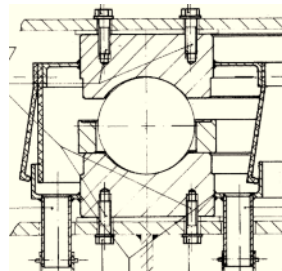


Industry: Mining – Coal & Open cast

Task: Coal Dredgers and Draglines
Slew Gear & Slew Bearing Refurbishment or Replacement

Measurement System:
3D Laser Trackers & Industrial Total Stations

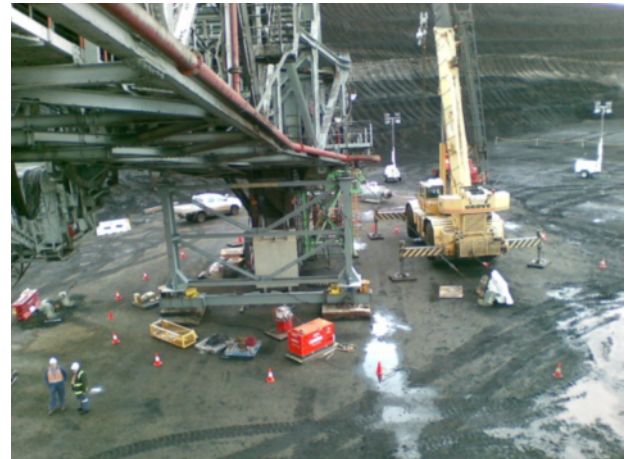
The **Slew Gears** (rack & pinion) and **Slew Bearings** (Ball Race) require replacement after several years as they wear and distort during continuous coal dredging operations. ADS provides all **Dimensional Metrology Services** in timely and coordinated manner for the various **3D measurement phases** involved in refurbishment including:



3D Measurement Phases

1. **Operational Slew Centre and CL of rotation for the Lower and Upper sections prior to jacking.**
2. **Independently referenced Coordinate Frame for each Upper and Lower base**
3. **Establishing the as-found Slew Gear and Slew Bearing positions and dimensions**
4. **Measurement of preliminary Upper and Lower Base Plates for flatness**
5. **Measurement of all existing segment bolthole positions for transfer to new manufactured segments.**
6. **QA Inspection and referencing of manufactured slew bearing segments**
7. **Installation of Gear Segments and installation of Upper and Lower Bearing segments to ring tolerances and original operational Slew Centre Lines.**
8. **Final As-built of all installed components**

1. Operational Slew Centre and CL of rotation for the Lower and Upper sections prior to jacking.



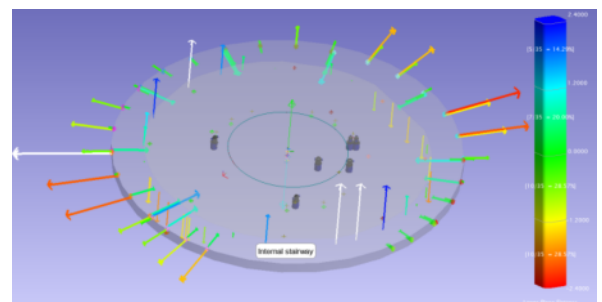
2. Independently referenced Coordinate Frame for each Upper and Lower base

- Fixed reference coordinates with uncertainties
- Reference points monitored for distortion and corrected to reference temperature throughout refurbishment.

Group - A: USMN C3							
Point Name	X	Y	Z	Ux	Uy	Uz	Mag
U204	-3252.07	300.87	66.06	0.01	0.01	0.01	0.02
U207	1065.96	-3078.07	64.50	0.02	0.01	0.04	0.04
U302	3600.62	3653.32	6.57	0.02	0.02	0.06	0.06
U303	0.06	5576.79	7.72	0.02	0.02	0.06	0.09
U304	4049.70	3649.45	13.07	0.02	0.02	0.04	0.05
U305	-5585.16	152.83	10.79	0.01	0.02	0.03	0.04
U306	-3577.79	-3921.96	4.26	0.02	0.02	0.06	0.06
U307	1.44	-5610.95	7.43	0.03	0.02	0.06	0.07
U308	3566.33	-3817.46	6.25	0.02	0.02	0.06	0.07

3. Establishing the As-found Slew Gear and Slew Bearing (and Slew Guides) positions and dimensions

- Centre comparison with slew centre and slew plane
- Design data verification
- Shape and positions of horizontal and vertical Slew Guides

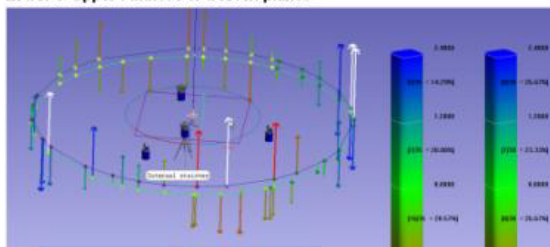


4. Measurement of preliminary Upper and Lower Base Plates for flatness

- Design bracket and grouting options and requirements
- Comparison with Upper and Lower Slew Planes
- Measurement systems could include lower order type for lower specification requirements

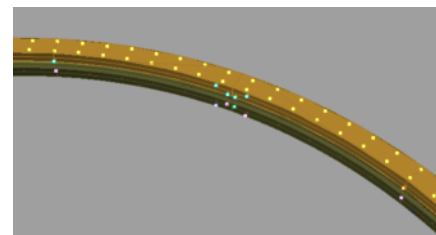
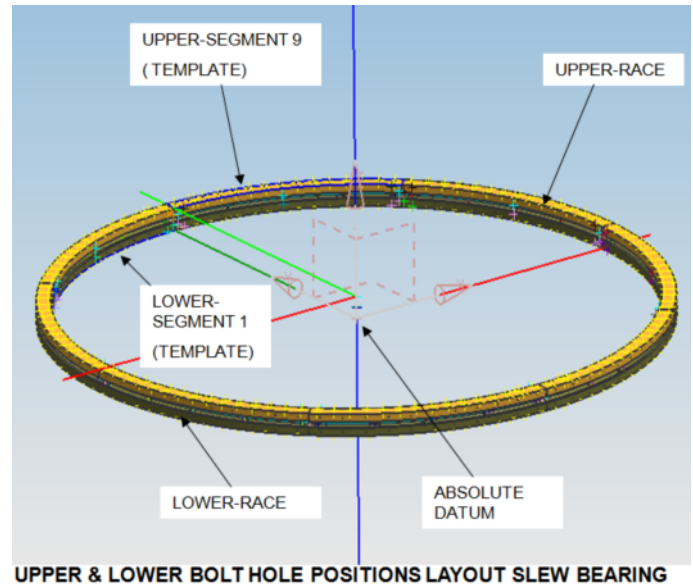
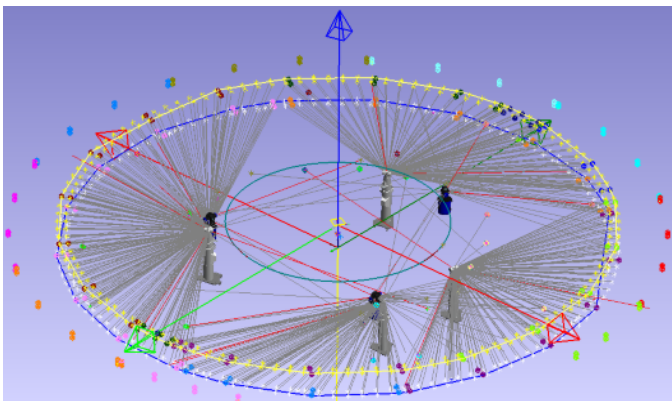


Lower & Upper Flatness to best fit planes



5. Measurement of all existing segment bolthole and drain hole positions for transfer to new manufactured segments.

- Correct datum referencing imperative for accurate machining
- Confirmation by sample template sheets to check fit to bolt holes for relevant segments



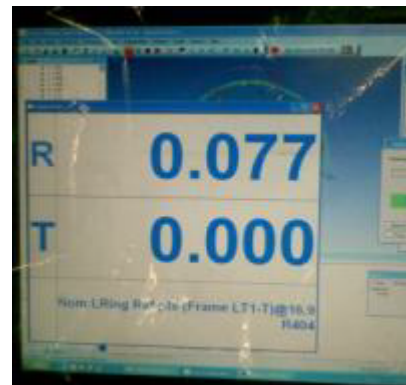
6. QA Inspection and referencing of manufactured slew bearing segments

- Segments may be checked fully assembled or individually and then mathematically assembled.



7. Installation of Gear Segments and installation of Upper and Lower Bearing segments to ring tolerances and original operational Slew Centre Lines.

- a. A real benefit during assembly, positioning and adjustment is the real time screen display of coordinate differences reducing to zero target.
- b. This phase may include provision of adjustment parameters for repositioning or replacement of horizontal and vertical Slew Guides – and their subsequent adjustment.



8. Final As-built of all installed components

- New Slew Gear Rack
- New Upper and Lower Slew Races
- New/Adjusted positions of horizontal and vertical slew guides
 - a. Summary of final positions, deviations and uncertainties
 - b. Final comprehensive formal report for sign-off records

ADS provides Alignment and Dimensional Services for any of the 3D Measurement phases associated with Slew Gear and Slew Bearing replacement/refurbishment. We can customise to any of your requirements. Call now to discuss.

Other related tasks: Bucket Wheel and Gearbox - Referencing and Alignment