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RASIRC

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RASIRC Granted Patent for Controlled Delivery of Hydrogen Peroxide Gas

Novel method for generation of H₂O₂ gas granted patent in US and Japan

San Diego, California – February 24, 2022 – RASIRC announced that the United States Patent and Trademark Office has granted Patent # US 11,154,792 B2 for a novel Method, System and Device for Delivery of Process Gas. The patent is applicable to RASIRC hydrogen peroxide products including the Peroxidizer®. The patent was also certified by the Japan Patent Office as Patent 6951321. The method enables more accurate and repeatable delivery of hydrogen peroxide gas into a wide range of flow rates, operating pressures, and temperatures.

This invention correlates instantaneous applied power to mass delivery of H₂O₂, largely eliminating nonuniformities in the liquid source and thermal droop. This enables the Peroxidizer to provide accurate and linear delivery of chemistry without regard to vaporization temperature or process pressure.

“By applying this new process control method, the Peroxidizer can provide linear control throughout the mass flow range independent of the carrier gas flow rate and operating pressure of the process,” said RASIRC Founder and CEO Jeffrey Spiegelman. “This design integrates custom hardware, firmware and software to improve both Peroxidizer performance and tool-to-tool repeatability, helping us meet the semiconductor standards for high volume manufacturing (HVM).”

Power control is a very effective way to deliver vapor from a liquid source. Most liquid to vapor mass flow control is managed by temperature regulation of the liquid source or bath. However, bath temperature increases with increased mass flow rate causing temperature non-uniformities, localized droop, and output instabilities. As the temperature increases the vapor pressure increases on a power curve. Error increases in a highly non-linear fashion. For example, H₂O₂ vapor pressure change of 1°C at 90°C is 20 times larger than 1°C at 30°C, leading to 20X increased error at the higher temperature. Power control is based on the mass evaporated so the error does not increase with increasing bath temperature.

About the RASIRC Peroxidizer®

The RASIRC Peroxidizer provides a safe, reliable way to deliver high-concentration hydrogen peroxide gas into ALD, annealing, gapfill, dry surface preparation, and cleaning processes.

About RASIRC

RASIRC transforms liquids into dynamic gases that power process innovation in semiconductor and adjacent markets. By commercializing molecules for lower temperature processes, RASIRC patented technology enables the manufacture of atomic-scale oxides, nitrides, and metals. Innovative products such as Brute Peroxide, Brute Hydrazine, the Peroxidizer, and the Rainmaker Humidification Systems are being used to develop solutions for 5G, AI, IOT, and advanced automation.

What makes RASIRC a unique industry leader is our technical expertise and commitment to solving complex industry challenges for our customers. Our team of industry experts has a proven track record of beating larger competitors to market by efficiently delivering state of the art technology that reduces cost, improves quality, and dramatically improves safety. With our customers at the forefront of all we do, we continue to research, develop, and design innovative products that purify and deliver ultra-pure gas from liquids for the semiconductor and related markets. Contact RASIRC to help solve your complex problems.

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