Designing Circuits for Coating Efficiency and Effectiveness

Circuit design and component selection are generally driven by a quest for both technical effectiveness and production economy. In the case of assemblies that are to be Parylene coated, however, this approach may lead to unexpected costs and unintended complexities. Para Tech assists OEMs and contract manufacturers meet performance/economy goals for coated assemblies by means of informed device selection, circuit layout and surface preparation appropriate to the requirements of Parylene deposition.

For example, a low cost press-fit connector that meets technical requirements may appear to be a good circuit design choice. However, if a circuit with such parts is to be Parylene coated, the cost to mask the parts will far exceed the expense of more sophisticated, sealed connectors.

Assemblies with costly ball grid arrays need to be constructed in such a manner that BGAs can be salvaged in the event of board failure. Parylene coating will penetrate the cavity below BGAs, making it all but impossible to remove parts without damage. BGA perimeters should therefore be sealed with an RTV at the time of manufacture or during pre-coating preparation.

Parylene coating success depends on assembly surfaces being absolutely pristine, free from flux and paste residues, and other contaminants. Para Tech can advise with material selection and cleaning processes to ensure full coating adhesion, eliminate trapped residues, and protect long-term circuit reliability. Understanding and accommodating these requirements upfront helps control turn times and protect product integrity.

Customers are encouraged to consult with Para Tech early in the design process for circuits that are to be Parylene coated. With nearly 50 years of industry experience and a sophisticated, proven vacuum deposition coating regime, we can help optimize your investment through informed design, device selection and coating preparation decisions.

Supply Chain Success Demands Close Cooperation

Para Tech is a supply chain participant with customers and provides highly individualized services in an environment of stringent response standards. Effective and intentional communication is crucial to mutual success for every coating project.

Parylene coating is a custom engineered batch process and differs substantially from conventional assembly line type operations such as spray or dip coating. As much as 80 percent of the process consists of non-coating steps that include engineering runs, cleaning, masking, demasking, inspection and testing.

Anyone considering Parylene will benefit from a better understanding of the advanced coating technology and how the process impacts production scheduling. As an experienced supply chain partner, Para Tech in turn seeks to understand the precise demands of each new project: What are the irreducible timing constraints? What unique preparation steps will be required? Have contamination and cleaning issues been fully addressed? What is the practical yield target for this assembly?

Because of the engineered and highly application-dependent nature of Parylene coating, success requires that supplier and customer review and confirm expectations for work-in-process costs, scheduling, and yield loss. Each project presents its own unique parameters, and each demands its own communications stream to find the most effective means to meet common production goals.

Full effectiveness requires use of common metrics, balancing production resources with accurate production forecasts, and setting incentives and penalties that are carefully aligned to achieve optimal supply chain results. Each of these issues are important components of communication, from beginning to end of every coating project.

The Para Tech team works tirelessly to perform each phase in the Parylene process to high standards in both quality and efficiency as a partner in the pursuit of excellent supply chain service.

Southern California Reliability Workshop
June 7, 2016 - Carlsbad CA

Technical Manager Gustavo Arredondo will address the upcoming Reliability Workshop on best practices for effective, efficient Parylene vacuum deposition coating. Workshop topics include Cleaning Equipment and Process, Cleaning Materials, Cleanliness Assessment, Thermal Profiling, Automated Optical Inspection (AOI) and Pb-Free Soldering Materials. To register, click here.
Coating Systems Advancements
Para Tech has a long history of proprietary innovations in vacuum deposition coating system design that enhance performance and efficiency. Advancements include precise temperature and vacuum controls for optimized dimer sublimation, unique tangential flow coating chamber design, and asymmetrical tumble coating design.

Most recently, we have developed a new programmable logic controller, which further improves monitoring and integration of vacuum level and heating zone controls in the coating chamber. This design enhancement expands programming options as well as coating cycle predictability, stability and repeatability. A third vacuum sensor has also been incorporated for even more precise coating cycle setup. These refinements result in added coating precision and functionality benefits that are independent of operator interaction.

The new PLC enhancements are being incorporated into all Para Tech production systems and are also available as retrofits for equipment in the field. Contact us for more information or assistance with a field retrofit.

Para Tech Appoints Eastern Territory Manager
Scott Vandeweghe is the newest addition to the Para Tech management team. Scott assumes the role of Eastern Territory Manager, serving customers in the eastern U.S. and Canada from the company’s Middletown, Connecticut coating center.

“We often encounter questions as to the nature and complexity of the Parylene process, and are pleased to explain the technology and provide design and handling recommendations for customers in our area,” Vandeweghe says. “With the mutual goal of achieving optimum coating results, we share knowledge of what is involved in this highly engineered and effective coating process.”

Para Tech’s Connecticut facility has been in operation since 2000, and its experienced team plays a vital role in serving Parylene users in the eastern United States. Scott can be reached at (949) 900-8878, and by email at svandeweghe@parylene.com.

Midwest Territory News
Wisconsin’s 6th district United States Congressman Glenn Grothman recently visited Para Tech’s Neenah, Wisconsin, coating center, expressing interest in expanding manufacturing job opportunities in the area. Coating center manager Ron Jagla reports that business at the Midwest coating center is growing steadily, and the staff is expanding.

“Our operation has been audited and certified to ISO 9001:2008 and AS9100C standards and we follow the same rigorous quality assurance and quality control processes as the company’s California and Connecticut coating centers,” Jagla explains. “The Wisconsin coating center reflects Para Tech’s unique abilities to optimize quality, reduce operating costs and shorten critical lead times, and our proximity to Midwest customers allows us to deliver high value coating services responsively and efficiently.”