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MARCH VOL 12 ISSUE 2 2009

The New Silicon Valley

Bradley County and East Tennessee are emerging as a major center for the semiconductor industry.

by Tonya Brantley
Managing Editor

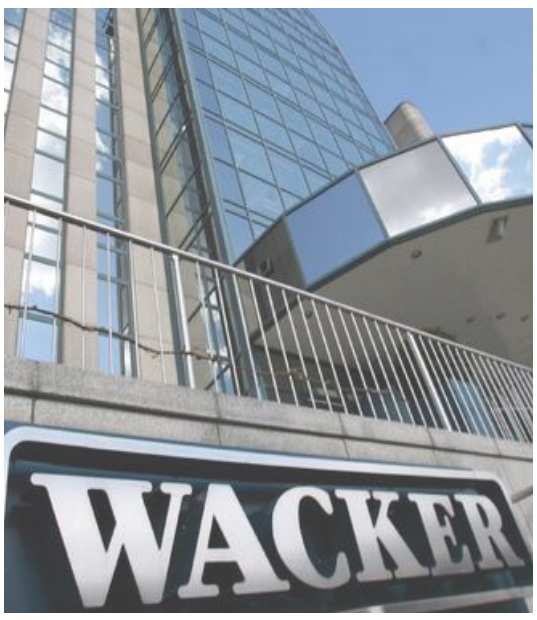
After four years of secrecy, the announcement came late February that the world's second largest producer of hyperpure polycrystalline silicon, Wacker (VAH'-kah) Chemie AG of Munich, Germany, will build a $1 billion facility on a 550-acre site near the Hiwassee Industrial Park in Charleston, TN. The Bradley County plant will be Wacker Chemical's first solar cell plant outside Germany.

The company has already purchased the land for the new plant at a cost of about $20 million.

Rudolf Staudigl, President and CEO of Wacker Chemie AG explained, "Purchasing the land is an essential prerequisite to quickly build up additional production capacities outside the euro zone in line with the projected market trends and growth in demand."

Wacker has manufactured polysilicon for the semiconductor industry for over 50 years. To meet rising solar-silicon demand, Wacker has steadily expanded its capacity and has supplied increasing volumes to the photovoltaics industry since 2000.

According to Wacker officials, the strong business climate, Tennessee's well-developed infrastructure and the cooperative partnership of state agencies, local government, and the Cleveland-Bradley Chamber of Commerce, were the major influences contributing to Wacker Chemie's choice of Tennessee for the location of the new facility.



The incentives package from state and local governments connected with the land purchase includes provisions for necessary transportation access and a reliable source for water and electric-based energy which are key resources associated with the production of hyperpure polycrystalline silicon. Also, Wacker Chemie is taking advantage of what it said are cheap electricity rates from the Tennessee Valley Authority which is about half of what it would pay at comparable sites in Germany.

Wacker will qualify for statutory incentives at the state and local level, including the FastTrack Infrastructure Development Program, the FastTrack Job Training Assistance Program, and the Super Jobs Tax Credit.

One of Wacker Chemie's key competitors, Hemlock Semiconductor, headquartered in Hemlock, Michigan and backed by Dow Corning, is believed to be the world's largest producer of these materials.

In December 2008, Hemlock announced it would build a $1.2 billion plant in Clarksville, TN that also will make hyperpure polycrystalline silicon.

Polysilicon, a material that consists of multiple small crystals, is used to make silicon wafers, solar cells and other products. Silicon is a very common raw material, and is most predominantly found in compounds with oxygen in the form of quartz sand. The oxygen has to be removed before quartz sand can be made into pure silicon, This is an energy-intensive process that involves heating the quartz together with carbon (from wood or coal) at around 3300°F. The carbon reacts with the oxygen in the quartz to form carbon dioxide, leaving behind raw silicon with a purity of over 99 percent.

Hemlock and Wacker, two of the largest polysilicon producers in the world, expect polysilicon demand from the solar and semiconductor industries to further increase in coming years and have been expanding capacity for several years to keep pace with demand. Polysilicon plants of this scale can take approximately two years to build and additional years to ramp to full capacity.

Wacker Chemie AG is expected to create 500 jobs and reportedly set to start producing polysilicon in 2012. The Hemlock Semiconductor facility in Clarksville, TN is also scheduled to open in 2012, employing up to 800 workers.

Wacker Chemie AG is the third billion-dollar project attracted to Tennessee in the last nine months. Aside from Hemlock Semiconductor, Volkswagen is building a new plant in Chattanooga.

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