

# WINNER

## Category 4: Special Projects



*“This complex project was modelled directly in SCIA Engineer as a hybrid structure with a span of over 400 meters, including façades and roof. The jury was impressed by the advanced analyses with second order, tension-only elements, physical and geometrical non-linearities, as well as advanced dynamic and seismic calculations, resulting in a fabulous building.”*

Quote of the Jury



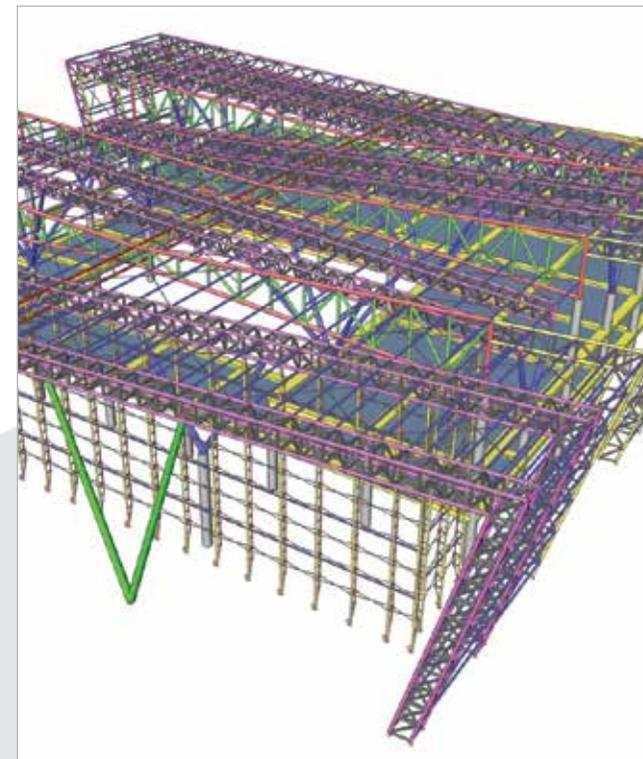
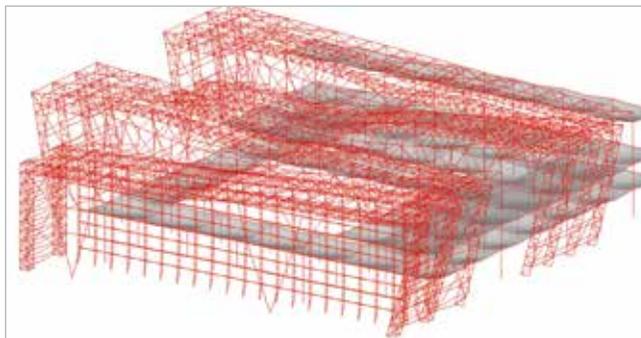
# Rafael Núñez Airport Expansion - Cartagena De Indias, Colombia

**Owner** Sociedad Aeroportuaria De La Costa S.A  
**Architect** Cemoso S.A  
**General Contractor** Sociedad Aeroportuaria De La Costa S.A  
**Engineering Office** Cemoso S.A  
**Construction Period** 01/2019 - 01/2024

The expansion Project of the Rafael Núñez international airport in Cartagena de Indias, Colombia, has been designed to reach the processing capacity of 8.5 million passengers per year. For this purpose, a new building has been designed, the international terminal, connected with a new boarding pier which spans over more than 400 m. The total designed area of this new expansion is 27,000 m<sup>2</sup>.

The principal structure modelled with SCIA Engineer is the new international terminal building, a single construction of more than 5,600 m<sup>2</sup>. This building has a steel roof composed of several spatial and planar trusses made of tubular HSS sections, forming different inclinations on the roof. For the analysis, calculation and design SCIA Engineer was used. The complex steel structures, the roof and façade, were modelled directly in the software. Furthermore, advanced analysis with nonlinear considerations, second order, tension-only elements, physical non-linearity of the concrete material and advanced dynamics and seismic analysis were performed. The ACI and AISC normative verification of the steel and concrete designs has been made in the project.

SCIA Engineer proved to be very flexible with data input, obtaining more productivity than with any other structural software used in the company.



## Estra Engenharia Ltda.



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Estra Engenharia Ltda. is a Brazilian Engineering Consulting Company specialising in structural, foundation and underground projects, delivering innovative solutions for public and private clients world-wide. It was founded in São Paulo in 1981 and since 2011 it is integrated in the international engineering consulting group Cemoso Ingeniería y Control S.A.

In the recent years, our approach to resolve highly technical projects has been recognized by a Brazilian Structural Engineering Association ABECE thanks to the innovative construction method of a cylindrical underground station, designed by our Technical Director.

