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Landmark Kiel CHP plant nears completion

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Delivery of the 20th and final gas engine completes the centerpiece of one of the most modern and flexible gas engine-based combined heat and power (CHP) plants in Europe—the K.I.E.L. coastal power plant.

Representatives of Stadtwerke Kiel, Kraftanlagen München GmbH (KAM) and GE (NYSE: GE) unveiled one of the 20 Jenbacher J920 FleXtra gas engines—marking another step towards securing the district heating supply in Kiel after the coal-fired power plant is decommissioned on March 31, 2019.

The coastal power plant makes an important contribution to the energy transition and environmental protection in the region, and with its power generation concept based on gas engines, heat storage and an electrode boiler, this gas-fired cogeneration plant sets new standards in terms of flexibility, efficiency and ecological sustainability.

After commissioning, the new large-scale gas engine-based CHP plant will supply over 73,000 households and facilities in Kiel with environmentally friendly district heating. Additionally, the electric power generated will be fed into Kiel's 110-kilovolt power grid, which supplies electricity both to households in the state capital and some of the surrounding municipalities. Excess energy is passed on to the upstream power grid.

"Our K.I.E.L. coastal power plant is unique in Europe," explains Frank Meier, managing director of Stadtwerke Kiel. "Installing the 20 Jenbacher FleXtra gas engines in the engine cells is another milestone for Kiel's reliable, sustainable and efficient heating supply."

Dr. Jörg Teupen, director of technology and human resources, adds: "The modular

generation concept allows the coastal power plant to react to all requirements of the energy market with great flexibility. Every one of the 20 gas engines ramps up to full load in less than five minutes. That allows us to react to changing grid situations at any time."

The new gas-fired cogeneration facility replaces the electricity and heat previously generated by the coal-fired power plant on the Kieler Förde, which has been in operation since 1970. Thanks to its high overall efficiency of about 91 percent and the environmental benefits of natural gas as an energy source, the new facility will emit over 70 percent less carbon dioxide than the previous power plant.

"In the coastal city of Kiel, fluctuations in renewable energy production range from storm to calm," explains Carlos Lange, president of GE's Distributed Power business. "These significant fluctuations require supplementary energy solutions that can start quickly and reliably when required—such as the new K.I.E.L. coastal power plant."

A 60-meter high heat storage unit (30,000 m^3 storage volume) and a powerful 35-megawatt electrode boiler (power-to-heat technology) further increase the flexibility of the CHP plant.

The gas engine-powered plant is being engineered and implemented by KAM and GE. KAM is the general contractor responsible for engineering, procurement, construction and commissioning the turnkey power plant, including the auxiliary buildings and integrating the heat storage and electrode boiler.

"We are celebrating the delivery of all of the gas engines with this final 20^{th} engine, which marks an important milestone in this flagship project for energy and heat transition. We are proud to be building one of Europe's largest, most modern and most flexible gas engine-based cogeneration facilities with Stadtwerke Kiel and GE," explains Reinhold Frank, chairman of the general management of Kraftanlagen München GmbH.

The K.I.E.L. coastal power plant is a good example for excellent operational flexibility, and it makes a key contribution to ensuring sufficient performance in the German power grid. The schedule of the consortium, made up of KAM and GE, expects that Kiel's intelligent energy solution (K.I.E.L) will begin providing power to the grid during the first quarter of 2019.