

# From reality to point clouds. Survey and analysis of Sant Miquel church of Batea (Spain).

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## ABSTRACT

Current architectural heritage documentation procedures are very varied, and the use of massive data capture techniques (MDCT), such as terrestrial laser scanning and digital photogrammetry, have become widespread during the last decade. These raises the possibility of developing new assessment methodologies based on the 3D documentation [1], [2]. In addition numerous investigations have tested the techniques' reliability on and proved their effectiveness and compatibility to obtain high precision topographical documentation [3].

The paper exposes de results of using simple, non-invasive procedures for the assessment of the shape of a masonry building from a point clouds registered with a terrestrial laser scanner. The case study selected is the church of Sant Miquel of Batea (eighteenth century), located in the province of Tarragona (Spain) [4]. It is probably the most relevant Baroque construction in Catalunya, due both for their architectural features and decorative elements. The building basically consists on a Latin cross floor plan with a transept and a central dome. The main body has a basilica configuration with three naves and square columns, finished with the altar and the presbytery. Compared to other contemporary buildings, it is remarkable its great measures, of 48.20 m x 26.11 m in the floor plan, and 19.95 m in the top of the roof of the central nave.

The methodology used combines 2D a 3D processes for assessment of the geometry. 2D analysis is mainly based on cross sections, which allows to quantify main measures of all structural elements in detail. 3D analysis is based on comparison reference planes for the assessment of vaults, which allows a quantitative and qualitative comparative analysis.

The results of the investigation has confirmed the good condition of the building. It presents dimensional variations, most of which can be related to the construction process, while some displacements identified provide information about the accommodation process of the masonry structure.

## REFERENCES

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