

Summary

There is a big offer of mobile heavy lift cranes in the world. There are different types and different models. The demand for heavy lifting cranes is increasing and these demands are changing constantly. Special features are becoming more important and that is why the diversity of types of lifting equipment is growing. In this report an overview will be given of all the different types of lifting material, models of these types will be specified and a conclusion will be made which crane will be used for what kind of operation.

Definition

In chapter 1 the definition of a mobile heavy lift crane is given.

Mobile: The crane can be transported, by itself or by other material in less than ten days.

Heavy: To limit the amount of cranes, heavy lift is a lift of 200 tons or more.

Systems and construction

There are different types of crane systems used on mobile heavy lift cranes. These systems are a characteristic of different types of cranes. These systems are: the different types of derricks, the telescopic system and the tower system. These systems can be extended with special attachments, like the jib and superlift attachments (chapter 2).

Cranes are not the only equipment for lifting. Hydraulic jacks, gantry systems, gantry towers and strand jacks are used for special lifting and these systems all have their own special feature.

A crane can be split in two different parts, the upper part and the under part. In the upper part the different types of systems can be found. The different types of systems can be used in different configurations and in combination with attachments. In the first part of chapter 3 the different configurations can be found.

The way the crane moves depends on the under part. The upper part of cranes can be mounted on:

- Rings
- Fixed platform
- Platform on Wheels
- Crawlers.

Types of mobile heavy lift cranes

All these options result in six different crane types:

1. Ring crane
2. Crawler cranes
3. All terrain cranes
4. Mobile lattice boom cranes
5. Non-mobile lattice boom cranes
6. Tower crane



Figure 1: Types of mobile cranes

1. Ring Crane (manitowoccranes.com)
2. Crawler crane (diytrade.com)
3. All terrain crane (shelax.com)
4. Mobile lattice boom crane (pixagogo.com)
5. Non-mobile lattice boom crane (www.liftok.com)
6. Tower crane (wikimedia.org)

In chapter 4 these types of cranes will be explained. The tower crane will not be handled further in this report. In the report of T.Renes “Literature study on the current worldwide offer of construction cranes and their technical specifications” the tower cranes will be handled.

Models of mobile heavy lift cranes

All the crane types have their own diversity in models created by different manufacturers. The most important specification is the maximum lifting capacity. The maximum lift load is not the only important specification. Other important specifications are: maximum radius, maximum load moment, maximum height, dimensions, the load curve and possible types of configurations.

Specifications as travel speed, ground/axle pressure, slewing speed, hoisting speed and power are important for the crawler, all terrain and mobile lattice boom cranes.

In Figure 2 an overview is given of the maximum capacity of the important specifications of every crane type. In chapter 5 to 10 the different types of cranes and their models are specified

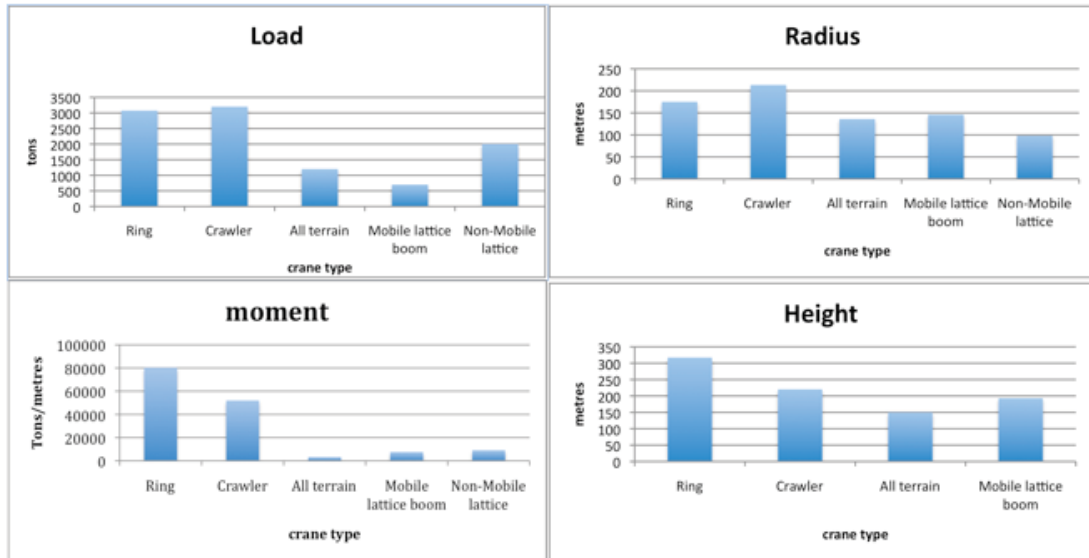


Figure 2: Overview of the important specification of the different types of cranes. Remark: Not all information is found.

A top five of cranes of the four most important specifications can be found in Figure 3. A total overview of all the cranes can be found in chapter 12.

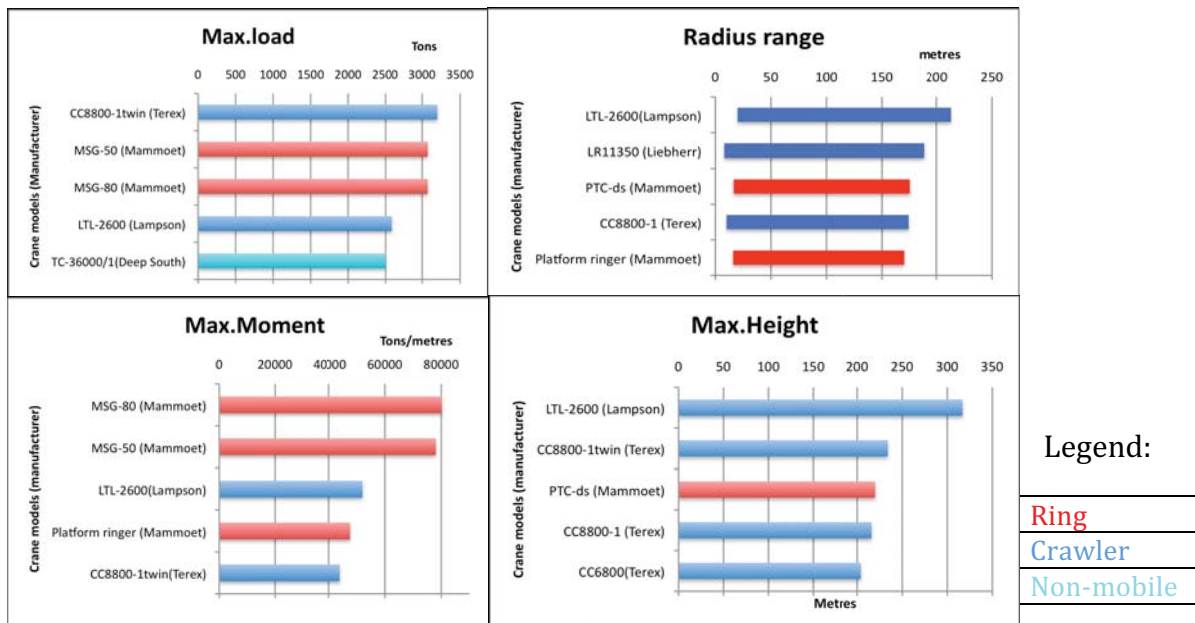


Figure 3: The top five of cranes in the most important specifications of mobile heavy lift cranes.

Conclusion

All crane types and models can be used for different lifting jobs. In

Table 1 the desired lifting jobs per crane is shown. These conclusions are based on the different abilities and possibilities of each crane type.

Table 1: Cranes and their desired lifting projects

	Load (t)	Radius (m)	Lifting jobs (estimation)
Ring crane	1300 → 3000	20 → 160	> 20
Crawler crane	100 → 3200	10 → 150	>10
All terrain cranes	0 → 1200	2,5 → 8	<10
Mobile lattice boom crane	0 → 700	8 → 30	<10
Non-mobile crane	500 → 2500	20 → 160	>10

Special lifting

When the lifting capacity is too big for a crane or the lifting is in a confined space or low overhead areas, special lifting tools are used. There are four different types of equipment:

1. Hydraulic climbing jacks
2. Gantry system
3. Strand jacks
4. Gantry tower/ strand jack gantry

In chapter 10 these special lifting tools are discussed.

Transport

To move the heavy lift over a larger distance on road two types of equipments are used; trailers and self-propelled modules transport. The maximum transport capacity can go up to 15000 tons and is done by a self-propelled module of Scheuelre. In chapter 11 the different transport equipment is displayed.