

The Church of Santa Maria in Arezzo.

From the laser scanner survey to the knowledge of the architectural structure

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ABSTRACT

The parish church of “Santa Maria” is considered one of the most important medieval buildings of the town of Arezzo. It is attested from the 11th century, but reached its current consistency between the 13th and 14th centuries [1], characterized by the particular façade with small columns on several levels and by an imposing bell tower. Later, from the 16th to the 18th century, it underwent profound transformations, then almost completely erased by the extensive restoration works of the second half of the nineteenth century [2]. With these last interventions, the parish church assumed its current apparently homogeneous features, with the facing walls entirely in squared sandstone ashlar.

To carry out the survey of the parish church of “Santa Maria”, a phase-shift laser scanner and a digital reflex camera (Z + F 5006h) were used. For the generation of the 3D model of the church, 189 scans were performed: 180 with high density and normal quality, lasting 5-6 minutes, and 9 with super high density and high quality, lasting 13-14 minutes. From the 3D model, vectorial drawings of plans and sections were then created.

The study of the parish church based on the laser scanner survey, made it possible to highlight the singularity of the structure of the basilical body and of the transept, showing the tilt of walls and columns, the variations in the thickness of the walls, the considerable deformations of some arches, the cracks and textures of the wall facing.

The information thus obtained attested a constructive arrangement also created by complex construction events that over time have affected this building. Constructive singularities related to the medieval genesis of the building have been highlighted, in which the construction of the dome not completed was involved, and others still determined by the transformations of the following centuries and, more recently, by restoration works.

These composite features are specific and common to every ancient building. It confronts us to a peculiar epistemological condition that eschews from simplifications and that, each time, requires deep and complex studies, closely linked to the problems of conservation of the structures to be tackled.

REFERENCES

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