Robots rev up Southern Company’s quest for future energy solutions

A technology that helps doctors perform surgery, scientists explore the surface of Mars or homeowners keep their living rooms clean may soon be put to work in the Southern Company system.

Southern Company researchers are testing the use of unique, remote-controlled robots in various industry settings. Recently, they took their photovoltaic-plant inspection robot to the Southeastern Solar Research Center on the campus of the Southern Research Institute in Birmingham, Alabama, to test it for field applications.

The robot’s camera can capture thermal images of each solar panel. The thermal images can provide clues to potential problems with panel cells. Addressing these issues early can help avoid equipment damage and keep solar plant performance at an optimum level.

“We realized that as operations and maintenance of solar facilities become more important, one of the things that can help is good visual and infrared inspections of the solar panels using automation,” said Will Hobbs, Southern Company research engineer and project lead. “Solar facilities can span hundreds of acres, and a robot can provide a more effective inspection.”

Currently, there is no industry standard regarding the frequency of infrared inspections at solar plants. In some cases, panels are inspected only as part of a plant’s commissioning. Performing regular infrared inspections with robots could prove to be the most cost-effective option in many cases.

“Although more research and development is needed, this innovative technology has good potential to enhance our ability to continue providing customers with clean, safe, reliable and affordable energy,” Hobbs said.

Solar panel inspection is not the only potential use for robots within the Southern Company system’s operations. Researchers are currently exploring opportunities for robots for substations, generating plants, transmission and distribution lines and hydro facilities.

In addition, Southern Company – through its operating utilities in Alabama, Florida, Georgia and Mississippi – has been involved for some time in the FIRST Robotics program, which seeks to encourage more students to participate in science, technology, engineering and math (STEM) education.

As part of that commitment, the company in January joined 10 other electric companies and the Edison Electric Institute (EEI) as sponsors of FIRST Robotics competitions and the FIRST Tech Challenge across the country.

This initiative will be managed by the Center for Energy Workforce Development, a consortium of electric, natural gas and nuclear utilities, and their associations, including EEI and many of its member companies.
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• Managed about $800 million in environmental research and development over the past decade
• Operating and managing the U.S. Department of Energy's National Carbon Capture Center, testing the next generation of technologies to reduce greenhouse gas emissions
• Conducting the United States' largest demonstration of carbon capture on a pulverized-coal power plant at Plant Barry
• Helped develop innovative TRIG™ 21st century coal-gasification technology, which is being marketed worldwide
• Developed the nation's only research facilities dedicated to testing technologies for managing water resources and reducing mercury emissions related to power generation
• Completed initial deployment of 4.4 million "smart meters," which are capable of providing information that can help customers manage their energy usage more wisely and save money
• Invested more than $9 billion in environmental controls, reducing emissions more than 80 percent while increasing electricity generation as much as 40 percent to meet customers' growing need for energy
• Working with diverse partners and supporting innovative environmental projects to conserve wildlife and habitat across the Southeast


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• Subsidiary Georgia Power's Plant McDonough switched from coal-fired to natural gas-fired technology; coal-to-gas conversions underway in Alabama, Georgia and Mississippi
• Subsidiary Southern Power operating 100-megawatt wood-fired biomass plant, one of the nation's largest, in Texas
• Subsidiary Southern Power and partners operate or are constructing nine solar plants — including the recently announced 131-megawatt facility in Georgia; company ownership totals more than 460 MW
• Current and planned solar power additions in Georgia over the next three years projected to total more than 900 megawatts under contract, more than any other utility that operates without government mandates
• Subsidiaries in Alabama and Georgia contracted to receive wind energy from Oklahoma and Kansas
• Energy-efficiency programs across the Southern Company system have avoided the need for the equivalent of enough energy to power Savannah, Georgia and Birmingham, Alabama for one year

More information at: http://www.southerncompany.com/about-us/leadership/ceo/tom-on.cshtml

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