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RASIRC Introduces Intaeger UHP Ultra High Purity Steam Generator
Generates Steam from De-ionized Water

San Diego, Calif. – SEMICON West 2006 – RASIRC™, the steam purification company, introduces its first product, the Intaeger® UHP (Ultra High Purity) fully automated steam generator. The system benefits companies whose processes are sensitive to impurities and variability in their water vapor and are looking for an improvement in performance and safety over their present systems.

The Intaeger UHP is unique in that it provides ultra high purity steam and process control, yet is a safe, non-combustible system because it does not require hydrogen and oxygen to generate water vapor. Water contaminants, including dissolved gases, are removed, metallic impurity sources are eliminated, and particle sources are greatly reduced, resulting in purity equal to or better than that created by burning oxygen and hydrogen.

The Intaeger uses de-ionized water, which is inexpensive and widely available. A highly flexible system, it automatically controls delivery pressure, temperature, and the directly related mass flow rate so it can be adapted for many applications. Liquid level is monitored and filled either automatically or manually. An additional temperature control loop minimizes condensation of UHP steam. The system has purge and drain capabilities. Intaeger's design enables the purifier to be located remotely from the steam generator, conserving critical space around the process tool. It can be operated locally or remotely.

Producing UHP water vapor using an Intaeger is an extremely efficient process, maximizing throughput. While alternative purification methods rely on flammable and explosive materials and often operate at temperatures greater than 700 degrees Celsius, Intaeger produces steam by boiling water. No hydrogen means no permits or bulk storage tanks are needed, storage of flammable gases in the facility is reduced, and low temperature operation allows for multi day runs without operator intervention. By running on de-ionized water instead of ultra high purity gases, the tool can pay for itself in months.

The Intaeger uses a non-porous hydrophilic membrane that selectively allows water vapor and steam to pass through it. Membrane selectivity is significant, as water molecules can pass through it 1,000,000 times faster than nitrogen molecules. In the vapor or steam phase, all other molecules are greatly restricted, so contaminants in water such as dissolved gases, ions, total organic carbons (TOCs), particles, viruses, bacteria, pyrogens, and metals can be removed from the purified steam.

Data from tests done on water vapor purified using the Intaeger system show reduction of 67 different metals to below detectable limits. Some contaminants have been verified to less than 0.0005 parts per billion. Nitrogen and CO₂ contaminants can also be eliminated. Because Intaeger works with water at low pressures, alternative high purity piping material such as quartz and fluoropolymers can be used in the delivery system.

The Intaeger UHP system has applications in the medical and pharmaceutical, semiconductor, power, and fuel cell industries. Water vapor is used with rapid thermal processing (RTP), atomic layer deposition (ALD), plasma stripping, immersion lithography, diffusion, wafer cleaning, and to control humidity in cleanrooms.

“There are many choices when process requirements specify water vapor or steam,” said RASIRC founder and president Jeffrey Spiegelman. “These include bubblers, contactors, direct liquid injection (DLI), catalytic combustion, or pyrolytic torches. Bubblers and DLI are easy and safe to use, but water purity and system control are compromised. Pyrolytic torches give purity and system control, but can be dangerous and require special permits because they have a hydrogen base. Our Intaeger UHP system provides the safety and ease-of-use advantages of

bubbler and DLI systems, while providing the purity and control of the pyrolytic systems, but without the risk. It can be adapted for almost any application because it can be configured for either high or low flow rates. As the need for UHP steam increases, a stand alone or sub-system solution will be needed to support the process tools, and the Intaeger UHP will be ready.”

About RASIRC

RASIRC was established March 7, 2005 to develop products that purify and deliver ultra pure liquids and gases, with a primary focus on water vapor. While steam is used extensively in the semiconductor industry, RASIRC technology is the first to purify live steam to generate ultra high purity (UHP) steam. Starting with de-ionized water and using specialized membranes to reduce total metals to 10 parts per trillion, this technology reduces cost, improves yield, and dramatically improves safety. The UHP steam generated by RASIRC products is of critical importance for many applications in the semiconductor, pharmaceutical, medical, biological, fuel cell, and power industries. For more information, contact Jeffrey Spiegelman at +1 858-259-1220, e-mail info@rasirc.com, or visit the website at www.rasirc.com.

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