

Project: Bolshoi Theatre Moscow

Interesting fact: The Bolshoi Theatre image is on a 100 Ruble banknote

Did you Know: This is a “must see” tourist attraction



Bolshoi Theatre gets a complete re-fit

The Moscow Bolshoi was first formed back in 1776. The company's theatre building was originally constructed in 1824 to replace an earlier theatre that had been destroyed by fire. It was designed by architect Andrei Mikhailov and was further damaged by yet another fire in 1853 after which it underwent a refurbishment and re-opened its doors in 1856. The name Bolshoi is Russian for 'large' or 'grand' and these originally imperial properties were intended purely for the high arts of opera and ballet.

Today this building that is regarded by many as one of the top, 'must visit' tourist attractions in Moscow, something that is confirmed by the fact that its neoclassical façade is depicted on the Russian 100 ruble banknote.

Recently the building underwent its biggest reconstruction and refurbishment to date, which was much needed as it was estimated that up to 70% of the structure was in a dangerous condition. The massive restoration project that took from 1st July 2005 to 28th October 2011 to complete during which time the building needed to remain operational. To give some sort of idea of what was involved during this time 3,500 specialists –

TOPIC:

Restoration project

LOCATION:

Moscow

COMPANY:

Bolshoi Theatre

1,000 of whom were restorers – worked on the building each day. In addition another 1,000 people were employed in off-site restoration workshops.

In addition to the extensive building works, the transformation also carefully restored the public areas to their former glory. The auditorium areas are once again decorated in bright crimson and gold as they were originally and the stucco arabesques have been lovingly restored to their former brilliance.

Extra space was also needed and this was achieved through creating a basement area that includes a large concert and rehearsal room as well as technical services and support areas. The hall itself now makes the best use of space by creating a range of platforms that provide a multi-functional design that allow the stage space to be used in different ways. The final cost has been put at 21 billion rubles (£540m) – much more than was originally estimated.

Such a significant project involved upgrading many aspects including the HVAC solution to make it fit for purpose for the requirements of a 21st century audience and this is where Grundfos Pumps were on-hand to offer their expertise. The final pump solution required a complete rethink of the total pump requirements including all the theatre's heating, air-conditioning, ventilation, fire prevention and of course booster sets that will ensure water will always be available where and when needed.

A range of services that is vitally important to such an important venue where only perfection is expected. That is why the Bolshoi Theatre renovation included providing the building with cutting-edge utilities (including heating, air conditioning, ventilation, fire fighting and pressure boosting systems).

The FIRE PROTECTION SYSTEM (FPS) deserves a special mention as Grundfos developed a bespoke computer control system. This consists of a number of booster units (SP submersible pumps in sleeves) providing a water flow rate of up to 1,600 m³. The fire fighting system uses NB long-coupled pumps and all the equipment is controlled from one control unit. Similar building management systems are installed in the Cathedral of Christ the Savior, the building of the Ministry of the Foreign Affairs of the Russian Federation and a number of other famous buildings in Russia.

The heating system for the Bolshoi Theatre is also of unique character. It was launched one year prior to the official opening of the theatre (before that the heating had been provided by a temporary system), and its main task at the time was to maintain the temperature and humidity necessary for the restorers. This system also features GRUNDFOS equipment from the TP, NB, NK and UPS(D) families.

'The heating system has probably undergone the most profound changes in comparison to all the other services in the building,' Sergey Tikhov, Deputy Chief Engineer of the

State Academic Bolshoi Theatre of Russia, says. 'The reason for this is that the pumps in other systems do not need to work so constantly, but only occasionally: they switch on, for example, upon receiving a fire alarm signal or if started preliminarily. This means much less significant wear.'

The building's water supply system uses Grundfos Hydro Multi pressure boosting system with energy efficient CR pumps. It provides a plentiful supply of water to any location where it is needed. If water is used simultaneously, the installation helps preserve permanent pressure in the water supply system.

'Currently more than 70 Grundfos pumps are installed in the building's services,' Sergey Tikhov said. 'We are more than satisfied with the quality of the equipment. One of the best features of modern pumps is that they require little maintenance. One doesn't need to replace consumable parts as often, which means great savings.'

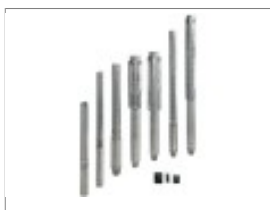
Having already made such a significant contribution to the history of performing arts, the Bolshoi theatre is once again set to sparkle for many more years to come and Grundfos are very proud to have played their role in contributing to restoring such a fabulous building back to its former glory which will now continue to deliver the precise, energy efficient pump services equal to any modern counterpart.

Related Products



NB, NBG, NBE, NBGE

The Grundfos NB(E)/NBG(E) pumps are all non-self-priming, single-stage, centrifugal volute pumps with axial suction port, radial discharge port and horizontal shaft.



SP

Submersible pumps for irrigation, water supply, pressure boosting and dewatering.



TP(D), TPE(D)

Grundfos TP and TPE(D) vertical in-line pumps are used in a variety of applications. The pumps are all single-stage, in-line centrifugal pumps with standard motor and mechanical shaft seals. The pumps are of the close-coupled type, i.e. pumps and motor are separate units.



NK, NKG, NKE, NKGE

Single-stage standard long coupled pumps according to EN 733, ISO 2858 and ISO 5199. Grundfos NK(E)/NKG(E) pumps are used in water supply, industrial pressure boosting, industrial liquid transfer, HVAC, irrigation and process industry.



CR

Multistage pumps for pressure boosting in a wide range of applications