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THE IMPORTANCE OF RELIABLE, SUSTAINABLE, ENERGY SAVINGS AND ROBUST STORM BRAKING SYSTEMS IN TIMES OF CLIMATE CHANGE

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CTD
TOC AMERICAS
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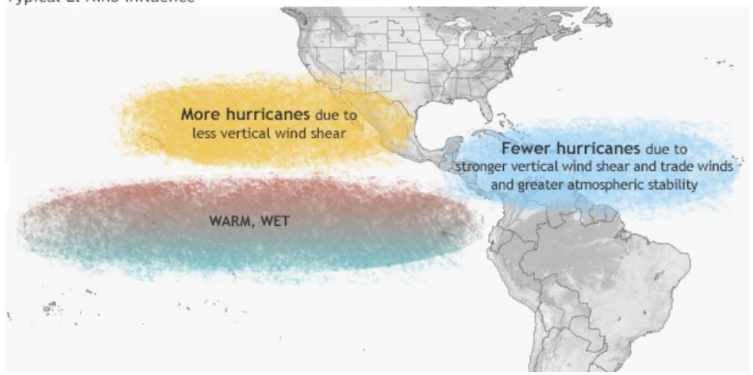
CLIMATE CHANGE AND ITS INFLUENCE IN TROPICAL STORMS INCREASE

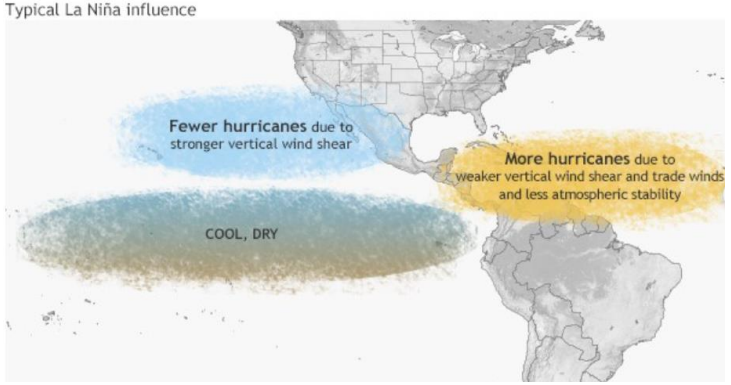
SOME FACTS

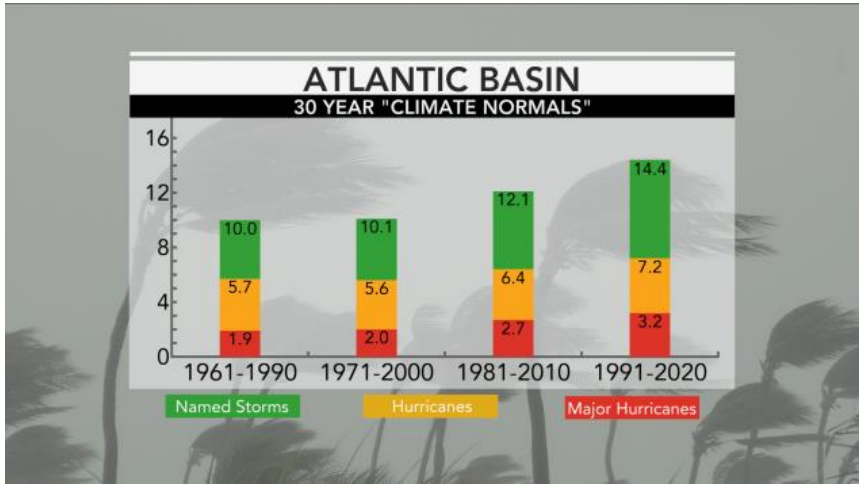
After a year of “El Niño”, we are now in neutral conditions, headed for “La Niña” which is predicted to start between September and January. However, there is a chance “La Niña” never fully develops and we remain in a neutral state. While many factors affect weather patterns, the transition from “El Niño” to “La Niña” could signify a more active Atlantic hurricane season.

Typical El Niño influence



Typical La Niña influence





Source: www.accuweather.com

In the Atlantic tropical cyclone basin, which includes the Atlantic Ocean, the Caribbean Sea, and the Gulf of Mexico, hurricanes originate primarily in the North Atlantic and to a lesser extent in the Caribbean. Areas at greatest risk include the Caribbean island countries north of Trinidad, Mexico, and the southeastern United States, Central America north of Panama, and to a limited extent the northern coast of South America.

Type of Storm	Wind speed
Tropical depression	< 60 km/h
Tropical Storm	< 61 km/h-117 km/h
Hurricane	118 km/h <

Hurricane cat.	Wind speed
Category 1	118-153 km/h
Category 2	154-177 km/h
Category 3	178-209 km/h
Category 4	210-250 km/h
Category 5	250 km/h <

Table 2. Saffir Simpson scale.

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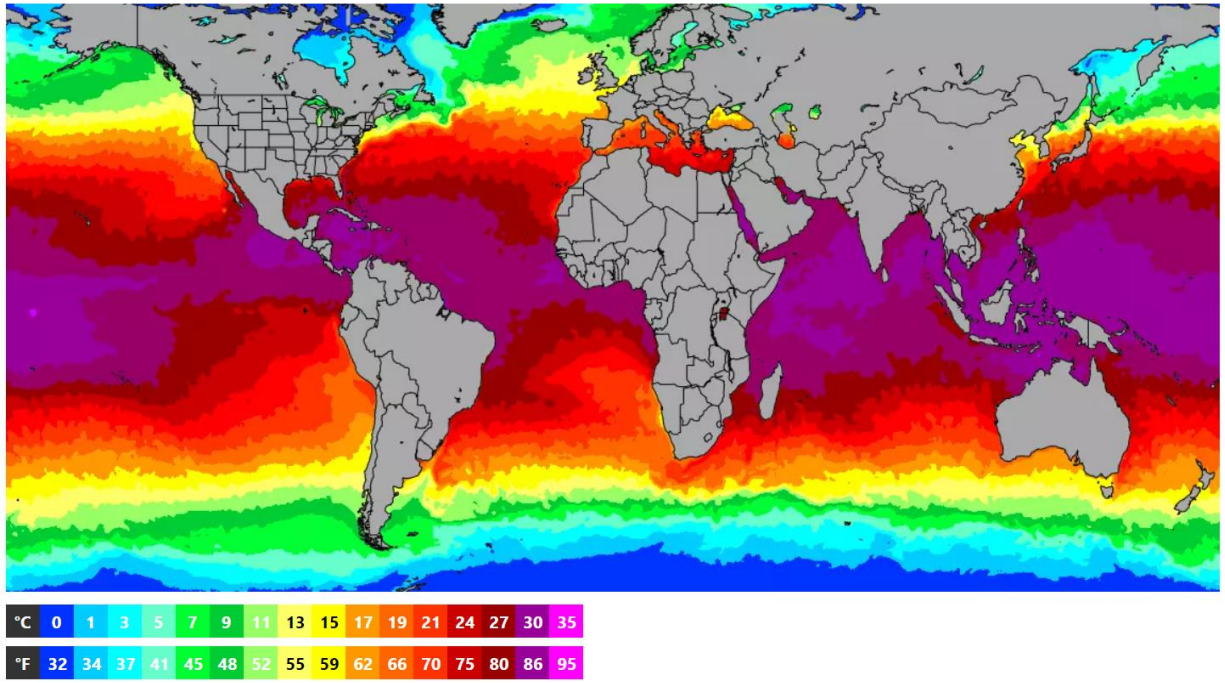
“The 2024 Atlantic hurricane season is expected to have above-normal activity due to a confluence of factors, including near-record warm ocean temperatures in the Atlantic Ocean, development of La Niña conditions in the Pacific, reduced Atlantic trade winds and less wind shear, all of which tend to favor tropical storm formation”.



Source: www.seatemperature.org

The waters from the coast of Africa to the Gulf of Mexico are more than unseasonably warm: they have never been this hot. However, the water temperature has remained stable, which discourages the air from rising and forming organized storms.

IS YOUR CRANE SAFE ENOUGH?

Weather conditions, which cause strong winds, can mean an enormous risk not only for the operation of a port terminal, but more critically the probability of accidents and human losses.

EVERY PORT TERMINAL MUST HAVE:

- ✓ SAFETY PROTOCOL TO STOP OPERATION AND SECURE GANTRY CRANES SUBJECTED TO WIND SPEED, INCLUDING OPERATOR TRAINING
- ✓ COMPLEMENTARY PROTECTION MEASURES AGAINST HURRICANE IMPACT
- ✓ CORRECT MAINTENANCE PLAN OF GANTRY AND STORM BRAKES AS WELL AS WARNING SYSTEMS SUCH AS ANEMOMETER
- ✓ REAL-TIME MONITORING INFORMATION AGREEMENT WITH GOVERNMENTAL AND LOCAL METEOROLOGICAL INSTITUTIONS

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ENSURE YOUR CRANE SAFETY

- When an accident occurs it is too late
- **Prevent such a situation in advance**
- Storm brakes cost less than 1% of the investment for a new crane

- The global climate is changing
- The quantity of cranes is rising
- The probability of accidents increases
- The trigger can be of different origins
- But storm brakes are always underestimated

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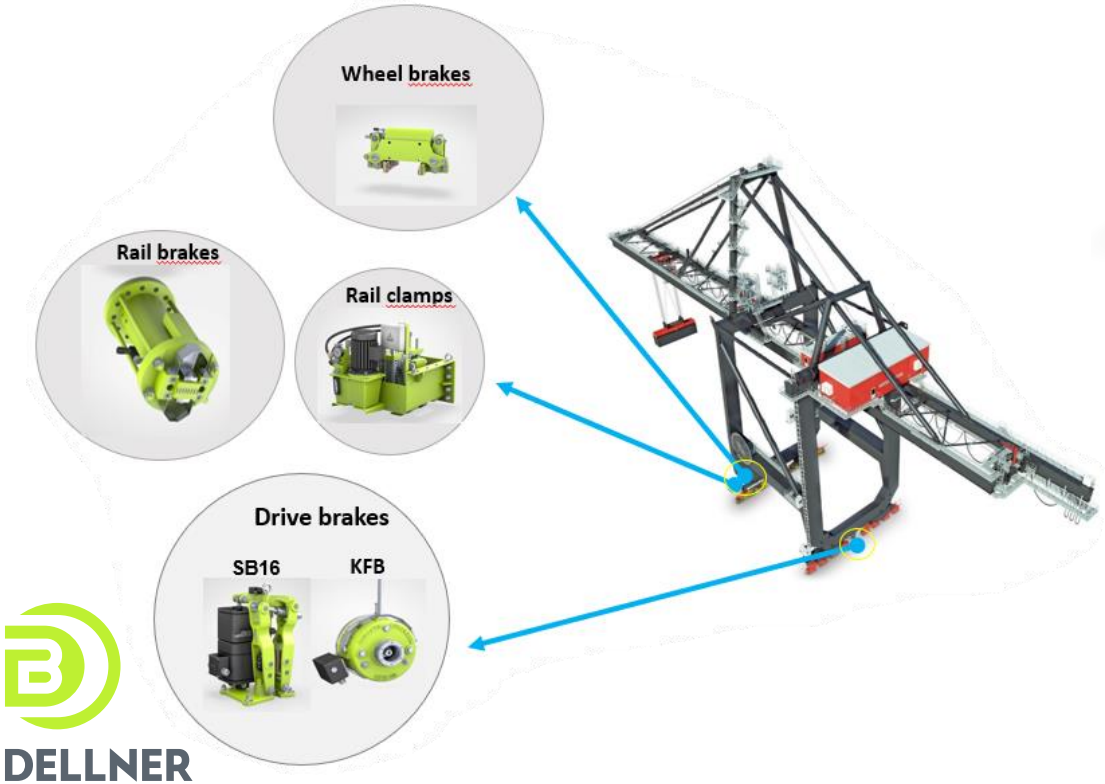
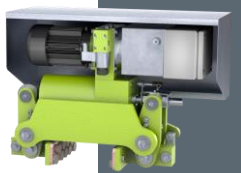
ENSURE YOUR CRANE SAFETY



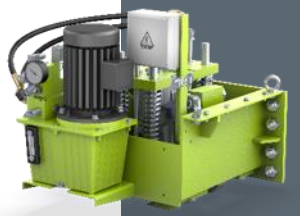
WEATHER CONDITIONS

80 km/h
DRIVE BRAKES



100 km/h
WHEEL BRAKES

160 km/h
RAIL CLAMPS /
RAIL BRAKES



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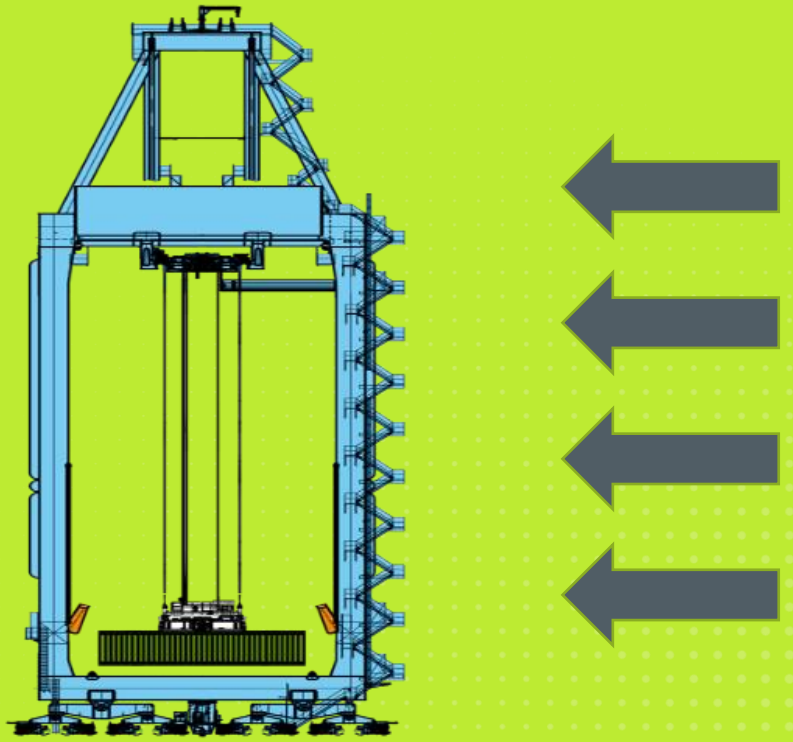
HOW TO BE MAKE A CORRECT SELECTION? START FROM THE IMPORTANT INFORMATION

CRANE SURFACE

The crane surface is the main important information to calculate properly the wind force acting on the crane itself

- The information about the surface must be as much accurate as possible.
- A drawing of the crane would be the best information to have.
- Important: The shape coefficient must always be applied!



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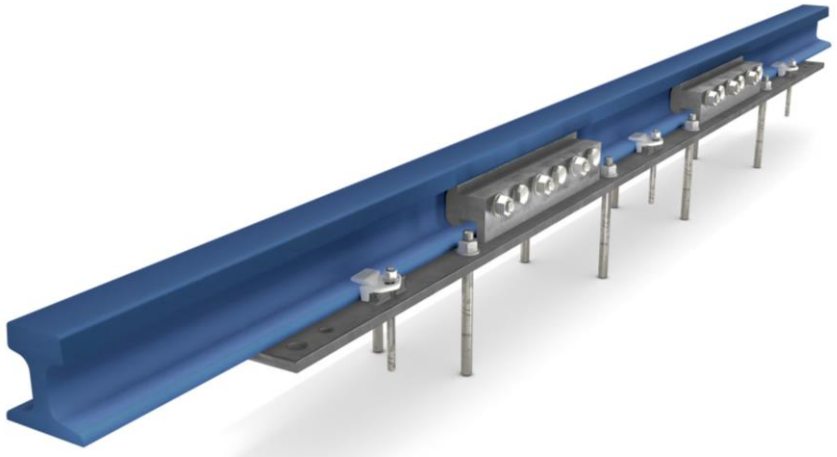
RAIL PROFILE

- The railhead width must be measured, to know the minimum and maximum value.
- Rails can be worn but they can also be deformed due to the heavy weight of the crane
- The rail clamps must be designed to work with the correct tollerance between the two values.

Is also important to know any additional information like:

- Type of clips or fixing system
- Type of rail joint
- Dimension of the rail trench

Deformed rail



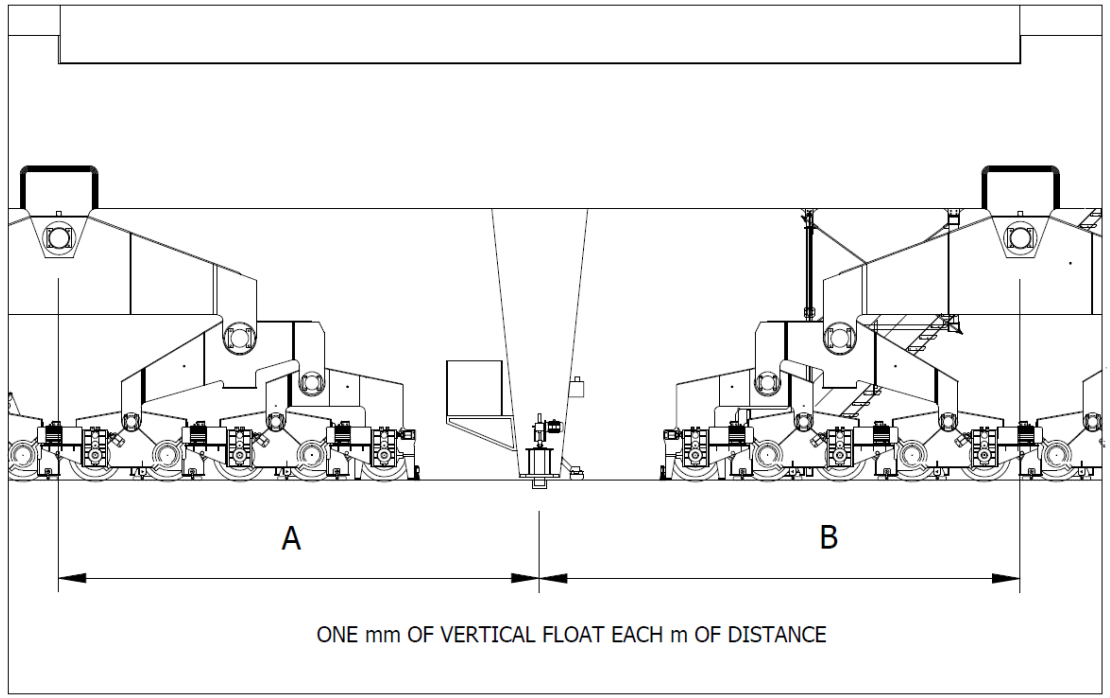
POSITIONING OF STORM BRAKES

- The installation position of the storm brakes (rail brakes and rail clamps) is very important because is closely related to the vertical and horizontal float

- If the brake is installed in the middle of the sil beam, take the distance between one equalizer or the other

- In case the brake is not in the middle

  Vertical float = (2*A*B)/(A+B)



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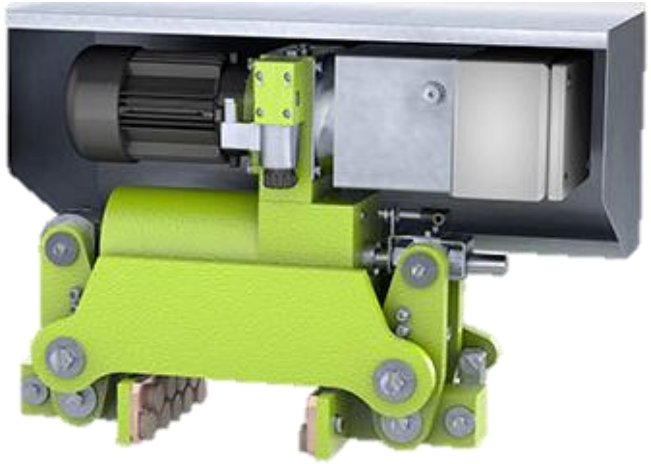
SUSTAINABLE SOLUTIONS FOR STORM BRAKES

Introducing the new electric Wheel Brake DBRBe

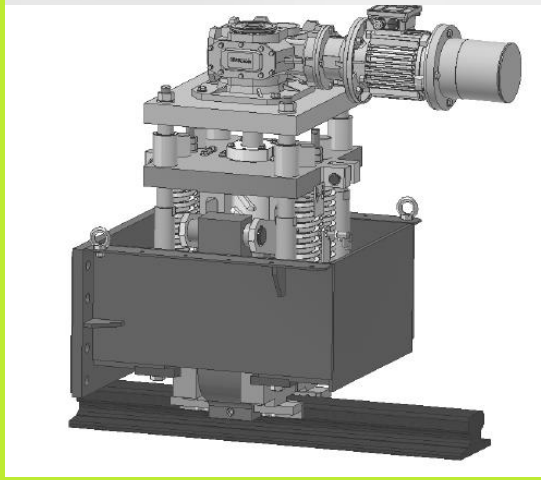


- ✓ Compact a fully integrated design
- ✓ Up to 91 kN holding force
- ✓ Heavy duty
- ✓ Friction coefficient = 0,4
- ✓ Adjustable closing time = 1 ÷ 12s
- ✓ No piping required
- ✓ Dynamic operation capability
- ✓ Easy maintenance
- ✓ Emergency manual opening device

TYPE	FORCE (kN)
DBRBe11–0056	56
DBRBe11–0072	72
DBRBe11–0091	91

A wheel brake has roughly a maximum holding force of 80 kN, and it has no use to increase that to let‘s say 120 kN because from roughly 80 kN a crane start to slide on the rails due to wind power ***

Introducing the new 100% electric Rail Brake DBSZe



- ✓ Compact a fully integrated design
- ✓ Ball Screw activation
- ✓ High friction coeficient
- ✓ Easy maintenance
- ✓ Electro magnetic brake
- ✓ Closure delay system
- ✓ Emergency manual opening device
- ✓ No hydraulics components
- ✓ Electrical release
- ✓ Easy to understand and service
- ✓ Fail safe

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BRAKING SOLUTIONS

DELLNER BUBENZER is a global leader in the design and manufacture of braking systems. Our unrivaled braking equipment offers customized stop-action solutions for a wide variety of industries from sea to sky, and everything in between.

For decades DELLNER BUBENZER products have been recognized worldwide as innovative braking solutions that are precision engineered to meet the highest quality standards.

WORLDWIDE FOOTPRINT

STORM BRAKES 100% ITALIAN MANUFACTURING

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