

FACTSHEET ON IMPLEMENTATION OF DATA LOGGERS FOR MOBILE CRANES

Background

Mobile cranes are commonly used in lifting operations at workplaces. Proper operation of mobile cranes is crucial to ensure the safety of workers and members of the public as any unsafe lifting operation could result in catastrophic consequences. Currently, mobile cranes are required to be examined by Authorised Examiners periodically and registered with the Ministry of Manpower (MOM).

2 A data logger is a device that records key operational parameters of a mobile crane, such as the weight of the load it carries, the operating lifting radius and status of safety devices, whether they have been activated or bypassed. Stakeholders, including crane owners and occupiers, could retrieve the data from the data logger to review and monitor the lifting operations.

3 With this information provided by the data loggers, they could take proactive intervention programme to prevent any unsafe operations. Data loggers can also aid in the investigations of crane-related incidents as they provide vital operational information relating the circumstances leading to the incident.

Requirement to Equip Cranes with Data Loggers

4 Over the last two years, MOM and the National Crane Safety Taskforce have been working closely with the industry on the feasibility of making the installation of data loggers a requirement for mobile cranes. Following a successful four month long pilot in 2014, MOM will require mobile cranes used in workplaces to be equipped with data loggers. The requirement is as follows:

- All new¹ mobile cranes registered with MOM on or after 1 August 2015 will have to be equipped with data loggers; and
- All existing registered mobile cranes, including those to be registered before 1 August 2015, will be required to be retrofitted with data loggers by 1 August 2018.

5 The types of mobile cranes² which are required to be equipped with data loggers are listed below.

- 601- Mobile Crane - Truck Mounted Variable Boom Length Type
- 602- Mobile Crane - Truck Mounted Fixed Boom Length Type
- 611- Mobile Crane - Crawler Mounted Variable Boom Length Type
- 612- Mobile Crane - Crawler Mounted Fixed Boom Length Type

¹ New mobile cranes means any new or imported second-hand mobile crane brought into use in Singapore.

² This classification refers to MOM's classification codes for lifting equipment.

- 621- Mobile Crane - Wheel Mounted (w/o prime mover) Variable Boom Length Type
- 622- Mobile Crane - Wheel Mounted (w/o prime mover) Fixed Boom Length Type
- 651- Mobile Tower Crane (Horizontal Boom)
- 652- Mobile Tower Crane (Luffing Boom)

Co-funding Scheme to Support Installation of Data Loggers for Existing Mobile Cranes

6 To help companies defray the cost of installation of data loggers, Workplace Safety and Health Council will launch a co-funding scheme. The Data Logger Fund for Cranes will cover 50% of the cost of installation, up to \$5,000 per mobile crane. To be eligible for the co-funding, a mobile crane will have to fulfil the following conditions:

- Registered with MOM before 1 August 2015;
- Listed as one of the types of crane in paragraph 4; and
- Have more than five years of remaining lifespan³.

7 The funding will be made available from August 2015 on a first-come first-served basis. It will cease on 31 July 2018 or when the funds have been fully disbursed. More details on the application process will be announced in June 2015. Enquires can also be emailed to funds@wshc.sg

Requirements of the Data Logger

8 The requirements of the data logger are listed in the attached appendix. It is largely mirrored after the European Standard for mobile cranes, EN13000:2010 which is recognised for its high safety standards. This standard has been widely implemented across Europe where cranes are required to be fitted with data loggers, and has also been adopted by Australia.

³ The lifespan refers to the service life of mobile cranes which is dependent on its design safe working load as indicated in the table below.

Design safe working load (Maximum Capacity)	Maximum allowable years of service from the year of manufacturing
50 tons and below	20
Above 50 Tons but not more than 100 Tons	25
100 Tons and above	30

REQUIREMENTS OF DATA LOGGER FOR MOBILE CRANES

The data logger must be able to perform functions and record operational parameters specified in the following paragraphs.

Requirement on Data Logger Functions

2 The table below summarises the functions that have to be performed by the data logger.

1	Detect and record any override key activation for the cranes safety devices (i.e. over-derricking limiter, over-hoisting limiter and rated capacity limiter)
2	Detect and record overloading occurrences (i.e. when load reaches and exceeds 100% of the cranes rated capacity)
3	Equip with data security and anti-tampering feature
4	Download recorded data
5	Generates reports

Requirement on Operational Parameters to be Recorded

3 The table below summarises the operational parameters that must be recorded by the data logger.

1	Date and time
2	Crane configuration
3	Permitted load, actual load, percentage of usage of rated capacity (for main hook and auxiliary hook)
4	Radius of load
5	Slew angle
6	Main boom angle, fly jib angle (if applicable)
7	Boom length ,fly jib length (if applicable)
8	Sequence of extension (for telescopic cranes)
9	Status of limit switches
10	Status of override key activation (for over-derricking limiter, over –hoisting limiter and rated capacity limiter)

Other Requirements

4 The data logger must be automatically switched on and operational whenever the mobile crane is in operation.

5 The data logger must be synchronised with the mobile crane as an integrated system without safety implications, undue limitations and or restrictions to the crane operation.

6 Data from the data logger shall be downloadable by interested parties, such as crane owners or occupiers, on a regular basis. The report generated shall be in a readable format that is easily comprehensible.