

New studies on Brunelleschi's Dome in Florence from historical to modern monitoring data analysis. The effect of encircling scaffoldings on cracks evolution.

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Abstract Aim of this paper is to show the results of the analysis carried out on the last 55years monitoring data of the severe crack pattern of Santa Maria del Fiore dome, in Florence (Italy), as an exemplar case study of mechanical behaviour assessment through monitoring data analysis. An accurate analysis of cracks thickness measurements, both considering the historical data and the last ones recorded by the modern monitoring systems, has allowed to detect the static movements developed in the monument during the centuries, also considering their correlation with environmental and seismic phenomena. Moreover, the presence, from 1980 to 1996, of a really contested encircling scaffolding in the inner dome (for frescoes restoration) has suggested a possible new interpretation of monitoring data trend, which seems to confirm, at the end, the prevision made by Vincenzo Viviani - at the end of XVII century - on the future consolidation of this dome.

Keywords Brunelleschi's dome, monitoring system analysis, domes strengthening intervention