INTRODUCTION TO OUR DESIGN, LASER SCANNING AND AS BUILDING SERVICE

MMR Corporation are providing Engineering Design and Laser Scanning As-Building services to the Energy and Resource Industries.

We offer specialised services for both offshore and onshore facilities, tailored to suit the requirements of operating companies, engineering consultants and fabrication/construction companies, in accordance with industry standards and procedures.

Services:

MMR Corporation services include:

• Engineering - Conceptual through to Detail Design
• 3D Laser Scanning and As-Building
• Asset Management
• Construction and Shutdown Support and Management
• Operations and Maintenance Support
• Drone survey services to take aerial surveys utilising drones for photography, videography and laser scanning.

Objectives:

MMR Corporation endeavours to provide its services by:

• Liaising closely with the client in order to clearly identify the requirements, objectives and outcome.
• Packaging and executing the activities in an efficient and timely manner so as to provide a quality and practical solution.
• Reducing client costs by engaging efficient work practices.
• Utilising the experience of competent and focused personnel.
• Maintaining a flexible and professional approach with our clients.
ENGINEERING

MMR Corporation provides Engineering and Design Services in the following disciplines:

- Process
- Mechanical
- Piping
- Structural
- Civil
- Instrumentation
- Electrical
- Health Safety and Environment

Process:

- Process Simulation utilising software such as HYSYS, OLGA, HTFS, Pipesim and Flarenet.
- Process Flow Diagrams - PFD's.
- Heat & Material Balance - HMB.
- Process and Instrumentation Diagrams - Production of Intelligent P&ID's, that allow extraction of data such as Line Lists, Valve Take-Offs and Instrumentation data.
- Process Description.
- Operating Manuals.
- Equipment Process Data Sheets.
- Instrument Process Data Sheets.
- Packaged Units Duty Specifications.
- Emergency Shutdown Philosophy.
- Causes & Effects Diagrams.
- Heat Exchangers Thermal Design & Data Sheets.
Mechanical:

- Specification of New or Replacement Equipment.
- Design of Mechanical Equipment
- Equipment Mechanical Data Sheets.
- Ensuring a Safe, Reliable and Environmentally Responsible Operations.
- Ensuring Compliance of Industry and Company Codes and Standards.
- Requisition for inquiry.
- Requisition for purchase.
- Technical Bid Tabulation.
- Vendor follow-up.

Piping:

- 3D Layouts and Design Utilising Intelligent Packages such as PDMS, AutoPlant and Plant3D.
- Pipe Stress Design Basis and Design Specification.
- Pipe Stress Analysis Utilising Software such as CaesarII and AutoPipe.
- Surge Analysis Utilising Software such as Flowmaster and PipeNet.
- 3D Clash Analysis.
- 3D Model Walkthroughs and Reviews Utilising Navisworks or Aveva Review.
- Plot Plans.
- Piping General Arrangements.
- Standard Drawings
- Pipe Supports Lists and Details.
- Fabrication Isometrics.
- Bulk Piping Material Take-Off's.

**Structural:**
- Structural Analysis.
- Finite Element Analysis.
- Material Selection.
- 3D Design and Modeling utilising Intelligent packages such as PDMS, StruCad and ProSteel 3D.
- Fabrication Detailing

**Instrumentation and Electrical:**
- Control System Specification.
- Instrument Data Sheets.
- System Layout Drawings.
- Systems I/O Sizing.
- Instrument List.
- Material Take-Offs.
- Cable Schedule.
- Loop Diagrams.
- Hook-up Drawings.
- Control Rooms/Buildings and Equipment Arrangement Drawings.
- Cable Routing Drawings.
Electrical:

- Single Line Diagrams.
- Electrical Consumers List.
- Equipment General Specifications.
- Electrical Design Specifications.
- Equipment Data Sheets.
- Standard Drawings.
- Bulk MTO's.
- Cable Schedules.
- Substation Equipment Arrangement Drawings.
- Cable Routing Drawings.

Health Safety and Environment:

- Safety Philosophy.
- Environment Impact Assessment.
- Hazardous Operations - HAZOP.
- Hazid Identification - HAZID.
- Quantitative Risk Analysis - QRA.
- Hazardous Area Classification Drawings - HAC's.
- Fire Water Demand Calculations.
- Fire & Gas Detection Layouts.
- Fire Water Network Layout Drawings.
Civil:

- Soil Investigation Specifications.
- Design Specifications.
- Civil Works Specifications.
- Calculations and Notes.
- Drainage Network Calculation
- Design Drawings.
- Underground Network Drawings.
- Concrete/Steel Standard Drawings.
- Buildings Architectural Drawings.
- Material Take-Offs.
SURVEYING

MMR Corporation provides 3D Laser Scanning, Photogrametry and Dimensional Control for the As-Building of existing facilities. These services can be utilised for Brownfield Revamps, Fabrication and Construction, Operations and Maintenance, Inspection, Safety and Asset Management.

3D Laser Scanning:

During construction and installation within existing facilities there is a constant concern of hard clashes between the various components, and mitigating this risk can be a challenge for plant constructors, operators and owners.

Our As-Building services aid in capturing precise information of the facility without causing any disruption to operations and production.

MMR Corporation survey solutions help meet this challenge with 3D laser scanning. We provide a unique solution that produces a high definition "Point Cloud" that can then be used to produce a 3D CAD model.

MMR Corporation utilises a range of high speed laser scanners that can capture up to one million points per second, to deliver individual scans of data. Each individual scan is a collection of high resolution points of 3D coordinates, depicting all line-of-sight objects. Numerous scans are collected from multiple locations to satisfy the overall capture of field data. The scans are then "Registered" to create an overall "Point Cloud" of the facility, which can then be referenced to the plant coordinates.

The 3D Point Clouds of the As-Built facility can then be integrated directly with CAD systems (PDMS, PDS, AutoCAD, MicroStation, CADWorx, AutoPlant, SmartPlant 3D) to integrate and clash check against new Design Models.

The Point Cloud can then be utilised further to create either a semi-intelligent or fully intelligent 3D Model that design groups can utilise, so as to eliminate interferences and clashes. This is opposed to the conventional method of using the original 3D design model or existing drawings that are not necessarily kept up to date.

Key benefits include:

Creation up to date as-built documentation
3D semi-automated modelling
Clash/Interference checking

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Condition and damage assessment
Data exchange with many CAD platforms
2D plans
Complete 3D CAD models from point clouds
Aid in inspections
Deformation analysis and weld peaking reports
Tank/vessel volumetric information

Our 3D laser scanning service is intended to enhance the design and constructability of any revamp, retrofit, upgrade project through all stages of the process.

Key benefits of this service include:
Mitigation of risk and environmentally safe
Minimizing shutdown periods
Minimizing offshore fabrication activities
Eliminate re-work and reduce cost of retrospective engineering
Reduction of installation man-hours
Maximizing field productivity
Minimizing field hot-work
Early project completion

Dimensional Control:
Dimensional Control
3D Photography
Photogrammetry
3D Holograms