

Tech

'Might save life'

Tech aims to 'predict' power lines problems

LOS ANGELES, Dec 3, (AP): **B. Don Russell** wasn't thinking about preventing a wildfire when he developed a tool to detect power line problems before they cause equipment failures, blackouts or even deadly accidents.

The electrical engineering professor at Texas A&M University figured he might save a life if his creation could prevent someone from being electrocuted by a downed live wire.

But fire prevention may be his product's biggest selling point in California and other places that have experienced devastating wildland blazes blamed on electrical equipment.

"If we can find things when they start to fail, if we can find things that are in the process of degrading before a catastrophic event occurs, such as a downed line that might electrocute someone or a fire starting or even an outage for their customers, that's kind of the Holy Grail," Russell said.



Russell

The technology he bills as a one-of-a-kind diagnostic tool called Distribution Fault Anticipation is now in use in Texas and being tested in California by Pacific Gas & Electric Co and Southern California Edison. The utilities have been blamed for some of the most destructive and deadliest fires in California.

Texas A&M said the technology will also be tested in New Zealand and Australia, which is currently reeling from destructive wildfires.

The tool detects variations in electrical currents caused by deteriorating conditions or equipment and notifies utility operators so they can send a crew to fix the problems, Russell said.

It can anticipate many problems in their early stages — sometimes years before they cause an outage — or direct a utility where to pre-emptively shut off circuits to prevent sparking wildfires, which utilities in California are now doing during fire conditions.

Developed

Before the technology was developed, electric companies often didn't know they had a problem until there was a failure or a customer called to report sparks on power lines or a loss of electricity.

"The assumption the utility has to make today is it's healthy until we get a call that says somebody's lights (are) out," Russell said. "By then the fire's started or the outage has happened or the person's electrocuted."

Pedemales Electric Cooperative Inc that serves about 330,000 customers outside San Antonio and Austin, Texas, began implementing the system after successful tests that began in 2015. The utility serves areas so rural that before the technology was installed, electricity powering a pump on a well could have been off for days before being detected by a farmer.

The devices installed at substations are now trouble-shooting all kinds of problems, said Robert Peterson, principal engineer for the utility.

"We've found tree branches on the line. Failing arresters. Failing capacitors. Failing connections," Peterson said. "It's pretty amazing."

In California, the testing process has just begun and there are no results yet, according to PG&E and SoCal Edison.

In Southern California, the software is running on just 60 of Edison's 1,100 circuits in the utility's high-risk fire zone, which accounts for about a quarter of its total circuits.

It's just one of several tools the utility is testing to continue to modernize its system.

"There is no silver bullet," said Bill Chiu, managing director of grid modernization and resiliency at SoCal Edison. "This is really more of a preventive measure. ... The important point is this will be one of the suite of technology that will help us better assess the condition of the grid."

Chiu said the technology was not at the point where it could be used by the utility to determine where to shut off power when dangerous winds are forecast during dry conditions. He also said it won't pinpoint problems but can help dispatch crews closer to the source of equipment that needs to be fixed, saving time that would be wasted patrolling miles of power lines.

One question is whether the technology is economically feasible to deploy across tens of thousands of miles of power lines, Chiu said.

At an expense estimated between \$15,000 to \$20,000 per circuit, it could cost the utility \$22 million in its high-risk fire area and that doesn't include installation, operation and maintenance costs.



In this image taken from NASA video, Italian astronaut Luca Parmitano (lower right), holds a bundle of new pumps for the Alpha Magnetic Spectrometer as he and US astronaut Andrew Morgan work to revitalize a cosmic ray detector outside the International Space Station on Dec 2. Monday's spacewalk is the third in nearly three weeks for the pair and is the culmination of years of work to repair the Alpha Magnetic Spectrometer. (AP)

Climate

Current decade heading for temperature record

Warming harms human health

GENEVA, Dec 3, (RTRS): Climate change is harming human health as more people suffer from heat stress, extreme weather and mosquito-borne diseases including malaria, the World Health Organization (WHO) said on Tuesday.

The UN agency, in a report issued a day after a climate summit began in Madrid, urged governments to meet ambitious targets to reduce heat-trapping carbon emissions saying it could save a million lives a year through lower air pollution alone.

"Health is paying the price of the climate crisis. Why? Because our lungs, our brains, our cardiovascular system is very much suffering from the causes of climate change which are overlapping very much with the causes of air pollution," Maria Neira, Director of WHO's Department of Environment, Climate Change and Health, told a news briefing.

Yet less than 1% of international financing for climate action goes to the health sector, she said, calling it "absolutely outrageous".

Global temperatures could rise sharply this century with "wide-ranging and destructive" consequences after greenhouse gas emissions hit record levels last year, international climate experts warned last week.

"WHO considers that climate change is potentially the greatest health threat of the 21st century," said WHO expert Diarmid Campbell-Lendrum.

"The reason for that is that unless we cut our carbon emissions, then we

will continue to undermine our food supplies, our water supplies and our air quality — everything that we need to maintain the good health of our populations," he said.

The same sources cause air pollution and climate change, Campbell-Lendrum said, adding: "So about two-thirds of the exposure to outdoor air pollution is from burning of fossil fuels."

"WHO estimates that over 7 million people a year die from indoor and outdoor air pollution. That is where the big win is," he said.

Risks

Some 101 countries responded to WHO's survey about the risks from climate change — but not big players including India and the United States.

"Over two-thirds have assessed that they have increased risks from heat stress, from injury and death from extreme weather, from food, water and vector-borne diseases and those range from everything from cholera to malaria," Campbell-Lendrum said.

Meanwhile, the past decade is almost certain to be the hottest on record, weather experts warned on Tuesday, painting a bleak picture of vanishing sea ice, devastating heatwaves and encroaching seas in a report launched at a climate summit in Spain.

An annual assessment of the Earth's climate by the Geneva-based World Meteorological Organization (WMO) underscored the stakes at two weeks

of talks aimed at shoring up the 2015 Paris Agreement to avert catastrophic global warming.

"Heatwaves and floods which used to be 'once-in-a-century' events are becoming more regular occurrences," WMO Secretary-General Petteri Taalas said in a statement.

"Countries ranging from the Bahamas to Japan to Mozambique suffered the effect of devastating tropical cyclones. Wildfires swept through the Arctic and Australia," he said.

The report also noted that surges in sea temperatures known as "marine heatwaves" which devastate underwater life had become more common.

The report said the concentration of CO2 in the atmosphere hit a record level of 407.8 parts per million in 2018 and continued to rise in 2019. Opening the climate summit on Monday, United Nations Secretary-General Antonio Guterres had warned that 400 parts per million had once been considered an "unthinkable" tipping point.

A drumbeat of dire reports from climate science in the past year has fuelled environmental activism, prompted some companies to commit to slashing emissions and raised concerns among investors about the stability of asset prices.

Nevertheless, delegates in Madrid are facing an uphill battle to persuade major emitters to embrace the kind of radical change needed to shift the Earth's climate system onto a more habitable trajectory.



This Oct 23, 2019 file photo, laborers lift a large basket filled with coal before loading it into a truck for transportation in the village of Godhar in Jharia, in the eastern Jharkhand state, India. (AP)

Discovery

Vikram debris found: NASA said Tuesday that it has found the debris from India's moon lander, which crashed on the lunar surface in September.

The US space agency released a photo showing the site of the lander's impact and the debris field, crediting an Indian engineer for helping locate the site.

The engineer, **Shanmuga Subramanian**, said he examined an earlier NASA photo to locate the debris.

The space agency said in a statement that Subramanian first located the debris about 750 meters (half a mile) northwest of the main crash site.

"It took days of work to find the crash site," Shanmugham said. "I searched around the north of the landing spot and found a small little dot. When I compared it to the Lunar Reconnaissance Orbiter images of the site from the last nine years, I located the debris and reached out to NASA."

The 33-year-old engineer announced his discovery on Twitter on Oct 3, after which NASA performed additional searches in the area and made an official announcement.

The space agency said that after receiving Subramanian's findings, its team "confirmed the identification by comparing before and after images."

NASA also said, "Despite the loss, getting that close to the surface was an amazing achievement." (AP)

Thunberg arrives in Europe: Climate activist **Greta Thunberg** arrived Tuesday by catamaran in the port of Lisbon after

a three-week voyage across the Atlantic Ocean from the United States.

The Swedish teen sailed to the Portuguese capital before heading to neighboring Spain to attend the UN Climate Change Conference taking place in Madrid.

Her arrival coincided with a new scientific report saying there is mounting evidence that the world is getting ever hotter.

Thunberg hitched a renewable-energy ride from the United States, joining an Australian family on their 48-foot (15-meter) yacht.



Thunberg



Subramanian

The white catamaran carrying Thunberg sailed slowly up the River Tagus under blue skies and a stiff breeze. Thunberg's father, Svante, was also on the boat as it approached the Lisbon quayside.

Chile's Environment Minister Carolina Schmidt, saluted Thunberg's role speaking out about the threat of climate change.

"She has been a leader that has been able to move and open hearts for many young people and many people all over the world," Schmidt said at the summit in Madrid. (AP)

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