

An AAM Industrial Measurement team conducted a laser tracker survey of a cold mill located in the Philippines.

Key Features and Benefits of AAM's Industrial Measurement Team:

- Offer heightened safety awareness from working on hazardous sites across various industries
- Very precise measurements using a laser tracker: $\pm 0.025\text{mm}$ permitting shape analysis
- Fully independent teams mobilise to job sites, execute the scope and supply data directly to client
- Decades of experience working on heavy industrial plants
- Rapid mobilisation from well-resourced survey department
- Job delivered prior to leaving site

Scope of Project

An AAM industrial survey team rapidly mobilised from Sydney to commence work at a steel mill south of Manila. The job entailed two days of observations and all numerical results presented to the consulting engineer prior to demobilising from the site.

The Methodology

Several permanent survey control monuments were established around the mill to permit multiple setups to be transformed into a single coordinate system. Multiple setups were required to observe the mill's centreline monuments, which were four brass disks in concrete located on the left, right, drive and operator sides of the mill. The north-south and east-west centrelines were assessed for square.

For measurement of the liner surfaces, the tracker was set on the operator side of the mill with vantage into the mill window. Observations were made to each of the posts, liner surfaces, Mae West block surfaces and other features to assist with navigation, such as bottom-of-steel of the cylindrical hydraulic rams at the top of the mill housing.

Regular checks were made against the control monuments and to already surveyed surfaces to ensure quality of measurements.



Above: A surveyor measuring the top-left liner surface with a probe

Hardware

AAM's API laser tracker 3 was deployed on this important survey campaign. The API laser tracker provides 3D coordinate measurements to an accuracy of $\pm 0.025\text{mm}$. Laser trackers are well suited to shape assessment of structures, such as mills. The liners were assessed for planarity, twist, offset from mill centrelines (longitudinal and transverse) and planarity within each liner face. All measurements are related to the mill's centreline monuments. Conventional optical equipment was also mobilised to enable checking of measurements.

The AAM team was fully self-contained with survey instrumentation, software, computer and safety equipment.

Software

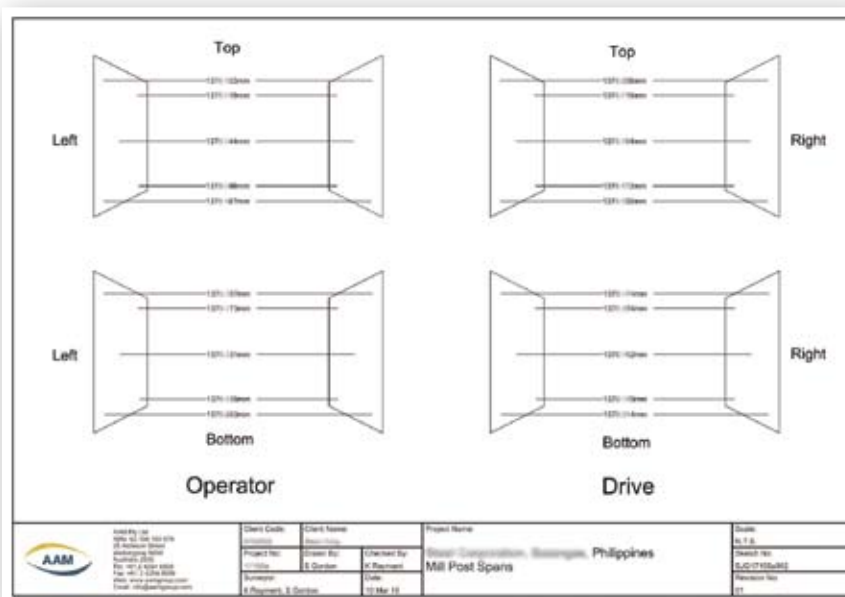
The software controlled the laser tracker and permitted immediate interrogation of measurements. Numerical results were presented in a spreadsheet and sketches compiled in a CAD and exported as PDF documents.



Above: Surveyor controlling the laser tracker

Conclusions

The measurement accuracy of this job was very clear: $\pm 0.1\text{mm}$ was required. The survey exceeded the accuracy limits of the job. The deliverables consisted of numerical data and a series of sketches confirming the numbers.



Above: Example sketch - spot measurements showing the span of the mill posts