

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

FROST & SULLIVAN BEST PRACTICES AWARD

SMT REFLOW SOLDERING EQUIPMENT- GLOBAL

Company of the Year 2020

FROST & SULLIVAN

BEST  
2020 PRACTICES  
AWARD

**HELLER**  
INDUSTRIES

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## Background and Company Performance

### *Industry Challenges*

Surface mount technology (SMT) is a component assembly technology leveraged in attaching and connecting components on a printed-circuit board (PCB) leveraging Mass Production solder-reflow processes. The methodology enables manufacturers to produce reliable assembling at a reduced weight, volume, and cost. Used in a growing number of commercial and industrial products, SMT mounts electronic components on PCB surfaces or substrates. While previous conventional technology inserted components through holes in the 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 more complex as PCB manufacturing and component design become more 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. Those manufacturers that fail to upgrade their technologies with advances features fall behind the competition, negatively impacting their revenues, margins, and their relationships with customers; thus, leading to contract loss and customer churn. If SMT companies cannot meet high-demand volume efficiently due to poor research and development (R&D) processes, 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 of Heller Industries*

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 continues to set the gold standard for SMT reflow ovens, continuing to refine its systems to satisfy advanced application requirements.

### **Adapting to a Changing Technological Landscape**

Frost & Sullivan finds Heller maintains its competitiveness through its Darwinian approach to product development, as the company adapts to ongoing technology transitions and the fluctuating customer needs that follow. By leveraging a customer-centric mindset, a highly skilled engineering department, and comprehensive R&D, Heller develops high-performance products that deliver a lower total cost of ownership (TCO).

To enhance its customer experience and satisfaction, Heller designed its Mark 7 (MK7) Series of machines in 2018. The series features an evolving design, such as uniformity,

and a large-sized blower, which guarantees better airflow for heavy or difficult boards and carriers. In fact, Heller also developed ovens with novel catalysts that optimize and heighten operational efficiency, minimize flux maintenance, and lower nitrogen consumption rates.

### *Mark 7 Series*

Heller's MK7 platform differentiates through its revolutionary designs and features. The platform answers customer needs for lower delta temperature (Delta T), reduced nitrogen consumption, and extended preventative maintenance (PM) into a new low-height package, enabling visibility across the production floor.

The series' low-height heater module provides improved airflow and uniformity, resulting in reduced Delta T. The MK7's uniform gas management system also eliminates "net flow" which reduces nitrogen consumption by up to 40%. Combined with the new semi-circular heater, which sports improved robustness and efficiency, resulting in a much longer lifetime, MK7 uses a 10 inch (25.4 centimeters) long heater module, which provides more modules in the same heating length, offering greater process control and reduced liquid times.

The MK7 series also boasts Heller's tried-and-true features, such as pure forced convection heating, advanced Windows operation system with data and alarm logging, and lead-free processing. In addition, the company stacked its MK7 with new features that strengthen it from the ground up. For example, the company strengthened its flux collection system with a filtration box, which has no flux clogging risk for a longer-term PM interval. Additionally, the company's flux-free grill system limits the flux residue on the cooling grills, giving the Heller system the highest production yields of any oven.

Moreover, Heller's MK7 provides a dynamic three-tiered Process Control system (Tier 1: Oven CPK, Tier 2: Process CPK, Tier 3: Product Traceability), enabling customers to improve product quality and yield quickly while reducing costs. The added benefit is automatic record-keeping and recall, delivering customers with the peace-of-mind that all process parameters are under control and within spec.

### **Evolving Technology through Megatrends**

As Industry 4.0 continues to alter the technological landscape, more industries and end customers, such as electronic device manufacturers, are realizing the productivity and value attached to connectivity and digitization. To extract this value from their connected assets, enterprise customers require smart automation-driven SMT solutions to accelerate their Industrial Internet of Things transformation by leveraging a connected asset ecosystem, automation intended to minimize manual intervention while ensuring error-free measurements, as well as predictive analytics engineered to accelerate time-to-market.

To answer its customers' call for Industry 4.0, Heller developed Electrical Testing Laboratories (ETL) and Conformité Européene (CE) 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 SEMI Equipment Communications Standard and Generic Equipment Model standards-based interface, as well as remote monitoring and technical support options 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.

Real-time and predictive analytics are significant factors for several industries that lack actionable insights, creating a hazardous environment. Accurate, real-time insights and predictive analytics empower customers to identify and address issues without time-spent waiting for the development cycle's end. Additionally, immediate actionable-decisions prevent unplanned downtime due to sudden asset malfunctioning; thus, saving end-customers from incurring heavy financial losses.

Heller builds its commitment and expertise into its advanced technologies through multiple strategic approaches, such as collaborations. For example, the company partnered with Panasonic Factory Solutions to leverage its PanaCIM<sup>®</sup>, Panasonic's manufacturing execution system. By integrating its reflow ovens with PanaCIM<sup>®</sup>, as well as additional automation equipment from other vendors, Heller created a network of devices, machines, and systems. Heller's offerings support Industry 4.0 communication, and the company takes predictive analytics to the next level by collaborating with brands such as Panasonic to enable customers to harness Big Data and implement corrective strategies to enhance productivity and witness improved margins and profitability. By leveraging strategic partnerships to create new technology, Heller is transforming manufacturing floors into smart factories.

### **Maintaining an Optimal Technological Ecosystem**

Heller maintains a product and technology strategy tailored toward customer value and lowering equipment costs to stay competitive in the market. In 2018, the United States (US) government levied a 25% import tax on goods manufactured in China—the world's manufacturing hub. The decision affected several industries, including SMT. As a result, Heller's competitors increased their oven prices to prevent high-scale losses, since their manufacturing bases are in China, restricting their ability to circumvent the import duty. Moreover, the tax continues to affect the competition in terms of the purchase experience for cost-conscious customers, impacting their margins in the short-term, 9 to 12 months.

In response to the duty tax imposition, Heller shifted its manufacturing base and supply chain from its China manufacturing plant to the Korea location, resuming manufacturing goods for the US market, which exempts the import duty levy on Heller. In this context, Heller is best-positioned to continue offering a best-in-class and differentiated purchase experience to its customers. Similar to its China-based factory, the company's Korea facility can produce any reflow oven, giving Heller a competitive advantage without a price

increase. Customers that continue buying Heller's products can purchase more ovens without having to extend their budgets.

This competitive edge over the competition will attract potential customers and, thus, expand the company's customer base. Since then, Heller continues to deliver an unmatched purchase experience to its US customers, reporting high margins. In addition to supplying the equipment at a lower cost, Heller's strategic supply chain enables it to deliver products on time, which is a critical success factor in the industry. Therefore, Frost & Sullivan finds Heller's proven strategy offers the best purchase experience in the industry.

### **Generating Robust Value-rich Features**

Heller ensures its customers realize an evident difference in performance features throughout the product lifecycle. One feature that reflects the company's robust value creation is 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**—Monitoring process temperature is important, as exceeding temperature limits could damage the internal SMT components as well as foster intermetallic growth; if not hot enough, the past may not reflow adequately. The Oven CPK comes standard in every Heller oven. The tried-and-true system delivers unmatched zone monitoring, capturing temperature variations over time to determine both individual zone CPK and overall CPK. Moreover, Oven CPK enables real-time feedback on the oven's performance and constant performance assurance within the desired specifications.
- **Tier 2**—Heller's 365 continuously monitors the quality of the printed circuit board (PCB) assemblies as they pass through the oven, optimizing and streamlining the Process CPK. The system monitors PCB quality around-the-clock and delivers additional benefits, such as automatic SPC analysis and alert reporting, board profile generation sans thermocouples, as well as remote capabilities for off-site troubleshooting. Heller's 365 works in the Process CPK to deliver end-users with proof of product quality.
- **Tier 3**—Heller's traceability feature provides time-stamps and stores all PCBs and assemblies, enabling customers to recall them for any future assembly. Each product receives positive part identification by solder paste, baseline profile and product phone, board-level reflow soldering condition traceability, and data/parameter recall for ISO and customer audits.

## Characterized Success through Proven Results

Customers regularly reevaluate their processes and seek cost-effective, yet robust SMT reflow soldering solutions to minimize their capital and operational expenditures and, consequently, lowering their TCO. Differentiated by its strong SMT reflow soldering ovens, Heller delivers operational expense savings, enhancing the company's value proposition and strengthening its competitive position in the market.

Considering this existing need for fast returns with few investments, Heller's advanced, balanced flow heating and cooling technology leveraged in its reflow soldering ovens reduces nitrogen consumption by 40% to 50%. Customers reported significant energy efficiency levels, which saved them a maximum of 40% of the cost incurred through competing solutions—for instance, customers leveraging Heller's reflow technology witnessed savings between \$15,000 to \$18,000 annually, which is the lowest TCO reported in the industry.<sup>1</sup>

Furthermore, customer satisfaction is critical to Heller's growth strategy. For example, Heller collaborates and partners with its customers. The one-on-one interaction 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 has a dedicated engineering team comprised of 80 engineers whose sole focus is semi-custom solutions. This targeted approach to service demonstrates Heller's aggressive approach to customer ownership experience. 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.

## Achievements for a Strong Performer

A pioneer in the SMT reflow soldering oven market, Heller receives regular accolades for its excellent efficiency, comprehensive service offerings, and best-in-class technology. Household names, such as International Business Machines and Lean Stream (North California's top sales representative group) are proud to associate with Heller, providing 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 market, identifying Heller as a market leader.

Heller 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 foothold, Heller strengthens the company's brand visibility while also providing convenient support to its current and future clients, enabling the company to reach out and fulfill customer needs worldwide.

Frost & Sullivan believes that Heller's wide-reach, partnerships, and aforementioned strategically linked supply chain position it as a market leader in delivering on-time the best products for customers, thereby strengthening its brand equity.

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<sup>1</sup>Heller Industries. Website.

## *Conclusion*

As an established leader, manufacturer, and pioneer in the surface mount technology (SMT) reflow soldering oven market, Heller Industries (Heller) receives repeated recognition for its excellence and on-time service delivery, which are two key factors that drive the global SMT reflow soldering equipment market. As more customers transition to Industry 4.0, Heller maintains its leading position by updating its technology and outfitting it with state-of-the-art technology. Moreover, the company's customer-centric approach drives its continuous product development, thus enabling it to meet cost-conscious customers on time.

In light of the United States' (US) high import duty, the company shifted its manufacturing to Korea, catering to its US customers. Heller's portfolio of lead-free-certified Mark Series SMT reflow ovens are best-of-breed offerings because they guarantee the lowest TCO, with a 40 to 50% reduction in nitrogen consumption; minimized maintenance needs; and about 40% in energy savings. In addition, Heller aligns its product strategy with the rapid technological advances that impact customers' changing preferences and demands.

With its strong overall performance, Heller Industries earns Frost & Sullivan's 2020 Global Company of the Year Award for the SMT reflow technology 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 underserved 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 revenue, 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 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 <b>Monitor, target, and screen</b>	Identify Award recipient candidates from around the globe	<ul style="list-style-type: none"> <li>• Conduct in-depth industry research</li> <li>• Identify emerging sectors</li> <li>• Scan multiple geographies</li> </ul>	Pipeline of candidates who potentially meet all best-practice criteria
2 <b>Perform 360-degree research</b>	Perform comprehensive, 360-degree research on all candidates in the pipeline	<ul style="list-style-type: none"> <li>• Interview thought leaders and industry practitioners</li> <li>• Assess candidates' fit with best-practice criteria</li> <li>• Rank all candidates</li> </ul>	Matrix positioning of all candidates' performance relative to one another
3 <b>Invite thought leadership in best practices</b>	Perform in-depth examination of all candidates	<ul style="list-style-type: none"> <li>• Confirm best-practice criteria</li> <li>• Examine eligibility of all candidates</li> <li>• Identify any information gaps</li> </ul>	Detailed profiles of all ranked candidates
4 <b>Initiate research director review</b>	Conduct an unbiased evaluation of all candidate profiles	<ul style="list-style-type: none"> <li>• Brainstorm ranking options</li> <li>• Invite multiple perspectives on candidates' performance</li> <li>• Update candidate profiles</li> </ul>	Final prioritization of all eligible candidates and companion best-practice positioning paper
5 <b>Assemble panel of industry experts</b>	Present findings to an expert panel of industry thought leaders	<ul style="list-style-type: none"> <li>• Share findings</li> <li>• Strengthen cases for candidate eligibility</li> <li>• Prioritize candidates</li> </ul>	Refined list of prioritized Award candidates
6 <b>Conduct global industry review</b>	Build consensus on Award candidates' eligibility	<ul style="list-style-type: none"> <li>• Hold global team meeting to review all candidates</li> <li>• Pressure-test fit with criteria</li> <li>• Confirm inclusion of all eligible candidates</li> </ul>	Final list of eligible Award candidates, representing success stories worldwide
7 <b>Perform quality check</b>	Develop official Award consideration materials	<ul style="list-style-type: none"> <li>• Perform final performance benchmarking activities</li> <li>• Write nominations</li> <li>• Perform quality review</li> </ul>	High-quality, accurate, and creative presentation of nominees' successes
8 <b>Reconnect with panel of industry experts</b>	Finalize the selection of the best-practice Award recipient	<ul style="list-style-type: none"> <li>• Review analysis with panel</li> <li>• Build consensus</li> <li>• Select winner</li> </ul>	Decision on which company performs best against all best-practice criteria
9 <b>Communicate recognition</b>	Inform Award recipient of Award recognition	<ul style="list-style-type: none"> <li>• Present Award to the CEO</li> <li>• Inspire the organization for continued success</li> <li>• Celebrate the recipient's performance</li> </ul>	Announcement of Award and plan for how recipient can use the Award to enhance the brand
10 <b>Take strategic action</b>	Upon licensing, company able to share Award news with stakeholders and customers	<ul style="list-style-type: none"> <li>• Coordinate media outreach</li> <li>• Design a marketing plan</li> <li>• Assess Award's role in future strategic planning</li> </ul>	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



## About Frost & Sullivan

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>.