

Wind Gust Forecasting: Managing Risk to Construction Projects



CAN YOU PREDICT THE WIND GUSTS THAT COULD PUT WORKER SAFETY AT RISK?

“SITE-SPECIFIC” AND “EQUIPMENT-SPECIFIC” WEATHER FORECASTS FOR CONSTRUCTION



High winds can be very disruptive to construction sites.

Every year many injuries and millions of dollars in property damage occur as a result of high winds at construction sites. Damage and injury can occur as a result of:

- Unsecured materials being blown from structures and falling to the ground;
- Loose materials being blown into and damaging the façade of nearby buildings;
- Structural damage caused by wind loads on tarps and other coverings / fabrics;
- Crane fatigue / failures, etc.;
- Wind action on swing-stages;
- Insufficient advance warning for emergency managers.

Are you making decisions using the best available technology?

In most jurisdictions, national weather services provide warnings when wind speeds at ground level are predicted or measured to exceed certain critical thresholds. However, this information does not reflect the complex aerodynamic conditions of urban areas or wind speeds at different working heights which is critical for tall buildings.



What is Envision?

Envision is an automated computer modelling system that combines weather forecast technology with the science of wind engineering and complex aerodynamics to provide site and height specific wind gust forecasts to contractors for tall building, bridge, and other construction sites. Some features of Envision include:

- Use of multiple weather forecasts to provide warning up to 48 hours in advance of wind gusts or adverse weather conditions that typically result in high wind gusts;
- Forecast information that can be viewed over the Internet using web browsers, smart phones, tablets, etc.;
- Available 24 hours a day.

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Key Features

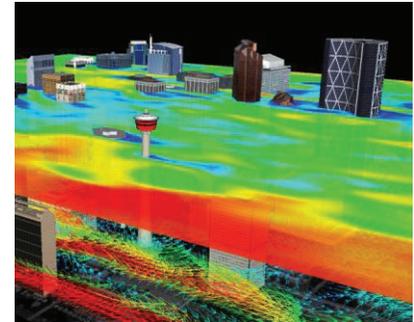
- High resolution “site-specific” and “equipment-specific” weather forecasts - accounts for influence of neighboring buildings and local terrain for wind gusts at construction site, provided at grade, and specific structure elevations.
- Wind gusts, precipitation, and temperature prediction - 48 hrs in advance, updated every 3 - hours.;
- Forecasts - email or SMS at pre-defined time intervals to on-site personnel, safety officers, city officials, etc..
- Weather alerts - define custom thresholds for wind speed, precipitation, temperature, forecast delivery methods and alert frequency.;
- Lightning prediction and detection - 30 mile radius.;
- Automated incorporation and relay of National or regional Weather Office alerts (e.g., Environment Canada, US NWS alerts);
- Advanced auditing that keeps a record of each weather forecast, alert, and the recipients;

Benefits:

- Improved safety - construction site crews and equipment.
- Improved productivity - factoring weather information in to daily job - site scheduling.
- Reduced liability for construction site managers - reports are kept of each weather forecast, alert and the recipients.
- Reduced risk of unsecured materials being blown from structures.
- Reduced risk of tragedy arising from unexpected wind gusts during lift operations.
- Reduced risk of fatigue or failures of cranes, scissor lifts and other lifting equipment.
- Reduced risk of catastrophic wind action on swing - stages or scaffolding.
- Reduced claims - potential for less claims.

Who can benefit from the System?

- Municipalities concerned about wind related accidents on construction sites;
- Construction companies and general contractors concerned about site safety;
- Heavy lift operators (e.g., bridge sections);
- Emergency responders / response personnel;
- Operations managers for structures such as an operable roof on a stadium;
- Insurance Companies.



CASE STUDY: City of Calgary, AB, Canada RWDI is running operational forecasts for the City of Calgary to provide detailed meteorological information to Calgary’s construction community. Subscriptions are mandatory and incorporated as part of the building permit issued by the City.



“The wind warning system has been implemented and we received data from the system four hours before we received a warning from Environment Canada,”

said Bruce Burrell, director of the Calgary Emergency Management Agency (CEMA).