

NEWS RELEASE

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QUANTUMCLEAN SELECTED BY MOTOROLA AS OUTSOURCED PARTS CLEANING “SUPPLIER OF CHOICE”

Cited as a ‘Paradigm Shift’ to the Outsourced Parts Cleaning Industry / Enables Motorola to Benefit from QuantumClean’s ‘Consistently Cleaner Parts’ Procedures and Technologies

AUSTIN, TX. (October 14, 2002) – With a commitment to extend process tool part life, as well as to improve their fab process performances as other QuantumClean customers have benefited from, Motorola’s Semiconductor Products Sector management team recently spent nearly eight months thoroughly evaluating the Outsourced Parts Cleaning (OPC) industry before awarding QuantumClean as “Supplier of Choice” in April 2002. “It is understood that Motorola previously outsourced critical process tool parts to over a dozen different parts cleaning services from their various fabs about the world”, according to Maceo Ward, QuantumClean’s global director of sales and marketing. “In doing such,” the 20 year veteran of industry leaders like APCI, Schumacher, Motorola, and Millipore explained, “Motorola experienced a noticeable lack of consistency between OPC services and quality -- as well as excessive administrative challenges from using numerous OPC vendors. The Motorola OPC evaluation team carefully audited QuantumClean’s Advanced Technology Cleaning Centers (ATCC) on numerous occasions and were impressed our cleanliness, efficiencies, technology alternatives, and segregated cleaning processes. Ward further pointed out, “QuantumClean’s ATCCs, built as an ‘extension to our customer fabs, are typically cleaner than sub-fab service areas, with more specialized and segregated process equipment than fabs can maintain.”

QuantumClean’s chief technology officer, Dave Zuck, repeatedly demonstrated to the Motorola evaluation team and fabs that by using novel, more exact, and less aggressive technologies -- versus the three traditional tool part cleaning methods of Bead and CO₂ blasting, and wet chemical strip technologies -- not only could part lives be extended, but actual tool performance and process improvements can be accomplished. Zuck, an 18 year veteran of Air Products and Chemicals and often regarded as the mentor of its MEGASYS® on-site gas and chemical management services -- another industry-heralded outsourced fab service of APCI’s -- further clarified, “We believe Motorola is most impressed with actual fab tool performance data which validates that QuantumClean’s expanded and

reproducible cleaning methodologies *do* yield ‘Consistently Cleaner Parts’ ... and *do* indeed lead to improved tool process performance.” A defining IP offered by the company is their patent-pending, high volume, *Single Part Chemical Cleaning* (SPCC™) technology designed to eliminate cross-contamination of customer parts, which revolutionizes both the traditional large, multi-purpose vat, as well as the dedicated, single-part-per-bench chemical cleaning approaches. According to Zuck, “QuantumClean is pursuing numerous innovative patents that will further expand our ‘tool box’ of novel cleaning technologies (several patent applied for) ... the three traditional technologies [CO₂ and bead blasting, and large chemical vats] used in the OPC industry for over 10 years now are *not* the ‘cure-all’ for the fabs. “We established QuantumClean in 1999 to address the OPC shortcomings,” Zuck continues. “QC’s verifiable Consistently Cleaner Parts approach truly benefits the fabs’ processes ... particularly in terms of faster post-PM pull downs, reduced Fail-on-Installs (FOIs), and extended Mean Time Between Service (MTBS). In fact, some customers and OEM’s have shared in confidence with us – multiple percentage die yield increases across numerous platforms.”

According to Ward, “The estimated global market for semiconductor equipment parts cleaning, based on the 600+ fabs worldwide, exceeds \$1 billion annually”. “Add to that, given that a notable percentage spent each year on tool part replacements (a \$10-12 billion-plus market), QuantumClean’s innovative technologies are extending and restoring part lives thereby reducing fab costs even more! In fact, Motorola was quite impressed with QC’s Parts Restoration Program (PRP), where we often successfully clean parts that were traditionally discarded by most fabs, sometimes *even after a single* tool PM. These include many types of upper electrodes [aka “GDP” or “showerhead”] of various substrates, such as quartz, graphite, stainless, aluminum, and Vespel. QuantumClean extended this success to challenging substrate/deposition combinations, such as B-P-TEOS from aluminum; and GDPs with new, ultra-thin anodization hybrids. Other critical chamber parts restored to OEM specifications include expensive aluminum-ceramic (dielectric) electrostatic chucks [ESCs], and parts of intricate configurations.”

The QuantumClean selection by Motorola was further supported by fact that the OPC provider being and independent affiliate of Air Products & Chemicals, Inc. In 1999, QuantumClean’s visionary approach to the OPC industry was bolstered when Air Products took an equity position in the firm, enabling QuantumClean to move forward with its plans to increase the number of its regional U.S. semiconductor ATCCs. Air Products is a leading supplier of all the consumable products that surround a semiconductor process tool, as well as related equipment and services for fabs, and enjoys a preferred status with Motorola. Beneficial synergies of the QC-APCI relationship include: QuantumClean’s use of high purity, semiconductor process grade chemicals for parts cleaning (vs. bulk, tech grade) from Air Products Electronic Chemicals (APEC: an APCI subsidiary that consists of Schumacher® and Solkatronics®); access to APCI’s full-scope of atomic and ionic surface analytical capabilities at its

numerous strategically located Semiconductor Technical Centers; and fab-internal parts management programs via APCI's on-site MEGASYS® teams.

Motorola's desire for global standards is consistent with QuantumClean's intentions to optimize all these OEM approval and partnerships as it intends to provide equipment parts cleaning services to customers in centralized Asian and European semiconductor manufacturing locations.

About Quantum Global Technologies, L.L.C. (dba "QuantumClean") (www.quantumclean.com) — established in 1999 to address the ultra-clean, outsourced tool parts cleaning and management demands of the semiconductor industry—offers semiconductor fabricators a technologically innovative alternative to traditional outsourced parts cleaning industry methodologies. The company builds and manages Advanced Technology Cleaning Centers to provide environmentally compatible, quantifiably cleaner, and expeditiously processed tool parts services that exceed market expectations. QuantumClean has established numerous semiconductor OEM and OPM relations; and is an independent affiliate of Air Products and Chemicals, Inc.

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Media Inquiries:

Maceo D. Ward

Tel: (972) 465-9700; e-mail: mward@quantumclean.com

Dwight Zuck

Tel: (267) 228-1747; e-mail: dwightzuck@quantumclean.com

Investor Inquiries:

Scott H. Nicholas

Tel: (215) 249-1717; e-mail: snicholas@quantumclean.com