



## Anti-collision tower cranes: the revolution

With the proliferation of tower crane use for construction projects, safety is a key focus area

Workspace safety is gaining prime importance in today's industry, and the construction industry has already a reputation of being accident-prone. No doubt, the industry is following the motto: safety first is safety always.

One of the most useful equipment in the construction work is tower crane, which has been revolutionised with innovation in both power and load-control systems.

We have discussed with several leading crane manufacturers and discovered how the tower crane industry has made revolution in safety.

### Never before importance

"The importance of tower crane anti-collision systems in today's construction industry is higher than it has ever been before," says Lingaraju M S, General Manager, Tower Crane, Anupam Industries Ltd.

He continues, "Nowadays, while a lot of emphasis is being given on safety in all fields, there is a legislation

in the international level through OHSAS-18001, enforcing more and more safety regulations, particularly in construction."

According to Rajeev Kumar, CEO - Crane Division, DCS Techno Services Pvt. Ltd., "Very soon it [safety] becomes the need for the market, and the reason being is day-by-day project site complexity due to innovative designs."

Mr Kumar also sounds little concerned because most of the cranes is left on-site at the mercy of crane operator judgement, whereas it's very difficult for any individual to focus on safety if more than one crane or equipment working at the same site.

### Technology for tower cranes

In congested metro cities, it is not uncommon to see multiple tower cranes working in close proximity to one another, either on neighbouring sites or within the same site. Special care must be taken to ensure that these cranes are kept clear of each other's working envelopes; however, it is not

always possible to isolate the working envelopes or areas of multiple cranes. In such cases, it is prudent to invest in an anti-collision system to monitor multiple cranes and prevent untoward incidences.

"Modern anti-collision systems give live data to crane operators through an LCD screen mounted in their cabins," explains Tushar Mehendale, Managing Director, ElectroMech. "These systems include a central computer integrated

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Managing Director, ElectroMech

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Director - Terex Cranes India

with multiple sensors and wireless communication equipment. Data about each crane, obstacles and other limitations can be fed into the system through a user-friendly interface. The data is relayed to the individual tower cranes wirelessly and changes can be made on the fly."

Manitowoc Cranes is also delighted that anti-collision technology for tower cranes is on the rise. "If two or more tower cranes overlap on a job site, you need the technology — it's as simple as that," says Gurdeep Singh, Country Manager - Crane Care, Manitowoc Cranes.

He also emphasises, "Tower crane users in India are becoming more aware of the need for anti-collision systems, but we can always do more. We want to promote the technology and ensure that every tower crane in India is prepared for

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the busy and crowded job sites they will encounter."

Manitowoc has joined hands with anti-collision technology specialist Ascorel and developed the top tracing II anti-collision system which is a step forward for the tower crane industry.

#### Present innovations

As safety has become a key area that requires focus, the industry is coming up with innovative safety features and solutions, every day. Mr Mehendale mentions three unique technologies: tower crane anti-collision protection, zone (obstacle) anti collision and boundary protection.

In the first technology, if the cranes operate at the same height, the system can detect the location of the jibs and prevent collisions through alarms or restricting motion. If cranes operate at different heights, the position of the hook of the higher one is used to predict collisions with the structure of the crane at the lower level.

With zone (obstacle) anti-collision, systems can detect up to 10 prohibited zones in which the hook or jib are not allowed to operate. Whereas in boundary protection, up to 30 points can be set to record a boundary, beyond which the hook will not be permitted to operate.

#### Avoiding collisions

In a construction project, many a time it can be seen that there are multiple tower cranes without much room to manoeuvre loads through. The result? Collisions.

While talking about avoiding collisions, Mr Lingaraju shares, "When the risk of collision is detected, the anti-collision system calculates the relative distance in real time between collision paths, and alerts both the operator and neighbouring cranes via an LCD monitor as well as audibly. If the operator doesn't react to the signal, the anti-collision system will slow down or shall stop the motions to avoid entering a forbidden area and shall allow a reverse movement to prevent the collision. This system lets

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Rajeev Kumar, CEO - Crane Division,  
DCS Techno Services Pvt. Ltd.

the tower crane remain in the operator's control until safe working distances are breached."

#### Safety norms

There are different products in market for anti-collision of crane. Bharat Brahmhatt, Head - Projects, RNA Corp., advocates that every system for tower cranes should comply with all prevailing regulations.

He explains, "Only suitably qualified and authorised person should carry out installation, setting and maintenance of same. Site manager must make



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10 ←

sure that system related user guide is available all time for consultation by the crane operator and ground staff. Generally this data exchange between each device is provided as standard by radio transmitting on public frequency band. This system should solve the



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Gurdeep Singh, Country Manager - Crane Care, Manitowoc Cranes

problems arising from the risk of collision between hoist ropes of an overflying crane and jib and counter jib of crane below."

Mr Brahmbhatt also talks about its zoning function. He adds, "This system is not intended to substitute for the judgment of crane operator rather it is designed to provide as many indications as possible to enable operator to adjust his behaviour in accordance with the situation encountered. The crane movement will only ever be slowed down or disabled, if continued it would risk breaching the safety boundaries by the system. System constantly informs the operator the position of crane jib radius, slewing angle, travelling distance, warning light or alarm will indicate dangerous movement. It also indicates position of other crane (in case site is using no. of cranes) or any fixed objects nor by jibs."



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### Safety vs profit

Ravin Wadhawan, Director - Terex Cranes India, sees safety as independent to profit or growth. To him, safety is an absolute thing, not a relative variable. "If our team members or customers don't come back safely home after working, nothing else matters," he assures. ■