Earthquake deformations check

RESTORATION AND CONSERVATION INTERVENTION

Temple of Belén, Cusco (PERU)

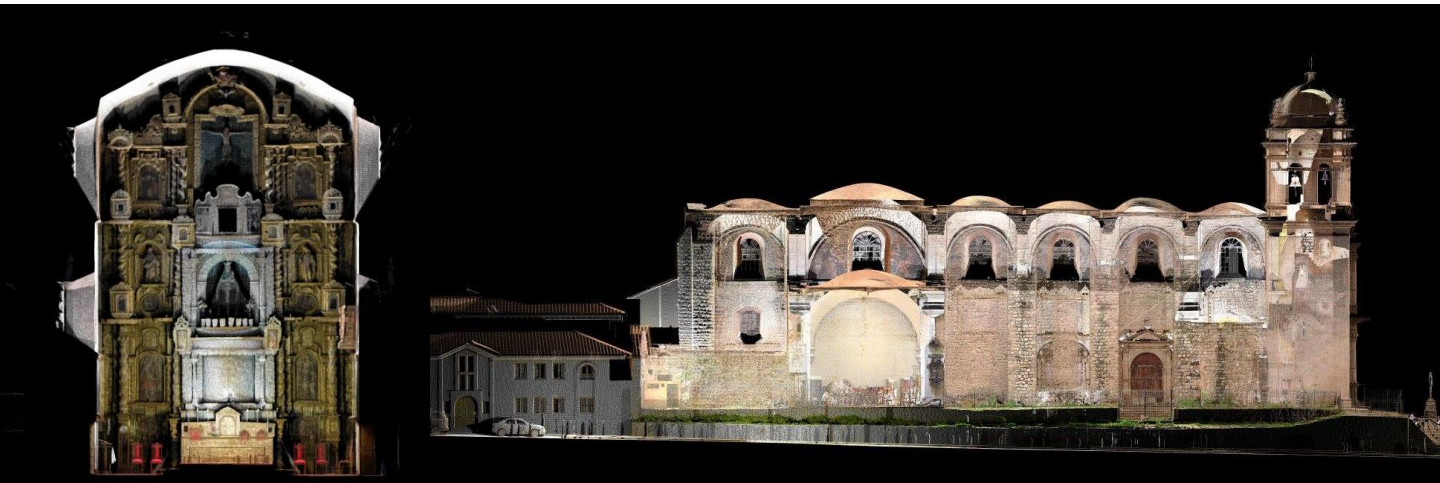

Fig1-2_Temple of Belén: 3D visualization inside the JRC 3D Reconstructor software

NEEDS AND GOALS

- Measure, analyze and document the phenomena of the degradation of the church useful for the restoration project.
- Get for the first time an accurate survey to obtain a full view of the building.

TECHNOLOGY BENEFITS

- Rapidity of 2D and 3D data extraction.
- Millimeter accuracy of the technical result.
- Precision and accuracy of data.
- Time savings in data processing and acquisition.

RESULTS

- Detailed report of vaults deformations
- Plans, elevations, sections
- High-Res orthophotos
- Data precision and accuracy

RESTAURO
Conservación & Restauración de Bienes Culturales

Restauro Sac

RESTAURO S.A.C. is a Peruvian company that offers a wide range of services related to Cultural Heritage needs. Founded in October 2009, it offers solutions for management, conservation and restoration problems thanks to a national and international experience as well as a selected professional team and high-level technologies.

Fig3_CAD drawings with high-res ortofotos

TECHNICAL DETAILS

- SURVEYING SYSTEMS:
  Faro Focus^{3D} 130x laser scanner
- SURVEYED AREA:
  3,145.50 sqm
- SURVEYING TIME:
  3 days
- PROCESSING SOFTWARE:
  JRC 3D Reconstructor®
  AutoCAD®
- DATA PROCESSING TIME:
  1 month

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The church of Belén stands on a strongly seismic territory that from its origins has undermined the structure, rebuilt several times.

After the damages caused by the earthquake of 1950, the internal consolidation of the vaults and domes was carried out, in order to avoid subsequent collapses, and only recently (for the first time!) a laser scanner survey was commissioned by the Ministry of Culture in Cusco to evaluate the actual structural conditions of the church and undertake restoration work.

Thanks to this important technological step, it was immediately possible to notice some serious structural problems concerning the subsidence of the cupola. An aspect that would never have emerged with traditional measurement systems.

> **“Working with highly technological tools allows great precision in a short time, which for the client translates into high quality at affordable prices. JRC 3D Reconstructor® is an easy-to-use software: only one operator can do the whole job obtaining accuracy never seen before!**
>
> **Wilfredo Torres**
> **Restauro S.A.C. | CEO**

In just 3 days of work, the entire building was completely detected and through the JRC 3D Reconstructor® data processing software it was easy to extract the orthophotos to draw plants, sections and elevations.