

F R O S T & S U L L I V A N

BEST PRACTICES

AWARDS

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2020 BEST PRACTICES AWARD

HELLER
INDUSTRIES

THE THERMAL TECHNOLOGY LEADER

**2020 GLOBAL SURFACE MOUNT
TECHNOLOGY SOLDERING EQUIPMENT
COMPANY OF THE YEAR AWARD**

Contents

Background and Company Performance	3
<i>Industry Challenges</i>	3
<i>Visionary Innovation & Performance and Customer Impact</i>	3
<i>Conclusion</i>	8
Significance of Company of the Year	9
Understanding Company of the Year	9
<i>Key Benchmarking Criteria</i>	10
Best Practices Recognition: 10 Steps to Researching, Identifying, and Recognizing Best Practices	11
The Intersection between 360-Degree Research and Best Practices Awards	12
<i>Research Methodology</i>	12
About Frost & Sullivan	12

Background and Company Performance

Industry Challenges

Surface mount technology (SMT) enables manufacturers to create reliable product assembly at a reduced weight, volume, and cost. Used in a growing number of commercial and industrial products, SMT mount electronic components on printed circuit board (PCB) surfaces or substrates. While previous conventional technology inserted components through holes in a board, SMT redefined and streamlined the process in every aspect: design, materials, methods, and assembly of component packages and substrates.

However, SMT assemblies are becoming increasingly complex as PCB manufacturing and component design become main-stream. Most current SMT manufacturing processes must have “hybrid” assembly capabilities, containing both previous generation technology and more state-of-the-art advancements. Additionally, increasing SMT assembly yields is critical; however, maintaining yields while implementing new technologies causes many SMT providers to stumble. Manufacturers that fail to upgrade their technologies with advanced features fall behind the competition, negatively impacting their revenues, margins, and customer relationships; thus, leading to contract loss and customer churn. If SMT companies cannot meet high-demand volume efficiently, customers will suffer and lose confidence in the company.

As high-performance devices continue to drive demand for next-generation SMT technology, Frost & Sullivan believes SMT companies must disrupt their traditional processes and develop new manufacturing lines with advanced technology, effectively positioning them to address current and future customer needs.

Visionary Innovation & Performance and Customer Impact

With more than 60 years in the electronics industry, New Jersey-headquartered Heller Industries (Heller) delivers high-performance and unmatched customer value through its reflow soldering technology. The company pioneered convection reflow soldering in the 1980s, and since then, Heller has set the gold standard for SMT reflow ovens, continuing to refine its systems to satisfy advanced application requirements.

Engaging the Market

Frost & Sullivan finds that Heller maintains its competitiveness through a combination of continuous innovation and agility. The company embraces the changing nature of technology and adapts to ongoing transitions and the fluctuating needs that follow. To this end, one of Heller’s core philosophies is to “always say yes” to a customer, which demonstrates its keen agility in addressing unmet needs. By leveraging this customer-centric mindset, as well as its industry-leading engineering department and comprehensive research and development (R&D) team, Heller’s portfolio of high-performance products continues to deliver a lower total cost of ownership (TCO). Moreover, Heller also provides its customers with direct access to upper management, providing a direct lifeline to new and emerging challenges through customer feedback and input.

To enhance its customers' experience and satisfaction and keep pace with their evolving needs, Heller regularly updates its technology, such as its Mark 7 (MK7) machine series. The company plans to finish the final updates to the MK7 in 2020. Since its 2018 release, Heller evolved the series' features, improving areas such as airflow, infrastructure, and frame, with low nitrogen consumption and improved heating and reliability remaining a constant across all technology iterations. The company is well-known for its ovens with industry-leading novel catalysts that optimize and heighten operational efficiency, minimize flux maintenance, and lower nitrogen consumption rates. Heller's MK7 models each offer additional value. The 1913, 1809, and 1707 reflow ovens offer 10-inch wide heater modules for reduced liquidus time; 2043, 1936, and 1826 ovens have 12-inch modules for profile compatibility with competitor systems.

Strategic Customer Success

Heller makes customer success a best practice, as it ensures its customers remain satisfied with their purchases throughout the entire product lifecycle. For example, the company's MK7 incorporates all customer requests for lower Delta T, reduced nitrogen consumption, and extended preventative maintenance (PM) into a new, low-height package that maintains strong visibility across the production floor. Furthermore, Heller runs profiles and gathers data for customers at its three locations. Customers also have the option to send boards to the company, for which Heller will run profiles and generate data. The company works with clients to configure customer systems that suit their needs. The MK7's low-height top shell offers easy access for operators, and all skins have double insulation, saving up to 15% in energy costs.¹ The oven also networks with other machines in the smart factory. The oven's enhanced low-height heater module provides low Delta T on the product with optimal airflow and uniformity.² Its semicircular heater is more robust and efficient with a much longer lifetime than competing iterations.

Heller continues to build its commitment and expertise into its advanced technologies through multiple strategic approaches, such as collaborations. For example, the company partnered and continues to work with Ours Technology Inc. (OTI), a Taiwanese company that makes pressure vessels for semiconductor backend packaging. While Heller already makes this technology in its Korea facility, OTI manufactures them in a less expensive manner for the low-end electronics market. This collaboration enables Heller to bring cost efficiency to its varied customer base. Another collaboration the company entered into is with Panasonic Factory Solutions. Through this partnership, Heller leveraged Panasonic's PanaCIM®, a manufacturing execution system. Integrating this technology into Heller's reflow ovens, as well as additional automation equipment from other vendors, the company created a network for devices, machines, and systems. This partnership and solution enable end-customers to harness Big Data and make informed decisions to improve their manufacturing processes and operations productivity. By leveraging strategic partnerships to create new technology, Heller helps transform manufacturing floors into smart factories.

¹ Heller Industries. "Mark 7 Reflow System." Brochure. Accessed July 2020.

² Ibid.

Furthermore, in 2018, the company deftly avoided the United States government's import tax on goods manufactured in China by shifting its manufacturing base and supply chain from its China manufacturing plant to its Korea location. While Heller's competitors increased their prices to accommodate the tax and avoid large-scale losses, Heller achieves and maintains best-positioning to continue offering a best-in-class and differentiated purchase experience to its customers. This strategic execution gives Heller a competitive advantage without a price increase, as customers who continue buying Heller's products can purchase additional ovens without increasing their budgets. In addition to supplying the equipment, Heller's strategic supply chain enables it to deliver products on time, a critical success factor in the industry.

Simplifying Industry 4.0

Frost & Sullivan identifies increasing connectivity as a key megatrend, with Internet-tethered devices increasing and creating an extensive network of intelligence nodes, which will result in a highly connected world. This megatrend directly feeds into Industry 4.0, which continues to alter the technology landscape as more industries and end-customers, such as electronic device manufacturers, realize the productivity and value attached to connectivity and digitization. Heller's equipment supports customers' migration to Industry 4.0 through the freedom to monitor their SMT equipment performance remotely and take corrective action through predictive analytics.

Heller's SMT reflow oven series outperforms many of its competitors due to its high degree of repeatability and flexibility during configuration. The repeatability is a critical purchase criterion when dealing with ultra-high volume production of electronic devices. Smart SMT solutions are a significant customer need in the current production environment as semiconductor and electronic device manufacturers transition to Industry 4.0. Heller is the only company in the market that keenly focuses on developing smart SMT soldering equipment, offering product advantages such as increased connectivity and automation and minimal manual intervention.

Furthermore, Heller developed Intertek's Electrical Testing Labs/Conformité Européenne-compliant reflow ovens that operate with next-generation Windows operating system, with data and alarm logging features delivering enticing robustness. Heller engineered its Industry 4.0 communication-enabling features, such as the Generic Model for Communications and Control of Manufacturing Equipment standard/Securities and Exchange Commission interface, as well as remote monitoring and technical support option to empower its customers' performance and strengthen the company's position in the market. These purpose-designed features enable real-time asset monitoring, which delivers efficient process control and end-to-end product traceability. Heller's comprehensive features divert from conventional solutions that require high-level manual machine health checkups, which are inefficient and unreliable.

Value-rich Features

Heller operates in a price-sensitive market, which places heavy emphasis on product innovations to give customers the best value. Following intense R&D, it continues to

deliver a range of curing and back-end semiconductor solutions, voidless/vacuum reflow soldering, and the flux-free formic reflow soldering process. This dedication to technology advancement results in a robust and continually evolving technology roadmap, earning the company a vast and loyal clientele. Also, Heller builds value into each product through unmatched features, ensuring that its customers realize the difference in performance throughout the entire lifecycle. Frost & Sullivan finds Heller's vacuum-assisted reflow is a critical feature that reflects the company's robust value creation. The modular technology inserts into reflow oven lines to meet increasing demand for high-volume, void-free automated inline soldering. Heller reports this module reduces voids in a solder joint by 99%. It enables thermal profile porting directly from non-vacuum reflow applications, achieving low cost of ownership and high units per hour.

Heller further strengthens its portfolio through its dynamic three-tiered process and capability control (CPK) system. The software package addresses oven CPK, process CPK, and product traceability, enabling efficient and streamlined statistical process control (SPC) that set quality specifications and alert operators of aberrant trends. Heller's CPK system also provides automatic record keeping and recall, delivering peace-of-mind to customers regarding record reviews.

- **Tier 1:** Oven CPK comes standard in every Heller oven and offers unmatched zone monitoring, capturing temperature variations over time to determine both individual zone CPK and overall CPK. It also enables real-time feedback on oven performance and performance assurance within desired specifications.
- **Tier 2:** The Heller 365 OvenWATCH monitors printed circuit board assembly (PCB) quality as it passes through the oven, optimizing and streamlining the Process CPK. This monitoring is round-the-clock, delivering benefits such as SPC analysis and alert reporting, board profile generation sans thermocouples, and remote capabilities for off-site troubleshooting.
- **Tier 3:** Heller provides best-in-class traceability through time-stamps, and it stores all PCBs and assemblies, which enables customers to recall them for any future assembly. Every product receives positive part identification by solder paste, baseline profile and product phone, board-level reflow soldering condition traceability, and data/parameter recall for the International Organization for Standardization and customer audits.

Furthermore, Heller offers a flux collection system that traps flux in easily removable collection jars, which are replaceable while the oven runs. This process saves time-consuming PM. Heller's flux filtration box does not carry flux clogging risks for longer-term PM intervals. Additionally, the company's proprietary Flux-Free Grill system limits the flux residue on the cooling grills, giving Heller's system the highest production yields of any oven.

End-to-end Service

Since customer satisfaction is critical to Heller's growth strategy, the company's one-on-one, collaborative interaction with customers provides Heller with a foundational and

comprehensive understanding of its client's needs before designing a best-in-class semi-custom product. To ensure its customers receive their customized solutions on time, Heller also staffs a dedicated engineering team of 80 engineers whose sole focus is semi-custom solutions. This targeted approach to service demonstrates Heller's aggressive approach to customer ownership and service experience. Also, the company offers around-the-clock customer service hotline for any issues related to the SMT soldering equipment. With service centers located across Asia, North America, and Europe, Heller guarantees fast troubleshooting and resolution. Frost & Sullivan commends Heller for its ability to provide the industry's lowest TCO, along with its ability to design and deliver customized solutions on time.

As manufacturers alter their processes in search of cost-effective and robust SMT reflow soldering solutions that lower their TCO, Heller delivers operating costs less than its competitors, further bolstering its value proposition and its competitive advantage. Heller's industry-leading technology features, such as balanced flow heating and cooling, reduce nitrogen consumption by 40% to 50%. Customers also state significant energy efficiency, saving 40% more than they would with Heller's competitors. The company reported that customers using its reflow technology realized savings between \$15,000 and \$18,000 annually.

Unmatched Excellence

Heller stands apart as a pioneer in the SMT reflow soldering equipment market, having delivered the first convection reflow soldering in the 1980s. It receives regular commendations and accolades for its excellence, efficiency, comprehensive service offerings, and best-in-class technology. Well-known companies, such as IBM and Lean Stream & Heller Reflow Technology (North California's top sales representative group), are proud to associate with Heller, which is a testament to their confidence in Heller's competence. Moreover, the company's unmatched reflow oven performance enhances its brand credibility across the SMT reflow soldering ovens industry, identifying Heller as a market leader.

The company strategically established a local presence across the world, with a committed and trusted distributor network in the Americas, Europe, Australia, New Zealand, Asia, and Africa. By maintaining a diverse geographic footprint, Heller strengthens its brand visibility while also providing convenient support to its current and future clients, enabling it to reach out and fulfill customer needs worldwide. Also, despite having factories in China and Korea, Heller reported no supply chain or staffing disruptions in the wake of COVID-19, enabling it to continue operations undisturbed. Frost & Sullivan believes that Heller's wide-reach, partnerships, and aforementioned strategically linked supply chain position it as a market leader in delivering the best products on-time, thereby strengthening its brand equity.

Conclusion

As surface mount technology continues to transition into Industry 4.0, growing complexity in printed circuit boards and increasing assembly yields inhibit manufacturers. If these companies cannot meet high-demand volume efficiently, customers will suffer and lose confidence in them. As an established leader, manufacturer, and pioneer in the surface mount technology reflow soldering oven market, Heller Industries continues to excel through its continuous innovation and customer-centric mindset. The company continues its agility and adaptability, maintaining production and processes throughout the COVID-19 pandemic, delivering industry-leading ovens that guarantee the lowest total cost of ownership, with a 40% to 50% reduction in nitrogen consumption, minimized maintenance needs, and up to 40% in energy savings.

For its unmatched technological expertise, laser focus on customer success, unmitigated adaptability, and a strong overall performance, Heller Industries is recognized with Frost & Sullivan's 2020 Global Company of the Year Award for the surface mount technology soldering equipment market.

Significance of Company of the Year

To receive the Company of the Year Award (i.e., to be recognized as a leader not only in your industry, but among non-industry peers) requires a company to demonstrate excellence in growth, innovation, and leadership. This excellence typically translates into superior performance in three key areas—demand generation, brand development, and competitive positioning—that serve as the foundation of a company’s future success and prepare it to deliver on the 2 factors that define the Company of the Year Award: Visionary Innovation and Performance, and Customer Impact).



Understanding Company of the Year

Driving demand, brand strength, and competitive differentiation all play critical roles in delivering unique value to customers. This three-fold focus, however, must ideally be complemented by an equally rigorous focus on Visionary Innovation and Performance to enhance Customer Impact.

Key Benchmarking Criteria

For the Company of the Year Award, Frost & Sullivan analysts independently evaluated each factor according to the criteria identified below.

Visionary Innovation & Performance

Criterion 1: Addressing Unmet Needs

Requirement: Implementing a robust process to continuously unearth customers' unmet or under-served needs, and creating the products or solutions to address them effectively

Criterion 2: Visionary Scenarios through Mega Trends

Requirement: Incorporating long-range, macro-level scenarios into the innovation strategy, thereby enabling "first-to-market" growth opportunity solutions

Criterion 3: Implementation of Best Practices

Requirement: Best-in-class strategy implementation characterized by processes, tools, or activities that generate a consistent and repeatable level of success.

Criterion 4: Blue Ocean Strategy

Requirement: Strategic focus on creating a leadership position in a potentially "uncontested" market space, manifested by stiff barriers to entry for competitors

Criterion 5: Financial Performance

Requirement: Strong overall business performance in terms of revenues, revenue growth, operating margin, and other key financial metrics

Customer Impact

Criterion 1: Price/Performance Value

Requirement: Products or services offer the best value for the price, compared to similar offerings in the market.

Criterion 2: Customer Purchase Experience

Requirement: Customers feel they are buying the most optimal solution that addresses both their unique needs and their unique constraints.

Criterion 3: Customer Ownership Experience

Requirement: Customers are proud to own the company's product or service and have a positive experience throughout the life of the product or service.

Criterion 4: Customer Service Experience

Requirement: Customer service is accessible, fast, stress-free, and of high quality.

Criterion 5: Brand Equity

Requirement: Customers have a positive view of the brand and exhibit high brand loyalty.

Best Practices Recognition: 10 Steps to Researching, Identifying, and Recognizing Best Practices

Frost & Sullivan analysts follow a 10-step process to evaluate Award candidates and assess their fit with select best practice criteria. The reputation and integrity of the Awards are based on close adherence to this process.

STEP	OBJECTIVE	KEY ACTIVITIES	OUTPUT
1 Monitor, target, and screen	Identify Award recipient candidates from around the globe	- Conduct in-depth industry research - Identify emerging sectors - Scan multiple geographies	Pipeline of candidates who potentially meet all best-practice criteria
2 Perform 360-degree research	Perform comprehensive, 360-degree research on all candidates in the pipeline	- Interview thought leaders and industry practitioners - Assess candidates' fit with best-practice criteria - Rank all candidates	Matrix positioning of all candidates' performance relative to one another
3 Invite thought leadership in best practices	Perform in-depth examination of all candidates	- Confirm best-practice criteria - Examine eligibility of all candidates - Identify any information gaps	Detailed profiles of all ranked candidates
4 Initiate research director review	Conduct an unbiased evaluation of all candidate profiles	- Brainstorm ranking options - Invite multiple perspectives on candidates' performance - Update candidate profiles	Final prioritization of all eligible candidates and companion best-practice positioning paper
5 Assemble panel of industry experts	Present findings to an expert panel of industry thought leaders	- Share findings - Strengthen cases for candidate eligibility - Prioritize candidates	Refined list of prioritized Award candidates
6 Conduct global industry review	Build consensus on Award candidates' eligibility	- Hold global team meeting to review all candidates - Pressure-test fit with criteria - Confirm inclusion of all eligible candidates	Final list of eligible Award candidates, representing success stories worldwide
7 Perform quality check	Develop official Award consideration materials	- Perform final performance benchmarking activities - Write nominations - Perform quality review	High-quality, accurate, and creative presentation of nominees' successes
8 Reconnect with panel of industry experts	Finalize the selection of the best-practice Award recipient	- Review analysis with panel - Build consensus - Select winner	Decision on which company performs best against all best-practice criteria
9 Communicate recognition	Inform Award recipient of Award recognition	- Announce Award to the CEO - Inspire the organization for continued success - Celebrate the recipient's performance	Announcement of Award and plan for how recipient can use the Award to enhance the brand
10 Take strategic action	Upon licensing, company able to share Award news with stakeholders and customers	- Coordinate media outreach - Design a marketing plan - Assess Award's role in future strategic planning	Widespread awareness of recipient's Award status among investors, media personnel, and employees

The Intersection between 360-Degree Research and Best Practices Awards

Research Methodology

Frost & Sullivan's 360-degree research methodology represents the analytical rigor of our research process. It offers a 360-degree view of industry challenges, trends, and issues by integrating all 7 of Frost & Sullivan's research methodologies. Too often companies make important growth decisions based on a narrow understanding of their environment, leading to errors of both omission and commission. Successful growth strategies are founded on a thorough understanding of market, technical, economic, financial, customer, best practices, and demographic analyses. The integration of these research disciplines into the 360-degree research methodology provides an evaluation platform for benchmarking industry participants and for identifying those performing at best-in-class levels.

360-DEGREE RESEARCH: SEEING ORDER IN THE CHAOS



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Frost & Sullivan, the Growth Partnership Company, enables clients to accelerate growth and achieve best-in-class positions in growth, innovation, and leadership. The company's Growth Partnership Service provides the CEO and the CEO's Growth Team with disciplined research and best practice models to drive the generation, evaluation, and implementation of powerful growth strategies. Frost & Sullivan leverages more than 50 years of experience in partnering with Global 1000 companies, emerging businesses, and the investment community from 45 offices on six continents. To join our Growth Partnership, please visit <http://www.frost.com>.