



Philharmonie de Paris: steel structure design in a complex-geometry building

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Summary

“Philharmonie de Paris” is an important project centred in a 2,400-seat concert hall. The building presents a very complex-geometry, both externally and internally, and its structure design, combining reinforced concrete and steel structure, has had to adapt, considering several systems and elements of great singularity and complexity.

The paper focuses on the main structural singularities and complexities regarding the steel structure design of the building. In particular: Singular connection design and analysis with unusual geometries and configurations; Erection process of the “Ecran”, a singular piece with a central span of 60 meters and a cantilever of 25 meters; Dynamic performance of the structure and supervision through dynamic load tests.

Keywords: steel structure; complex-geometry; architecture; vibration control; dynamic load tests.

1. Introduction

“Philharmonie de Paris” is an important project of a major new music complex in the Parc de la Villette, in Paris.

The building covers an area of approximately 20,000 square meters, housing a 8,400-seat concert hall, as well as educational and exhibition spaces, administrative and technical rooms, a restaurant and other logistical and technical facilities.

Designed by French architect Jean Nouvel, after an international design competition in 2007, the building presents an iconic exterior geometry (Fig. 1).



Fig.1: Philharmonie de Paris. Exterior general view (render)