

Industrial Area 3D Geometric Documentation Using Terrestrial Laser Scanners

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SUMMARY

The safety and enforcement of preventive maintenance procedures specifically for equipment in large industrial infrastructures is a matter of major importance in particular, in the Oil and Gas industry. For example, a pump or extruder malfunction may cause disruption to the production line and thus, result in significant economic damage. An increasing number of machines, complexity of technical checks and maintenance procedures, expansion of industrial infrastructure and the volume of production have increasingly given prominence to the safety and technical maintenance of equipment. In order to optimize the availability and utilize industrial maintenance the corresponding digital twin and its properties must be captured. This is possible using terrestrial surveys by means of new technologies. More specific, digital 3D scanning devices has provided new means to preserve geometric and photorealistic 3D point clouds.

This study takes a close-up look at measurement laser campaign and GNSS positioning for reference frame implementation and digital documentation. It describes both the fieldwork and the processing of the measured data. Additionally, the value of this paper lies in stressing the importance of the terrestrial 3D laser scanners and the practical applications they have in many domains, such as the oil and gas industry where special machines configuration is existing. The current study took place at Hellenic Petroleum facilities in Northern Greece.

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