3D Data Fusion for 3D Modeling Applications for the Energy Sector

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SUMMARY

The energy sector is a business area that has a lot to benefit from 3D data acquisition and modelling technologies. 3D Terrestrial laser scanning, Multibeam, ROV, UAV 3D and imagery data acquisition are all means of obtaining data in the form of point clouds. 3D data fusion from various sources can be processed into models and streamlined into engineering projects that include: 3D Visualisation, 3D dimension and position querying, creation and publication of annotations, modelling of existing terrain and infrastructures especially in remote unmapped areas, As-Built-BIM, integrated MEP documentation and modelling, inspection and documentation of existing structures, projects of rehabilitation of old power plants, factories, dams, industrial facilities, Facility Management, Deformation Analysis and monitoring, Finite Element Analysis, CFD, Volumetric surveys, Stress-strain analysis etc.

Several case studies are discussed based on the author's long and extensive experience in 3D data acquisition and processing into suitable outputs like 3D CAD models, As-built-BIM and a wide range of custom designed products. Moreover, the authors identify the challenges that come with the data acquisition and integration of these processes into various workflows and they describe, how in cooperation with their clients overcome all challenges, build on their own skill and utilize multidisciplinary approaches to deliver high quality results.