CERC - Cornwall

Turbine Exhaust 3D Laser Scanning

Project Value: £9,110

Project Start Date: 16th March 2020

Project End Date: 13th April 2020

Client: Uniper Technologies Ltd

JBL Engineers Ltd

uniper

suez

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JBL Engineers Ltd

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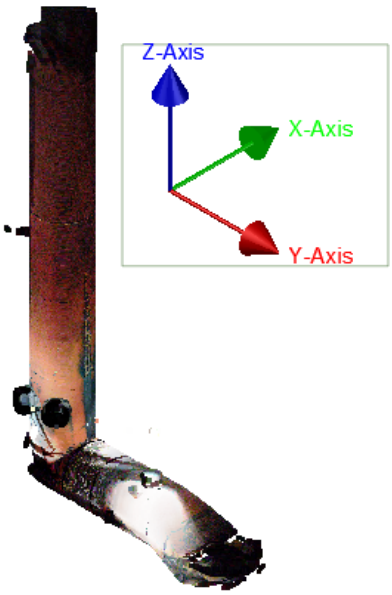
JBL Engineers Ltd was commissioned by Uniper Technologies Ltd to provide a 3D Scan and geometric analysis to the principal turbine exhaust as part of a root cause analysis due to repeated system failures. The purpose of the scanning and geometric analysis was to determine the integrity, condition, and construction of the 4m diameter exhaust shaft.

JBL Engineers conducted initial site surveys to assess the best method to achieve the maximum accuracy of scanning and any safety requirements such that relevant risk assessments and method statements could be prepared.



The project required confined space entry, JBL Engineers operatives worked collaboratively with the site operator SUEZ to conduct the entry in accordance with both JBL Engineers requirements and that of SUEZ and Uniper Technologies Ltd.

Due to the height of the exhaust shaft of more than 20m, JBL Engineers selected a line shaft tripod and 3d Faro terrestrial scanner with accuracy at <1mm. To ensure that concurrency of scans was achieved during registration, the line shaft tripod was essential.

The Line Shaft Tripod typically, able to provide scans at up to 4m extension above or below (inverted scanning) the tripod, JBL Engineers reinforced the extension rods enabling 12m extension above the tripod, and therein above the intermediate support level. This was essential such that accurate capture of the exhaust shaft was captured and that any deviations were recorded. The re-enforcement of the shaft extensions ensured a stable scanning point with no deviation.

JBL Engineers Having carried out the scans, registered the multiple scans to produce a photometric point cloud of the turbine shaft and proceeded with the analysis. The geometric analysis via AutoCAD demonstrated that the shaft was installed at an incline and that the ovality of the shaft was varied and outside recommended tolerances. JBL Engineers reported and evidenced their findings to Uniper Technologies Ltd for incorporation to their wider analysis.