

Blowing in the wind

Bill Smith discusses why wind is the “invisible enemy” of crane operators.

Last year, *Popular Mechanics* ran an article titled, “Why Cranes Keep Falling.” The year prior, in 2015, *Wired* ran a piece called, “How Foul Weather and Physics Can Turn a Crane Into a Tragedy.” What I find notable here is that *Wired* and *Popular Mechanics* aren’t construction publications and they’re not magazines that typically cover crane and rigging topics. Yet, here these magazines are, taking up coveted editorial space with substantial articles on crane accidents.

Obviously, this tells us something. A few things, actually. For starters, it tells us that cranes are given increasingly more attention, awareness, and airtime. Due to a myriad of factors, including a number of high-profile crane accidents in the U.S. and abroad, stories about cranes seem to be appearing online and in print much more frequently than ever before – and these articles are coming from a broader number of outlets. In some ways, journalists are just following the old adage, “If it bleeds, it leads,” but I also think that people are also just more aware of the awesome power of cranes; and since the construction market continues to trend upward (some estimates forecast six percent growth in the construction sector this year), there are more and more cranes to look at.

Both the *Wired* article and the *Popular Mechanics* article discuss events that occurred where wind played a factor – which is relevant because we’re just about two months into hurricane season, which lasts from June 1 to November 30. And according to the latest forecasts released by Colorado State University, the National Oceanic Atmospheric Administration, and The Weather Company, “The 2017 Atlantic hurricane season is forecast to be more active than historical averages with regard to the number of named storms.”



THE AUTHOR

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Wind is the “invisible enemy” of crane operations. It’s unpredictable and can change in an instant and create dangerous operating environments. But it’s also common, and the risk it causes is something that training and preparation can help mitigate.

OSHA’s guidance

According to the OSHA *Small Entity Compliance Guide, Bad Weather Precautions*, “When a local storm warning has been issued, the competent person must determine whether it is necessary to implement manufacturer recommendations for securing the equipment. The competent person must adjust the equipment and/or operations to address the effect of wind, ice, and snow on equipment stability and rated capacity.”

Additionally, on their website, OSHA writes about load charts and wind speeds: “Load charts do not generally take wind speeds into consideration. If the load chart or the operating manual does not have information on wind speeds and derating information, the crane

manufacturer should be consulted. The procedures applicable to the operation of the equipment, including rated capacities (load charts), recommended operating speeds, special hazard warnings, instructions, and operator’s manual, must be readily available in the cab at all times for use by the operator. (See 29 CFR1926.1417(c)) The maximum allowable wind speed and derating information need to be posted conspicuously in the cab or on the load chart.”

So what OSHA says about wind as it pertains to crane operations is essentially threefold: load charts do not generally take wind speeds into consideration; the crane manufacturer should be consulted if the operating manual doesn’t have wind speed information; and operating procedures, maximum allowable wind speeds, special hazards, warnings, and instructions need to be posted conspicuously in the crane’s cab.

Liebherr, one of the world’s most well known crane manufacturers, also writes about wind and the affect it has on crane operations in a 56-page training

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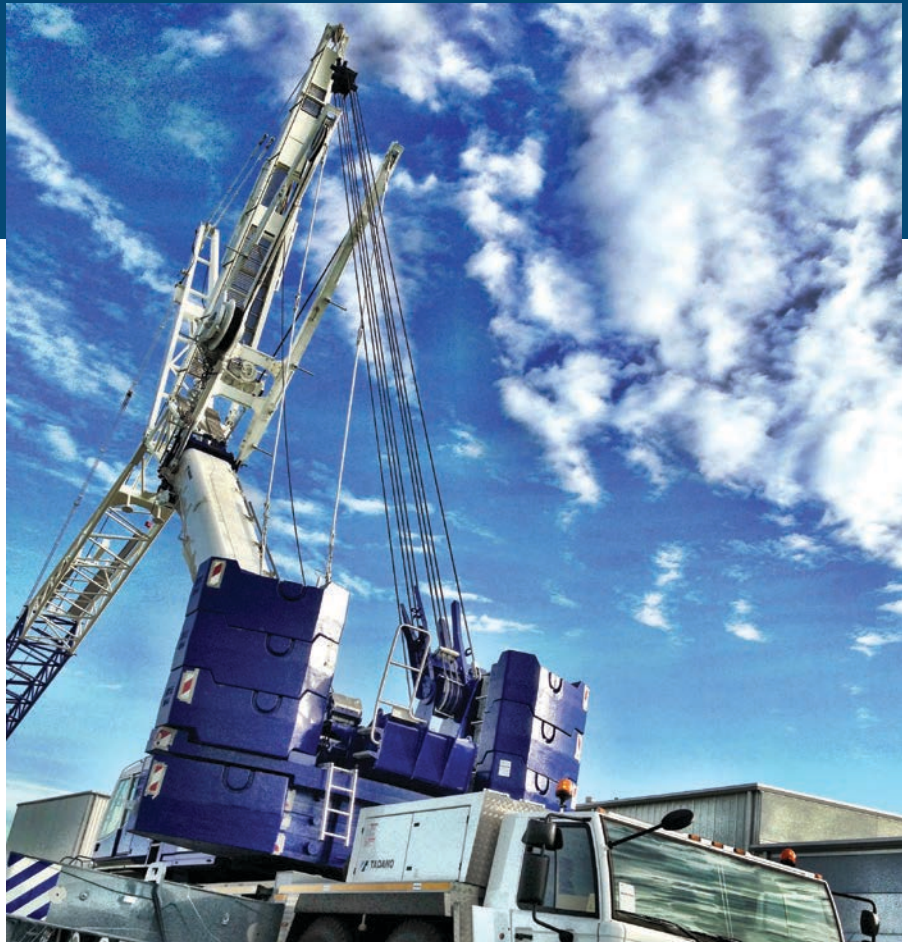
document the company has issued called *Influence of Wind of Crane Operations*:

“With crane operations, the wind conditions can present a potential danger that should not be underestimated. The crane driver must ensure that the crane is not exposed to any wind that could exceed the limit set by the crane manufacturer. It is also necessary to make the correct decision and implement the correct measures at the right moment to ensure the crane will never become unstable due to wind influences.”

Five practical points

According to Mark Krajci, product manager for all-terrain cranes at Tadano America, there are five practical points to consider when it comes to wind.

- 1** Prior to a lift, you should anticipate and study the possible effects of wind on the load on the crane. The larger the load and sail area, the lower the wind speed the load can safely be lifted in. (There is a formula for this in the operator's manual.)
- 2** Prior to any lift, check the latest weather reports for possible high wind conditions and plan accordingly. The Site Supervisor, the Lift Director and the Operator all have a part in this plan.
- 3** Always have access to and know where the Beaufort wind chart and deduction notes are located in the operator's manual and load charts.
- 4** It is essential that the crane be properly set up. Out of level cranes only get worse in high-wind conditions
- 5** Never carry out lifting operations when the permissible wind speed has been exceeded. Know what this speed is, and, if equipped, use the anemometer.



Understanding how wind affects the daily operation of a crane is critical to ensuring safety and preventing accidents.

Wind is one of those variables we can't see, but that doesn't mean we shouldn't give it our undivided attention. Wind presents critical daily challenges, especially as it pertains to how an operator goes about controlling a load. While it's true that wind affects a variety of variables in a crane lift, including the crane's capacity, even just a slight wind makes it challenging for an operator to keep a load steady. Load drift, load spin, swinging the boom, and holding the load in place are all factors the operator has to adjust for and work to control when wind is present during crane operations. Understanding the risk and preparing accordingly is the only way to truly mitigate adverse outcomes.

The NBIS Risk Management team proudly serves on the ANSI B30.5 standards committee, as well as the SC&RA Crane Safety Committee, providing regulatory guidance to members and policyholders regarding safe work practices. Talk to your insurance agent to “experience the difference” our team of industry experts can make to your operations and insurance coverage.

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	WIND FORCE (Knots)	WMO Classification	Appearance of wind effect on land
0	Less than 1	Calm	Calm, smoke rises vertically
1	1-3	Light air	Smoke drift indicates wind direction, still wind vanes
2	4-6	Light breeze	Wind felt in face, leaves rustle, vanes begin to move
3	7-10	Gentle breeze	Leaves and small twigs moving, light flags extended
4	11-16	Moderate breeze	Dust, leaves and loose paper lifted, small tree branches move
5	17-21	Fresh breeze	Small trees in leaf begin to sway
6	22-27	Strong breeze	Larger tree branches moving, whistling in wires
7	28-33	Near gale	Whole trees moving, resistance felt walking against wind
8	34-40	Gale	Whole trees in motion, resistance felt walking against wind
9	41-47	Strong gale	Slight structural damage occurs, slate blows off roofs
10	48-55	Storm	Seldom experienced on land, trees broken or uprooted, “considerable structural damage”
11	56-63	Violent storm	
12	64+	Hurricane	