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By Ken Irvin of Sidley Austin LLP, and Joe Wadsworth of Vitol Inc.

COVER FOCUS: COAL TOP PLANTS

A Japanese Project Demonstrates a Carbon Neutrality Pathway for Coal Power

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The integration of carbon capture-ready technology with a fuel cell is part of a demonstration project at a coal-fired power plant in Japan. The Osaki Cool-Gen facility, in Hiroshima Prefecture, is showing how coal-fired power can be produced with near-zero emissions.

Shanghaimiao Part of China's Push for More Efficient Coal Plant Designs

18

China continues to build coal-fired power plants, which gives their power generation companies the opportunity to test new technologies to make such plants more efficient, with reduced emissions compared to earlier facilities. One of the newest plants is a 1-GW unit of an eventual 4-GW facility that will provide power for one of China's major industrial regions.

FEATURES:

UTILITY SPOTLIGHT

Southern Company: A History of a Prolific Power Technology Pioneer

20

Southern Company is a leading energy company serving 9 million customers through several subsidiaries. The company provides clean, safe, reliable and affordable energy through electric operating companies in three states, natural gas distribution companies in four states, a competitive generation company serving wholesale customers across America, a leading distributed energy infrastructure company, a fiber optics network, and telecommunications services.

POWER TRANSITIONS

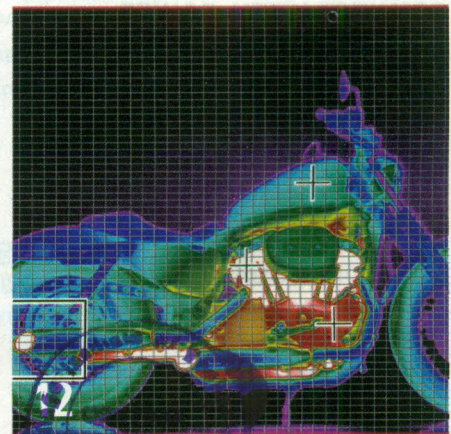
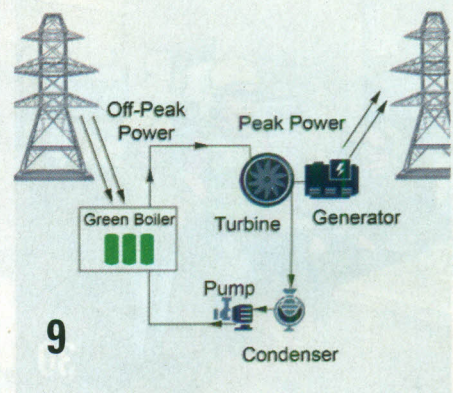
Station Life Extension Through Coal-to-Gas Conversion

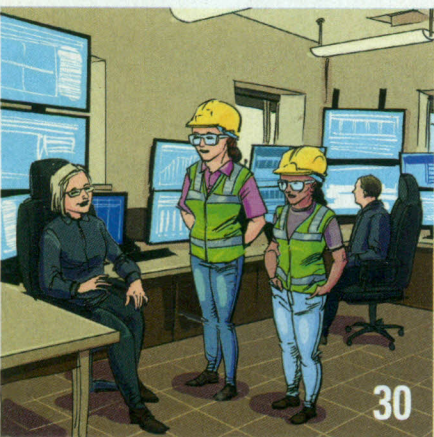
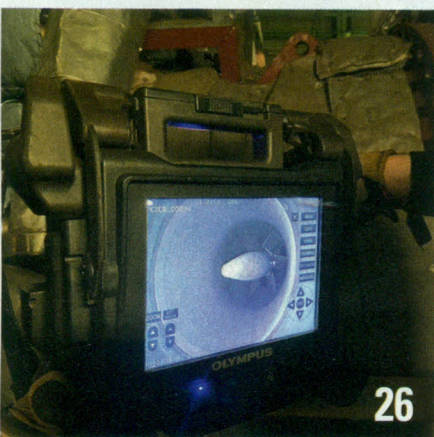
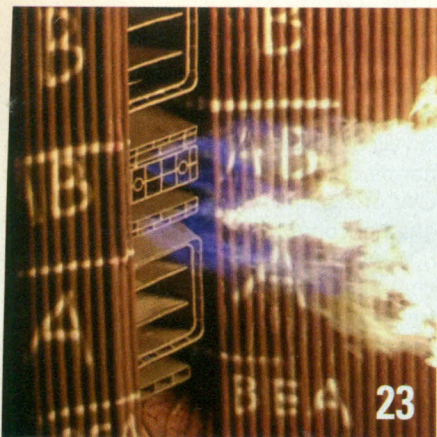
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Converting a coal-fired power plant to run on natural gas is a complex task. Executing a project from conception through commissioning, particularly with an eye toward the ideals of shared risk and shared success, brings a unique approach to project execution. These techniques can be replicated to keep other power plants in operation, achieving continued power generation from an existing facility.

ON THE COVER


The Shanghaimiao coal-fired power plant utilizes advanced once-through ultrasupercritical boilers sourced from Babcock & Wilcox Beijing. When the four-unit station is completed, it will deliver up to 4 GW of electricity to Shandong province on the country's eastern coast via the 800-kV, 10-GW Shanghaimiao-Shandong ultra-high-voltage direct current (UHVDC) transmission line. *Courtesy: State Power Investment Corp. Integrated Smart Energy Technology Co. Ltd.*







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OPERATIONS & MAINTENANCE

The Role of Videoscopes in Gas Turbine Inspections: Insights from the Field 26

A remote visual inspection can be an effective alternative to a traditional gas turbine inspection. Advanced videoscopes available today provide excellent visibility and imaging, easy measurements, and more comprehensive reporting.

TRANSMISSION & DISTRIBUTION

Innovating Grid Resilience from the Outside In 28

Utilities and operators of transmission and distribution systems are increasingly looking for ways to make the power grid more reliable and resilient. The process of grid hardening involves more than upgrading assets in the field—it also requires software solutions and better techniques to gather data.

MARNIE SURFACEBLOW

Combined Cycle Plants: Know Your Limitations and Keep Your Plant Both Online and Operating Efficiently 30

While most combined cycle plants were built to operate as baseload units, many are now being asked to cycle more frequently. This can result in heat rate loss and poor unit performance, as well as leading to increased plant outages. In this month's episode, Marnie and Maya are asked to help optimize a plant dealing with those types of issues.

WASTE TO ENERGY

The Power of Cow Manure: How Farms of the Future Are Transforming Waste-to-Energy Operations 34

Anaerobic biodigesters are proving to be a sound investment when it comes to transforming waste-to-energy operations, specifically benefiting the agriculture industry by providing a ready source of renewable energy.

Small-Scale Biodigesters Are Getting a Big Improvement in Thermal Control Web

Small-scale biodigesters experience shutdown without proper thermal control. However, a new solution offers an inexpensive and passive thermal control system that can easily be adapted to existing and newly fabricated biodigesters to increase operational time, and ultimately, biogas production. (Visit [powermag.com](https://www.powermag.com) and search "Biodigesters Thermal Control" to read this online-only exclusive.)

Waste-to-Energy Plants Suffer from Unplanned Shutdowns Caused by Boiler Failure Web

A recent survey revealed that equipment failures in waste-to-energy and biomass power plants were responsible for a total of 22.9 days of unplanned shutdowns in 2021, and 43% of equipment failure classifications were boilers. One of the most common contributing factors behind boiler failure is corrosion. (Visit [powermag.com](https://www.powermag.com) and search "Unplanned Shutdowns Caused by Boiler Failure" to read this online-only exclusive.)

CONNECTED PLANT

How Private Wireless Solutions Enable Digital Power Plants' Transformation Web

An industry standards-based broadband technology supports current mobile voice and wireless data applications, and enables and fuels digital operations technologies, such as enterprise-wide asset management, process optimization, and data integration, as well as improved worker communications, safety, and facility security to further the digital transformation of power generation plants. (Visit [powermag.com](https://www.powermag.com) and search "Private Wireless Solutions Enable Digital Power Plants" to read this online-only exclusive.)

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Even California's Governor Realizes Nuclear Power Is Key to a Clean Energy Future 36

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Keeping Diablo Canyon Running Past 2025 Is Not the Answer to California's Energy Future 37

By Kevin Kamps of Beyond Nuclear, and Jane Swanson of San Luis Obispo Mothers for Peace

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