

MAINTENANCE

Operations • Service & Repair • Inspection • Safety • Equipment • Condition Monitoring • Lubrication

Preventing a Flame-up

Keep natural areas around wind turbines from becoming a fire hazard.

By Travis Dees



Fire prevention is a big land-management issue right now, especially after El Nino drenched most of the nation earlier this year. Weeds are at an all-time high, just as fire season kicks in. The past decade of droughts and catastrophic wildfires have left parched landscapes ill prepared. Project site assessments and maintenance practices should be carefully considered, especially given the large assets at stake on wind projects.

Dry vegetation can be an extreme fire hazard around wind turbines.

TIME FOR FIRE PREVENTION

A wet growing season was a blessing for farmers, ranchers, and watersheds; however, as the temperature warms up and new vegetation reaches maturity, it's not exactly a blessing for wind projects.

Dry vegetation is an extreme hazard, especially around

potential ignition sources. Owners and operators probably could expect more visits from fire departments this year thanks to El Nino, so make sure you're in compliance. Most municipalities or county fire departments have vegetation management regulations to remove or mow to a prescribed height before the start of the fire season. It is also important to know inspections are conducted throughout the dry season, and the property must be maintained in order to remain in compliance. Even if property owners abate their property early in the season, there is potential for re-growth.

For some power facilities, managing vegetation around equipment where an ignition source could occur is another best management practice (BMP). Around power transformers and inverters, vegetation should be removed from the ground in a radius of not less than 15 feet.

Clearing this radius will help prevent a fire from starting if the component has a major failure that causes sparks. Inside the substations, fenced parameters should be removed to bare ground or rock. Low-growing vegetation is often encouraged as a means of mitigating dust, but it should be mowed to a height of four inches since this is an effective way to minimize fire hazards while allowing for low ground.

Most fire requirements ask for large defensible spaces for the site, but codes vary by region. Clearing around power poles, turbines, transformer pads, and junction boxes is essential, along with the other obvious places on sites such as roads and buildings. A 10-foot radius around power poles will help prevent a fire from starting if there is any arching due to a failed component. Trees and other large brush should be cleared at least eight feet below a power line.

Maintaining roads also will help as a firebreak if a brush fire starts. Most roads in high-risk fire areas need a 20-foot distance on either side after a project has been constructed, allowing for access and acting as a firebreak.

Using parameter roads and fence lines as a firebreak is a site's best defense for the spread of fire whether the source is internal or external. Keeping the groundcover and fence line maintained may mean seasonal inspections and services to remove windblown vegetation that has accumulated. Vegetation in fence lines can become a tinderbox, so

this has to be cleared throughout the season, too.

Fire safety starts with mowing as one small spark from a mower or a mower's blade hitting a rock can result in a big fire. Given the high-dollar cost of the site owner's assets at stake on wind fields, hiring safety-conscious licensed professionals with proven track records is recommended, especially given the chemical and mechanical weed-abatement strategies used.

TUMBLEWEEDS

One of the biggest weed challenges often faced is contending with the dreaded tumbleweeds (also known as Russian Thistle). In the Antelope Valley alone last year, World Wind & Solar (WWS) removed more than 2,000 tons of tumbleweeds — that's 4 million pounds — from both solar and wind projects. Tumbleweeds can cause serious problems when they get caught in equipment. In order to prevent these problems, WWS tells clients it's better to be proactive than reactive.

Each tumbleweed can produce up to 200,000 seeds if it's not removed from the site, and it also contains oils that can be flammable. WWS will mow them while they're still green and physically remove them from the site. WWS also uses a chemical weed abatement program that requires careful planning and permitting.

There are other professionals to turn to. A great source for assistance in identifying potential fire risk is often times the county fire department. WWS recommends inviting them on site to help with a proper proactive approach.

REDUCING DAMAGE

Preparation now will reduce potential damage later. Set up operations and maintenance vendor agreements. Look at your policies: Do they follow best practices discussed here? Can your staff effectively manage the ongoing tasks that need to be performed? Between the wet-winter season, followed by what is expected to be a dry summer season, fires are a looming danger for projects with catastrophic consequences. Given all of these potential devastating effects from improper land management, wind pros should take steps to minimize damage and protect their projects. ↴

Online Heater Selection Tool Mounts and Dismounts Bearings

The new SKF online heater selection tool introduces an easy, convenient, and highly accessible resource to make the right pick among heater technologies for mounting or dismounting bearings and similar workpieces in an application.

Based on a bearing's designation or input of key parameters, the tool chooses the appropriate heater for a

job from SKF's comprehensive product range, including electric hot plate, induction heaters, and fixed induction heaters. Suitable heaters are grouped into "mounting" and "dismounting" families for quick reference.

The practice of hot mounting and hot dismounting of bearings and workpieces has served to reduce the risk



of damage to a bearing, shaft, or workpiece and help increase bearing service life and machine reliability. Ultimately, proper heater selection is critical for application success.

For standard bearings, the online heater selection tool requires only an SKF bearing designation to de-

termine the appropriate heater. In the case of other bearings or annular components, the online tool can select a suitable heater after users simply enter parameters defining the application and specifying the dimensions and weight of the bearing or workpiece.

Either way, the heater selection tool serves as a practical resource for use by customers or distributors anywhere and anytime. ↵

Source SKF

For more information, go to www.mapro.skf.com.

New Tech for Inspections, Servicing, and Condition Monitoring

Romax InSight is launching two products to reduce cost and increase the effectiveness of wind turbine operations and maintenance (O&M).

EcoCMS is a new, low-cost condition monitoring system (CMS) for wind turbines. EcoCMS is aimed at making high performance CMS more affordable for wind farm owners, operators and OEMs. EcoCMS interfaces with Romax InSights' Fleet Monitor software — a hardware independent platform for condition monitoring

and reliability analysis. Romax uses its Fleet Monitor software to deliver condition-monitoring services to more than 3.5 GW of assets worldwide and offers technology transfer, training, and condition monitoring services to new ecoCMS users.

Romax's focus continues to be implementing a step change in the value of predictive maintenance for the wind industry.

"Romax has been working in the field of condition monitoring for many

years and in vibration engineering for decades, and we understand the requirements of CMS users very well," said Ashley Crowther, global vice president – InSight. "In fact, almost everyone we spoke to was frustrated at the high cost of CMS in the marketplace and need the improved ROI from more affordable CMS hardware."

Through a multi-year rollout, ecoCMS has built a strong track record of installation and fault detection on a large number of wind turbine

types including GE 1.5 MW, Vestas V80 2 MW, Siemens 2.3 MW, and many sub-megawatt machines around the globe. This track record has given Romax 100 percent confidence in the hardware and its damage detection capability, including class-leading performance for main bearing and planet bearing faults.

“Over the last few years, a lot has changed in the field of CMS and data acquisition,” said John Coultate, head of engineering development. “Firstly, the idea of putting ‘intelligence’ in the data acquisition box or in the sensors has proved to be unnecessary — this just drives up cost and the limitations on data storage and transmission are not relevant these days. Secondly, the explosion in embedded computing means that high performance systems can be deployed at very low cost, particularly compared to other condition-monitoring systems in the market — most systems today rely on an older and high-cost approach to architecture.”

FIELD PRO

Field Pro is a new a mobile/web application for wind-farm inspection and servicing to bring the wind industry further toward data-driven O&M. In the current O&M practice, there is a large volume of valuable data flowing in from the field including service and inspection reports, problem resolution, checklists, and photos. Much of this data is unused or lost, so the value is not leveraged, and so much money and time is wasted on administrative tasks for reporting and record keeping.

With the release of Field Pro, a step-change is possible for managing wind farm data by transitioning to mobile and cloud technology. Pen-and-paper-based checklists and work instructions become obsolete. Software organizes maintenance and inspection data automatically as soon as data is collected by smartphone. Synchronized devices and streamlined data transfer remove

the tedium and error from transferring data from borescopes, thermal cameras, and other O&M tools. Managers and technicians can access data in the cloud from anywhere in the world using the web portal.

“Although wind turbines are a progressive technology, O&M data management is largely stuck in the previous century,” Crowther said. “Field engineers still use pen-and-paper checklists, and the quality of work depends entirely on an individual’s experience; consistency is lacking. Adding this release to our InSight platform, we enable our customers to implement data-driven O&M practices, to maximize productivity and to increase quality.”

“Field Pro makes it possible for all trained technicians to perform service and inspection to the highest standards, regardless of their expert experience,” said Won Shin, Field Pro product manager. “With a mobile

device, the technician can follow detailed step-by-step guidance built by relevant experts while performing the required procedures. With just a few taps, a report is automatically generated and uploaded to the cloud. By having the entire team’s reports on the cloud, a manager has real-time access to field data, facilitating instant communication between the office and the field team while they are still uptower. Managers can also visualize and track any issues for the entire wind farm using the Field Pro web portal with no extra effort, allowing decisions driven on accurate data from the field.”

As a result of the two new technologies, Romax InSight expects to improve O&M quality and reduce O&M costs. ↴

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