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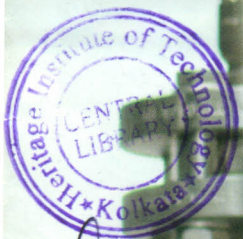
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The Future of Combined Heat & Power

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Renewables Need More Domestic Production of Minerals 16
By Karol Kahalley, Laura Granier, and Erica Nannini, Holland and Hart LLP

COVER FOCUS: COMBINED HEAT & POWER

A Complex Landscape for the Future of Combined Heat and Power 18

Combined heat and power (CHP), a mature distributed resource, faces headwinds as the world races to decarbonize, owing to its reliance on fossil fuels. But the CHP market is adapting. Along with key market shifts, the sector is leading power sector incorporation of low-emission fuels, such as renewable natural gas and hydrogen.

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ENERGY STORAGE

New Technologies, New Sites Supporting Growth of Energy Storage 22

Energy storage, whether from batteries, pumped hydropower, thermal systems or other technology, is benefiting from the trend toward electrification. It also is growing in importance as a way to support the integration of renewable energy to the power grid.

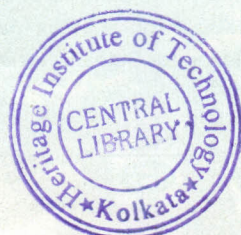
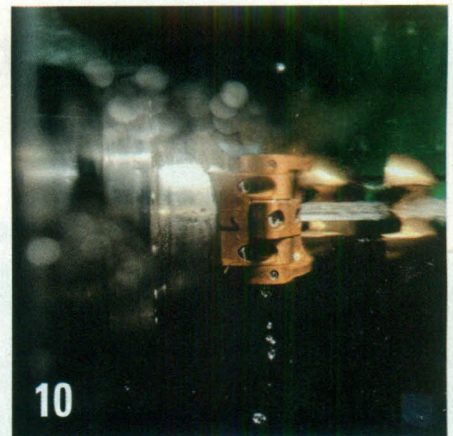
POWER MARKET ANALYSIS

The Challenges and Opportunities Facing Power Companies Today 26

Investors are finding new opportunities in the energy sector, and utilities are finding new ways to leverage their assets. Power generators, with the advent of new technologies, are today major players in the financial markets.

ON THE COVER

Efforts to adapt to decarbonization have prompted combined heat and power (CHP) equipment manufacturers to develop small-scale hydrogen CHP systems. The cover photo shows a 115-kWe/129-kWth hydrogen CHP engine developed by 2G Energy Inc. The system has been installed at several locations in Europe. Its first installation in North America is expected later this year. Courtesy: 2G Energy





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MARNIE SURFACEBLOW

When Theory Becomes Practice, Rely on Practical

Experience as a Foundation

29

Marnie and Maya travel to the Philippines to troubleshoot issues at a test facility for torrefaction of biomass. The pair find many problems at the facility, not least of which is a safety issue that puts workers in serious danger. However, their recommendations are sure to get the plant operating more safely, reliably, and efficiently.

FINANCE

Understanding How Securitization Can Help with

Power Plant Retirements

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Utilities know it can be costly to close a power plant, but also know that choice can be necessary. Securitization is a tool that power generators can use to lessen the cost of taking a plant out of service.

GAS TURBINE

An Unplanned Outage, an Unconventional Plan, and a Global Collaboration

34

A project to repair a gas turbine at a power plant in the UK became a global collaboration, with the parts needed for the repairs located at a facility in Argentina. What followed was a model of international cooperation to make the logistics—which included bringing in another important part from Switzerland—work.

Protecting Gas Turbines from High Temperatures, Humidity, and Dust

36

Operators of natural gas-fired power plants are always trying to improve the efficiency of their facility's turbines. A changing climate is making those efforts more challenging, which means today's turbines need better filtration systems to protect them from harsh conditions.

CYBERSECURITY

Cyber Resilience for Wind Power Installations

Web

Recent research at two national laboratories has provided insight into cybersecurity strategies and business cases for cybersecurity investments. These findings will help renewable sector entities tailor an approach to evaluating and implementing cybersecurity technologies for wind power plants. (Visit powermag.com and search "Cyber Resilience for Wind Power" to read this online-only exclusive.)

COMMENTARY

America—and the World—Needs More Nuclear Power

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By Jeremy Harrell, ClearPath and U.S. Nuclear Industry Council

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