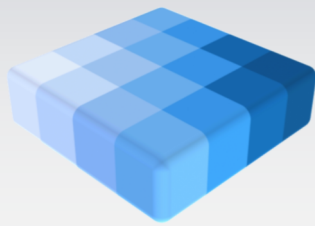


CAPABILITY STATEMENT

3D Laser Scanning



DEACON
ENGINEERS

**Mechanical, Electrical & Structural Equipment
Design and Verification
Advanced Simulation and Analysis· Consulting**

**Unit 3, 28 Belmont Ave Rivervale WA 6103 Ph: 08 9217 2933
Suite 4B / 1-11 High Street Shepparton VIC Ph: 03 5851 3444**

3D LASER SCANNING

Precise measurement technology to digitise, model & analyse the physical world

3D Laser scanning has changed the way we take site measurements. Using our own Leica high precision 3D Laser scanner, we can measure up to 80m radius with scan rate of 0.8 to 3.3mm @ 10 metres, capturing up to a million points per second with each radial scan completed in minutes.

With the use of placed targets and post processing software, multiple scans can be combined into a single point cloud model – enabling complete 3D capture of an entire process line, large machines, structures and buildings.

There are many applications, advantages and benefits with 3D scanning and include:

- Accurate measurement
Eliminate human error, the capture of millions of data points ensures nothing is missed - no need for return visits to site.
- Measurement of irregular shapes
Including deformed objects caused by impacts and where it is difficult or impossible to take manual measurements.
- Integrity assessments of equipment, tanks and structures
Creation of models from point cloud data for processing and analysis by finite element analysis (FEA) and fatigue analysis software.
- Reverse engineering
Where replacement parts cannot be supplied by the OEM or manufacturing drawings do not exist, with export of point cloud data into Autodesk Inventor.
- 3D modelling of structural items
Using Leica Cyclone software, placement of steel members from inbuilt libraries into the point cloud model provides fast and accurate 3D model generation.
- 3D modelling of piping installations
Using Leica Cyclone software with 'Auto Pipe Run Finder' and insertion of pipes, elbows, reducers, tees from inbuilt libraries provides fast and accurate 3D models.
- Wear monitoring of liners and chutes
- Calculate volumes and areas of tanks and vessels
- Collision detection and avoidance
e.g. replacement and addition of pipework in and around process plant, walkways
- Alignment surveys: Including periodic inspections on crane runways and monorails
- Constructed plant inspection for dimensional compliance
- Reduce risks to personnel and costs associated with plant shutdowns
Using long-range scanning capabilities can negate the need to shutdown plant, enter confined spaces, working at heights and the hire of EWPs / erection of temporary access equipment.

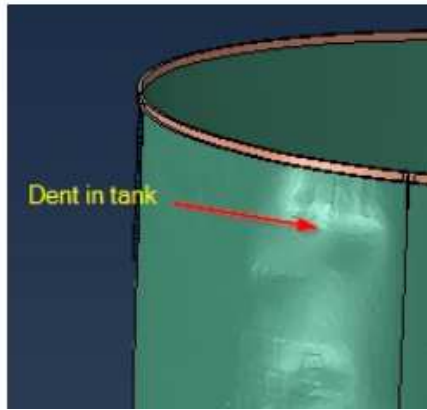
3D LASER SCANNING—EXAMPLE APPLICATIONS.

Buckled Tank Structural Assessment:

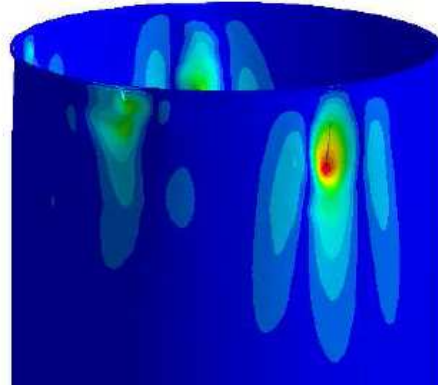
Undertaken to assess fitness of service and safe usable capacity of a tank with a localised buckle.



(site photo)



(model from point cloud)



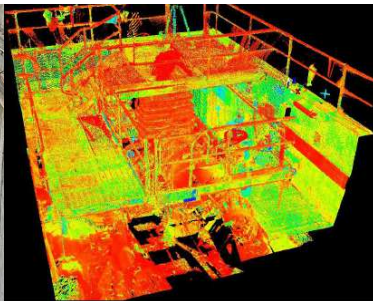
(FEA result)

Valve Pit Access Platform:

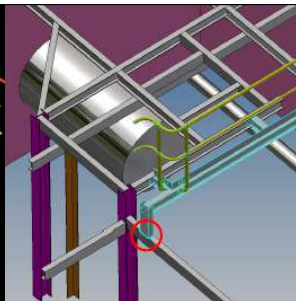
Design modifications to an existing platform to enable safer access to the pit and clearances to operate valves.



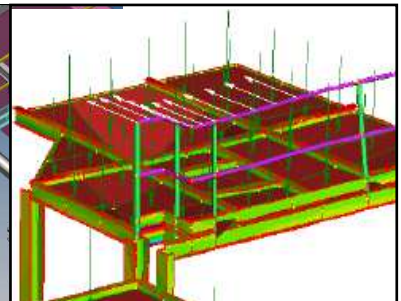
(on-site scanning)



(meshed point cloud)



(Inventor model)

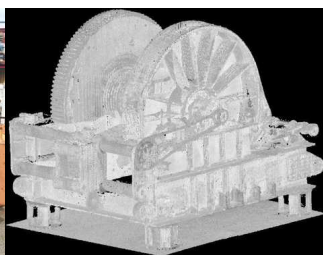


(FEA results)

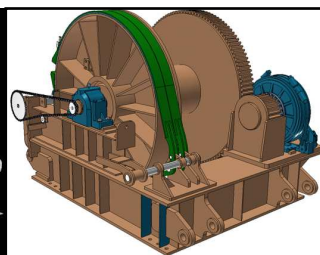
50T Winch Certification and Design Modifications.



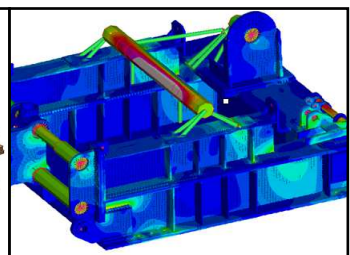
(on-site photo)



(meshed point cloud)



(Inventor model)



(FEA results)