

## News Release

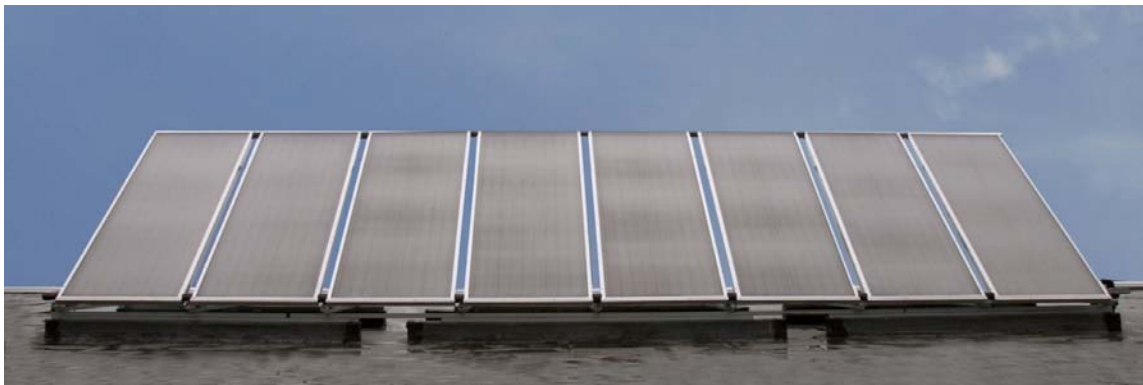
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### **Circuits, LLC demonstrates best practices for Clean Manufacturing** **Environmentally-friendly choices result in lower costs with higher quality**

FOR IMMEDIATE RELEASE

**April, 2010, Murrysville, PA,** Circuits, LLC, a manufacturer of highly reliable flex and rigid flex printed circuit boards announced today their clean manufacturing strategy resulted in improved product quality and reduced operating costs. The manufacture of flexible printed circuits is particularly sensitive to adverse environments, excessive handling and in-process contaminants thus necessitating the need for cleaner manufacturing principles. The factory-wide initiative at Circuits, LLC covers everything from the use of solar energy in the plating processes to the proper handling of air, water and waste from the facility.

Adeodato Vigano, President of Circuits, LLC, found a way to not only be ecologically responsible and build boards with improved quality and yields, but enjoy economical rewards as well. “I’ve spent my entire career in the PCB fab industry and have seen many PCB manufacturing plants, most of them were dimly lit and dirty” said Mr. Vigano, “When we started Circuits in 2008, I was determined to build a facility that was optimized for manufacture of high-quality flex, which meant designing a clean operation to minimize the handling and transport of ultra thin core laminates.” Circuits’ manufacturing facility features a fully-integrated Class 1,000 clean room central to the operations and the facility is outfitted with exhaust and fume scrubbers to reduce any pollutants leaving the manufacturing area. Circuits chose only efficient and environmentally friendly processes such as Electroless Nickel Immersion Gold (ENIG) plating finishes, Plasma etch and a CobraBond™ inner layer adhesion promotion system. In addition Circuits chose an ion exchange technology for water treatment that removes metallic and chemical contaminants. This process effectively cleans the water without generating solid hazardous wastes and recycles valuable materials whenever possible.



Circuits, LLC rooftop solar panels

The latest project that has come to fruition at Circuits is a solar thermal heating process that directly utilizes clean renewable solar energy. This offsets over twice the actual consumption of electricity from coal fired power plants due to transmission and distribution loss. The 8 roof top panels directly above the manufacturing floor heat 10 gallons water per minute to 70°F with as little as 3 ½ hours average sunlight per day. The energy is used to thermally heat the rinses through a heat exchanger for the plating processes and the ENIG line which has a direct effect on the quality of the finished product. According to Don Anderson, Quality Assurance Manager at Circuits, “Plating cracks are probably one the most common defects found in flex boards, the root cause is from contamination of organics in the plating process, and the best way to eliminate these organics is by reducing any chemical or residue bleed from one bath to the next.” Anderson went on to say that “Reducing the residue is best accomplished with warm water, but many PCB fab shops use cold water just because it’s too expensive or takes too long to heat the water. Unfortunately they pay the price with poor quality.” Mr. Vigano added that “At the rate PCB facilities use water; it would be like filling and heating 4 to 6 swimming pools every day. The solar project at Circuits has a ROI of only one year due to costs associated with gas and electrical consumption.” Circuits’ clean manufacturing practices and quality focus ultimately saves their customer’s time and money. Learn more about Circuits’ at [www.qualityacrosstheboard.com](http://www.qualityacrosstheboard.com)

#### About Circuits, LLC

Circuits, LLC is a quality-driven, customer-focused manufacturer of highly reliable built-to-spec flexible printed circuit boards serving the defense, industrial, and medical markets with consistent quality and on-time delivery unsurpassed by competitors.

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