audience. A dynamic ribbon-like balcony wraps around the stage and parterre, and an additional level of overhanging sloped balcony offers V.I.P. seat boxes on both sides of the hall while creating essential sound reflections back to the stage. In total, the hall will accommodate 1560 audience seats. Behind the stage, tiers are designed to seat either audience or choir singers, and can also be retracted in full with a system of drawers and lift to create an upstage extension of more than 5m. It is behind these tiers that a pipe organ will find its place.

Extensive computer simulations were conducted using our proprietary simulation software to carefully determine the most appropriate height and shape for the ceiling, in close collaboration with design architects TPO Reserve. From its lowest point at 15m above the stage, the ceiling gradually rises towards the rear of the hall in a stepped progression and reaches up to 21m at its highest. Three-dimensional curvatures create an even and balanced distribution of early sound reflections in the hall, essential to the acoustical qualities of intimacy and clarity, while its generous height guarantees sufficient room air volume for a rich reverberance.

Overall, the interior design of architects TPO Reserve dismisses sharp angles and straight lines in favor of curved shapes. It alternates smooth and textured surfaces, with irregularities designed to diffuse high frequency sound reflections and promote a warm sound.

A pure concert hall... with an orchestra pit

One of the distinguishing elements of Moscow Philharmonic Hall is the addition of an orchestra pit sunk under the front of the stage and first rows of audience, capable of accommodating up to 70 musicians. Pits are most commonly found in opera houses and theaters, which also offer densely-equipped fly towers, and concert halls with orchestra pits are still a rare breed. Our first encounter with such a design came with the Mariinsky Concert Hall in St Petersburg, which opened in 2006 (as reported in our January, 2007 newsletter), and the audacious idea originally came from Maestro Valery Gergiev himself, Artistic and General Director of the Mariinsky Theatre, and initiator of the project.

10 years after its opening, evidences point to a great success, with numerous staged or semi-staged opera productions tailored for the hall every year. For the 2015-2016 season alone, 50 performances of 10 different opera productions were presented in the hall, not counting semi-staged productions. While the hall certainly cannot directly compete with a purpose-built theater and its theatrical equipments and staging flexibility, it offers a uniquely rich yet intimate visual and acoustical experience for the audience and can inspire artists in innovative ways. This makes the orchestra pit a great asset in extending the use of the hall beyond the traditional concerts, without compromising on acoustical quality. The new Philharmonic Hall aims at replicating this successful programming model in Moscow.



Figure 2: Opera Performance at Mariinsky Concert Hall
(©Mariinsky Theatre)

Project Progress and Status

Design phases are now coming to an end, and will soon be concluded by the construction of a 1:10 scale physical model for dedicated acoustical studies in the coming months, an essential step to detect and prevent detrimental echoes in such a large and complex design. But the park construction is already underway on the site. Followed by the open to the public, the completion of concert hall is scheduled for 2017.