GlassPoint Unveils First Commercial Solar Enhanced Oil Recovery Project

New solar technology delivers steam for less than gas-fired steam

Congressman Kevin McCarthy joins GlassPoint, Berry Petroleum, and international oil and gas community at commissioning celebration in Kern County

BAKERSFIELD, Calif. – February 24, 2011 Noon PST– GlassPoint Solar, a provider of solar steam generators for enhanced oil recovery, today unveiled the world's first commercial solar enhanced oil recovery (EOR) project at Berry Petroleum Company's 21Z lease in McKittrick, California. U.S. Congressman Kevin McCarthy, California Independent Petroleum Association (CIPA) CEO Rock Zierman, and Petroleum Development Oman (PDO) Corporate Technology Advisor Syham Bentouati were among the honored speakers at today's event commemorating the moment the array officially went "on sun."

The Kern County 21Z Solar Project is the only operational solar EOR project worldwide. The project also incorporates GlassPoint's Single Transit Trough (STT) technology, the first new solar thermal technology in decades. Specifically designed for rugged oilfield environments, the GlassPoint solution encloses the solar technology in a unique glasshouse structure to deliver durable, low-cost solar steam in industrial environments. The project was built in less than six weeks —a testament to GlassPoint's architecture and execution capability.

"I'm proud to welcome another exciting energy development to Kern County, the state's top oil producing region and a model for energy policy and security," said U.S. Representative Kevin McCarthy, congressman for California's 22nd congressional district. "Solar steam has the potential to expand local employment and local capital assets and enhance domestic oil production. Once again, Kern County is leading the way in utilizing another form of cutting edge energy technology."

Steam-based EOR, also known as thermal EOR, dominates EOR operations worldwide, delivering more petroleum and enabling production of otherwise inaccessible heavy oil. Today's steam generators burn fuel – primarily natural gas – to produce steam injected into the reservoir to facilitate oil production.

GlassPoint's new technology raises steam with solar energy and delivers steam at a fraction of the cost of gas-fired steam. Solar-generated steam can deliver up to 80 percent of total annual EOR project needs, consequently reducing of the amount of natural gas used by 80 percent.

The Kern County 21Z Solar Project will produce approximately 1 million Btus per hour of solar heat, replacing natural gas used for steam generation.

The oil fields in Kern County have been in production for over a century, and the most accessible oil has already been recovered. Oil companies, such as Berry Petroleum Company, are committed to seeking advanced technologies to economically produce their heavy oil reserves with least impact to the environment. GlassPoint's solar EOR technology has the potential to significantly reduce natural gas usage for steam generation purposes and to increase the ultimate recovery fraction of heavy oil reserves.

The key to GlassPoint's cost advantage rests in the system's glasshouse enclosure, which protects and seals the mirror system from the elements, including dust, dirt, sand and humidity. The protected environment allows for the use of ultralight, low-cost reflective materials. Automated washing equipment eliminates manual cleaning and operator intervention, further reducing costs, worker health and safety challenges, and water use. GlassPoint steam generators directly raise steam using standard oilfield boiler feedwater, eliminating "reboilers" and expensive deionizing units required by older solar system designs.

GlassPoint's innovative Single Transit Trough (STT) technology creates a protected environment, where high-performance, front-surface reflectors are now practical and durable for the first time. This breakthrough in solar collector design eliminates multiple light transits through dirty glass, delivering higher real-world optical efficiency than today's systems. The STT design results in extremely efficient land use, offering the highest steam production per acre of any solar technology – five times more steam per acre than solar tower systems.

"It's not well-known that the United States still has more oil in the ground than the entire proven reserves of Saudi Arabia. The challenge lies in producing these untapped domestic oil resources with reasonable financial and environmental costs. Our solar EOR solution allows customers to produce heavy oil without the air emissions of combustion-based steam generation, and without the exposure to fuel markets, extending the economic life of aging oil fields," said GlassPoint CEO Rod MacGregor. "The 21Z project is tangible proof of this new technology. We expect the economic benefits of GlassPoint's solution will drive the adoption of solar EOR, both here in the heart of Kern County and internationally."

Dr. Syham Bentouati, corporate technology advisor, Petroleum Development Oman (PDO) and co-author of the Society of Petroleum Engineers (SPE) paper, "The Impact of Daily and Seasonal Cycles In Solar-Generated Steam On Oil Recovery," adds: "PDO has studied the effect of solar steam on oil production. We have found that from a sub-surface oil recovery point of view, solar-generated steam provides a viable alternative to constant rate steam injection derived from natural gas. Much of the world's heavy oil is located in the Persian Gulf region, which has abundant sunshine. In these locations switching to solar EOR saves gas for higher value applications like industrial development and export as LNG."

GlassPoint's solar steam generators deliver steam at a constant price for the entire 30-year life of the system. When oil fields are developed with the certainty of low-cost, fixed-price steam, recovery strategies can be optimized to produce more oil over the lifetime of the field. This results in an increase in proven reserves, greatly enhancing the value of the asset.

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About GlassPoint Solar

GlassPoint is the leading provider of solar steam generators to the oil and gas industry. When used for Enhanced Oil Recovery (EOR) GlassPoint solar steam generators reduce natural gas consumption by up to 80%, releasing large amounts of gas for use in higher value applications. This is only possible because, unlike previous solar designs, GlassPoint steam generators deliver steam at a lower cost than steam produced by burning natural gas. GlassPoint's steam generators are sealed for protection from sand, dust, dirt and high humidity typical of oilfield environments throughout the world. GlassPoint is headquartered in Fremont, California with offices in Bakersfield, California, Muscat, Oman and Shenzhen, China. For more information, visit www.glasspoint.com.

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