

Implications of 2011 changes to AS2550-1¹ on crane life assessment

- Periodic inspections are to be conducted by an independent third party at least once a year (i.e. not the organisations either operating or maintaining the crane).
- These inspections should include an estimation of remaining design working period (DWP) according to processes and calculations summarised in a new section (9) of AS2550.1. DWP is then used to determine when a major inspection (and subsequent general overhaul) is due.
- If DWP is not estimated according to this process, then the major inspection interval is to be reduced to two-thirds of design life or, if this is unknown, to a maximum of 7 years.
- Periodic third party inspections are to include verification of the past state of loading and utilisation (as well as intended future state) as compared to the crane classifications.
- “The purpose of the assessment of DWP is to estimate accumulated duty of the crane and assess its remaining life.”¹ (p.50) “Failure to keep records of use will dictate the necessity for more frequent major inspections.”¹ (p.49)
- This is implemented by using a safety factor when estimating DWP that compensates for the unreliability in the duty recording and estimation. The safety factor ranges between 1.1 and 1.5 depending on duty estimation method, as shown in Table 9.6.2 below.
- The only method of duty estimation that does not require DWP to be reduced by a factor of safety is using an automatic recording system (e.g. Liftlog™).
- Section 9 of AS2550.1-2011 uses a slightly different calculation for DWP than preceding international standards (e.g. ISO12482-1, 1995). To apply the calculations described in AS2550.1-2011, in addition to design information, the following operating data is required:
 - Number of operating cycles;
 - Handled payloads in each operating cycle;
 - Loaded hoist time in motion and respective load;
 - Unloaded hoist time in motion and dead-load.

Table 9.6.2 from AS2550.1-2011

| Method of duty recording | factor of safety | Expected DWP for a typical crane hoist operating to its classification | Expected DWP for a typical crane structure operating to its classification |
|--|------------------|--|--|
| Automatic recording system | 1.0 | 10 years | 25 years |
| Counters and manual documentation OR Estimation based on a special, documented process | 1.1 | 9.1 years | 22.7 years |
| Estimation based on documented production of the site | 1.2 | 8.3 years | 20.8 years |
| Estimation based on undocumented, estimated production of the site | 1.3 | 7.7 years | 19.2 years |
| Crane duty history is unknown (<i>i.e. all other cases</i>) | 1.5 | 6.7 years | 16.7 years |

¹ AS2550.1-2011: Cranes, hoists and winches – Safe Use, Standards Australia International, Sydney NSW.