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Successful Electricity Production from the Co-produced Fluids of Oil and Gas Fields

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In many oil and gas fields, a large amount of water is produced as a result of the production process. This water, in most cases, is a waste stream and is often disposed of or re-injected. But, as a geothermal fluid, these waste streams can be repurposed as a source of renewable energy.

In 2008, a Cooperative Research and Development Agreement (CRADA) between the US Department of Energy and Ormat Technologies, Inc. resulted in the completion of a small-scale power generation solution to produce sustainable electrical energy from an oil field waste stream (co-produced fluid). The power generation solution, which is the only equipment in operation today generating electricity from co-produced fluids, was designed and manufactured by Ormat Technologies, Inc.

Based on the Ormat Energy Converter, the power unit is installed at the Rocky Mountain Oil Testing Center (RMOTC) within the Teapot Dome oil field near Casper, Wyoming. The factory-integrated, skid-mounted, air-cooled unit has a nominal rating of 250 kW, and has been operated by RMOTC for over 2 years. Since commissioning, the power unit has provided high reliability and availability (consistently measuring 97%), and has produced over 1,918,000 kWhrs of electrical energy. As the power unit was designed utilizing ambient air as a cooling medium, the system consumes no water and has withstood the harsh environmental conditions experienced at RMOTC. This project's success demonstrates that safe, reliable and commercially proven solutions are available today to produce fuel-free electrical energy from oil and gas field waste streams. This energy, which is produced without consuming fuel, can be classified as renewable energy.