NEW ADVANCED GNSS AND 3D SPATIAL TECHNIQUES
APPLICATIONS to CIVIL and ENVIRONMENTAL ENGINEERING, GEOPHYSICS, ARCHITECTURE, ARCHEOLOGY and CULTURAL HERITAGE
In memory of Prof. Giorgio Manzoni

Trieste 18-20 February 2016
New Advanced 3D Spatial Techniques – Laser Scanning and 3D modeling

“Palazzo Italia at Expo 2015: 3D integrated and almost real time surveying technologies applied to the positioning of the external concrete panels”

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In collaboration with GEXCEL srl
Rete VRS in modalità DGPS.
Padiglione Italia
ITALIAN PAVILION
1. As Built check and control of Geometry and positioning of metal flanges and carpentries by first order total station

2. Accurate panels positioning

3. Millimetric Check of the concrete panels by first order total station and laser scanner

4. Global Building Survey by laser scanner and images
1

AS DESIGNED / AS BUILT
CHECK AND CONTROL OF
GEOMETRY
AND POSITIONING OF METAL
FLANGES AND CARPENTRIES
3D CHECK AS-BUILT AND PROJECT STATUS

metal carpentry
3D check as-built and project status

metal carpentry
3D CHECK AS-BUILT AND PROJECT STATUS

metal carpentry
3D CHECK AS-BUILT AND PROJECT STATUS

metal carpentry
3D CHECK AS-BUILT AND PROJECT STATUS

metal carpentry
2
Accurate panels positioning
3
MILLIMETRIC CHECK OF THE CONCRETE PANELS BY FIRST ORDER TOTAL STATION
FROM THE 3D BIM PROJECT EVERY PANEL AND THE METALLIC SUPPORT HAVE BEEN IN REAL TIME MONITORED AND THE POSITION DEFINED USING LASER SCANNER AND TOTAL STATION.

concrete covering panels
From the 3D BIM project every panel and the metallic support have been in real-time monitored and the position defined using laser scanner and total station.

Concrete covering panels
FROM THE 3D BIM PROJECT EVERY PANEL AND THE METALLIC SUPPORT HAVE BEEN IN REAL TIME MONITORED AND THE POSITION DEFINED USING LASER SCANNER AND TOTAL STATION.

concrete covering panels
THE CONSTRUCTION HAS BEEN LATER SURVEYED USING Z+F AND FARO LASER SCANNER. THE SCANS HAVE BEEN ALIGNED, ALMOST REAL TIME, USING A TARGET LESS PRE-ALIGNMENT AND BUNDLE ADJUSTMENT SOFTWARE PROCESS.
ALL THE HEAVY CONCRETE PANELS, OF DIFFERENT SHAPES, HAVE BEEN POSITIONED WITH 2mm ACCURACY AND THE SCANNING “AS BUILT” DATA ACQUISITION AND PROCESSING HAS BEEN CARRIED IN ALMOST REAL TIME.

cement covering panels
THE PROCESS FROM BIM TO THE ON THE FIELD POSITIONING AND SCANNING HAS BEEN OPTIMIZED IN THE WAY TO REDUCE AT THE MINIMUM THE DATA PROCESSING TIME.

cement covering panels
GLOBAL BUILDING SURVEY
(imaging tests
Automatic target less registration tools testing)
3D From images
Industrial Measurement Portal 4D INSPECTOR
4D INSPECTOR
Fully Automatic
Border “as built” check
JRC 3D Reconstructor + LineUp Pro + Focus 3D
Core verticality Check
JRC 3D Reconstructor + LineUp Pro + Focus 3D
Border “as built” check

JRC 3D Reconstructor + LineUp Pro + Focus 3D
Core verticality / border Check
JRC 3D Reconstructor + LineUp Pro + Focus 3D
AUTOMATIC Target less REGISTRATION TOOLS
LineUp Pro®
Grazie
For the attention!

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