CICA – Vic / Tas Branch
Crane Safety Bulletin
#324 September 2023

Greetings all. Today's Bulletin is about the necessary components for calculating load mass calculations.

Crane lifting operations involve the intricate dance of immense weights and intricate mechanics, all executed with the goal of ensuring efficiency, safety, and precision.

Importance of Load Mass Calculations

The primary purpose of load mass calculations in crane operations is to prevent overloading, which can lead to catastrophic accidents, equipment damage, and potential loss of life.

Accurate load mass calculations also contribute to optimizing crane performance, minimising wear and tear on equipment, and increasing overall operational efficiency.

Factors Affecting Load Mass Calculations

Several factors influence load mass calculations when lifting with cranes. These factors need to be accurately determined to ensure safe and successful operations:

1. **Load Weight:** The weight of the load being lifted is the most critical factor. It encompasses the actual mass of the object and any additional weight due to rigging equipment, attachments, and packaging.
2. **Load Distribution:** The way the load's weight is distributed across its dimensions affects how it interacts with the crane's lifting mechanism. An unevenly distributed load can cause instability and potentially lead to tipping.
3. **Centre of Gravity (COG):** The COG is the point where the load's entire weight is concentrated. Knowing the COG is crucial for achieving balance during lifting. An inaccurate COG determination can lead to tilting or swinging loads.

4. **Rigging and Attachments:** The weight of rigging equipment, slings, and attachments used to secure the load should be included in the total load mass calculation.
5. **Dynamic Factors:** Dynamic factors, such as wind speed, crane acceleration, and deceleration, can affect load stability. These factors must be considered to prevent load swinging or tipping.

Accurate determination of load weight, centre of gravity, and distribution factors are essential to ensuring successful crane operations.

Amidst the complexity of such operations, one role stands out as indispensable: the lift supervisor. The lift supervisor is more than a mere observer; they are the linchpin that holds the entire operation together, ensuring that every aspect of the lift runs smoothly and safely.

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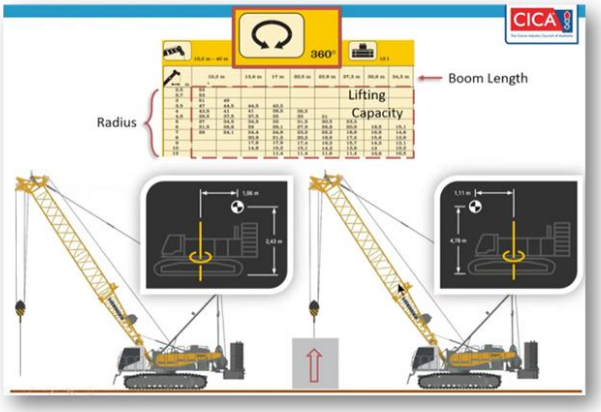
CICA's Lift Supervisor Course teaches best practices, by using appropriate formulas and considering dynamic factors.

Module 1 of the *CICA Lift Supervisor Course* covers Engineering principal basics. In this module, area and volume calculation formulas are reviewed to assist with load mass calculation.

The concept of the centre of gravity (COG) of an object is also reviewed and the principle of COG lifting is discussed. Mechanical advantage is another topic covered in this module.



The ideal candidate for Level 1 of the *CICA Lift Supervisor Course* is someone with C6 or above, HRWL crane license and an Intermediate Rigging License with at least 2 years of crane industry-related experience.

More information on the *CICA Lift Supervisor Program* is available here. If you are interested in registering for the next intake, you can do so here.

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