

*New  
Heller  
EXL  
Series*  
reflow  
ovens



**HELLER**  
INDUSTRIES  
THE INTELLIGENT CHOICE WORLDWIDE



## HELLER EXL Series



Winner of the 2001 and 2002  
Vision Awards for Innovation and  
Best New Product

## Heller's EXL Series reflow ovens: *built to a higher standard*

Heller Industries, the Worldwide Leader in Reflow, continues to set new standards in advanced reflow technology. Heller's EXL Series ovens, designed in cooperation with our most demanding customers, anticipate your future needs for increased productivity and throughput:

- Lead Free Reflow – More lead free boards have been processed on Heller ovens than any other so we can eliminate the Lead-Free learning curve for your company!
- Flux separation systems for both N<sub>2</sub> *and* air ovens to eliminate flux condensation – an industry first.
- Maintenance Free Operation – Flux Separation system has proprietary “Self Cleaning” option that does not use water or expensive filters.
- Lowest Cost of Ownership – Ultra low nitrogen features reduce N<sub>2</sub> consumption by 50% while new Low KVA design reduces Electrical consumption by 40%.
- Easiest Profiling – With integrated KIC and ECD profiling systems using profile optimization software and virtual profiling options.
- Multiple Manufacturing Sites – Now with factories in China, Korea and the US, Heller's regional Centers for Excellence offer “local” manufacturing, service, sales and process support 24 hours a day.

To meet advanced reflow applications around the world, Heller's EXL Series Ovens provide six-sigma performance; zone-to-zone, oven-to-oven and facility-to-facility with our Copy Exact manufacturing philosophy. Process consistency supports identical profile performance in air or nitrogen, regardless of component density or board loading. Rugged construction ensures reliable operation through years of heavy duty use.

## Expertise in convective air management.

The foundation of Heller's Worldwide Reflow Leadership is our in-depth understanding of convective heat generation, transfer and management. The result – Heller ovens are unique in using the fastest-acting heat source available: low-mass coil heaters.

Our low-mass coil heaters generate the desired temperature faster than any other reflow heat source, and repond in less than half a second to temperature changes of less than 0.1 °C thus maintaining the highest level of temperature repeatability.

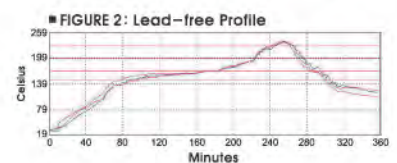
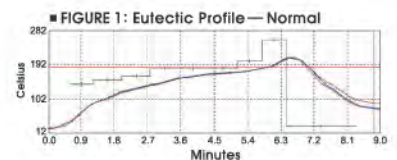
Heller's heater modules are also unique in heating air on the intake, allowing it to be blended into a uniformly mixed air blanket. With temperature gradients of as little as 2 °C, Heller ovens consistently have the lowest  $\Delta T$  across the PCB.

Finally, Heller's advanced air management technology maximizes the two critical reflow variables: air velocity and air volume. Thus, the highest level of convective heat transfer is achieved, and the flow of air is balanced throughout the oven. This balance also serves to minimize nitrogen consumption, creating the most repeatable and cost-effective reflow process available.

New

### ■ Optimized lead-free reflow -

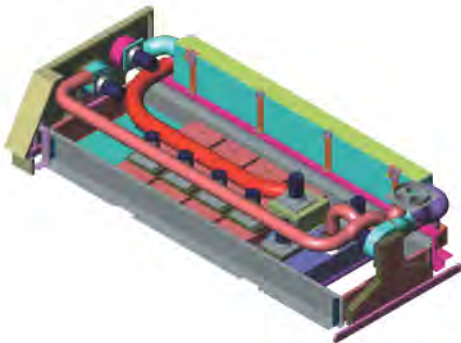
the result of Heller's reconfigured zone design. With higher efficiency heater modules and an increase in the number of reflow zones, Heller EXL ovens are prepared to meet the lower  $\Delta T$  and higher temperature requirements of lead-free vs. eutectic profiles, as shown in FIGURE 1 and FIGURE 2.



# Advanced Technology for Demanding Processes

## New

- **Eliminate costly maintenance with our Generation 6 advanced flux removal system.** Utilized in both air and N<sub>2</sub> ovens, flux vapor is removed from the oven chamber and collected externally using innovative cooling techniques and increased surface area for flux residue and particulate capture.



This award winning system utilizes a proprietary 'self-clean' feature thus providing virtually maintenance free operation for as long as 1 year.

- **Closed-loop nitrogen control** to maintain stable, user-selected oxygen PPM levels automatically. A wide range of PPM levels can be selected with nitrogen consumption rates as low as 350 SCFH(10m<sup>3</sup>) depending upon board size. An internal oxygen sensor and proportioning valve is used to minimize nitrogen consumption, and related costs by up to 50%!

## New

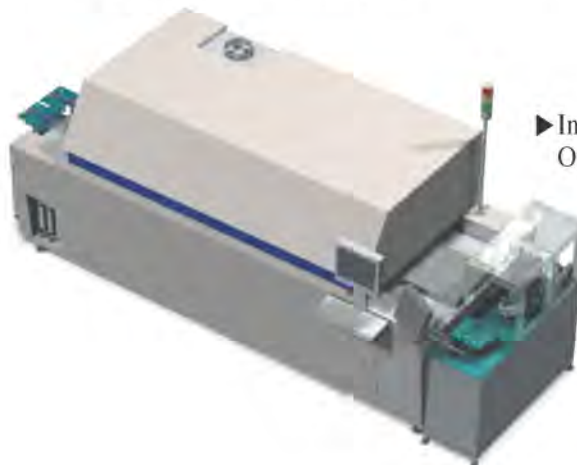
- **UL Listing** is now available on all Heller Reflow Ovens to satisfy local codes and safety requirements.



- **3-mm conveyor edge pins** - optional .120" (3mm) edge hold fingers are perfect for applications where components are placed beyond the .187" (4.7mm) SMEMA Standard distance from the edge of the PCB.



- **Compact center board support(CBS)** prevent board sag, maintain  $\Delta T$  across the PCB and allow overall board temperatures to repeat to within 0.5°C, eliminating the need for different profiles when a CBS is required.



► Integrated Wafer Processing Oven with Robotic Indexer

## New

- **Leading the way in wafer, flip chip, BGA and C-4 applications**

Heller has partnered with DEK(Screen Printers) and ADEPT Robots to create the first in-line solution for wafer bumping and ball attach.

With cassette-to-cassette or FOUF-to-FOUF handling of wafers up to 300mm, this system offers a turn-key solution that increases throughput and yield by up to 300%.

Heller's innovative conveyor system eliminates wafer breakage and with temperature gradients of as little as 2°C, Heller gives the highest repeatability and lowest  $\Delta T$ .

Best of all, with our fast response coil heater technology, profile setup and changeover *saves hours* vs. conductive heat systems.

And all Heller ovens can be equipped for 350°, 400°, or 450° maximum operating temperature in either Class 10,000 or Class 1,000 cleanroom environments.

# Heller reflow ovens deliver years of easy, maintenance-free operation.

- **The lowest  $\Delta T$ ,** enhanced temperature uniformity, repeatability and high-load handling, the result of Heller's air management expertise and enhanced heating modules with 25% higher airflow.
- **Profile repeatability** for densely packed boards, from balanced heater modules that respond in less than half a second to temperature changes of less than 0.1 °C
- **For flex substrates :** Advanced air flow management, with optional variable blower speed control.



*Company-wide CAD/CIM system link  
Heller's engineering and design departments with  
both in-house and overseas  
manufacturing facilities*

- **Global support,** from spare parts depots located around the world, ongoing training updates and optional RMATS(Remote Modem-Accessible Technical Support), with global video links for direct access to a factory-based Heller engineer.
- **Protection for heat sensitive components** with carbureted heater modules to create temperature differentials of up to 100 °C between the top and bottom heated zones.

## Heller's software solutions for process control

Heller's EXL reflow ovens, with integral CPU and keyboard, and feature-enhanced Windows-based software. Our new, easy-to-learn, user-friendly process control programs include:



KIC 2000 Profile Graphic

- **KIC Pilot H** – Single-pass profile prediction allows users to modify process parameters and review anticipated results on screen.

This eliminates the need for multiple profiling passes, reducing product changeover and setup time dramatically. To ensure process repeatability, profiles may be stored for rapid recall.



Board Tracking Software Graphic

- **Windows software** – Board-tracking software displays graphic representations of boards being processed, allowing production to be viewed as it passes through the oven. Adjustments to process parameters or board width can be made while the oven is running, supporting continuous process control. A PC-driven, PID closed-loop controller supports CIM networking capability. In addition, optional GEM / SECS II interface software is available.

## EXL Series



### 1700EXL Series – 1706/1707

The best value in the market. Ideal for Start ups or Medium Volume production. Includes sophisticated features previously found only on “premium” systems.

- ▶ Model 1706 : 6 Heat Zones / 1 Cool
- ▶ Model 1707 : 7 Heat Zones / 1 Cool



### 1800EXL Series – 1808/1809/1810

The workhorses, these consistent performers have proven themselves in thousands of high volume lines worldwide in 6 sigma environments. The most utilized reflow oven in the world today – outperforms, outlasts and outproduces.

- ▶ Model 1808 : 8 Heat Zones / 2 Cool
- ▶ Model 1809 : 9 Heat Zones / 2 Cool
- ▶ Model 1810 : 10 Heat Zones / 2 Cool

### 1809EXL-S Small Footprint Oven

Specially designed to accommodate reduced footprint requirements or to provide additional floorspace for Automatic Optical Inspection(AOI) systems, these ovens save 33”(84cm) of floorspace while providing the same throughput as our larger systems.

- ▶ Model 1809 EXL-S :
  - 9 Heat Zones / 2 Cool
  - 150”L × 54”W × 63”H
  - 381cm × 137cm × 160cm

### 1812 EXL-S Small Footprint oven

Ultra-High throughput system with 12 heated zones. The air version occupies only 175” of floor space while the nitrogen version requires only 200”, saves almost 1 meter of production area without compromising on performance!

- ▶ Model 1812 EXL - S :
  - 12 Heat Zones / 2 Cool
  - 175”L × 54”W × 63”H
  - 444cm × 137cm × 160cm



### 1900EXL Series – 1912/1913

The 1900 Series Ovens provide the ultimate High Volume production solution. With belt speeds up to 1.3m/min, these systems can accommodate the fastest Pick and Place systems while giving the highest levels of repeatability and lowest  $\Delta T$ 's.

- ▶ Model 1912
  - 12 Heat Zones / 2 Cool
- ▶ Model 1913
  - 13 Heat Zones / 2 Cool

### Common To All Heller Reflow Ovens

- ▶ Pure Forced Convection Heating
- ▶ Advanced Windows Operating system with Data Logging, Alarm Logging and GEM/Secs Host Computer interfacing option
- ▶ 5 T/C Profiling with KIC or ECD software - Standard
- ▶ Signal Light Tower - Standard
- ▶ Calendar Startup - Standard
- ▶ 350°C Operating Temperatures - Standard
- ▶ 400°C and 450°C Options
- ▶ Edge Hold Conveyor / Mesh Belt option
- ▶ Nitrogen Option with < 1000 SCFH@40PPM
- ▶ GEN 6 Filterless / Waterless Cooling option
- ▶ Nitrogen Retrofit option
- ▶ RMATS – Remote Monitoring and Technical Support option
- ▶ UL/CE configuration option
- ▶ Lead-Free processing capability
- ▶ Dual Edge Hold Conveyor option
- ▶ Lifetime Warranty on Heaters and Blowers

## Semiconductor Systems



### Model 1706EXL - Wafer

Designed for Cleanroom Class 10,000 and 1,000 environments, these high precision systems utilize the shortest available footprint, provide ultra-low PPM nitrogen levels and are perfectly suited for Wafer Bump, BGA Balling and Flip Chip applications.

- ▶ 6 Heat Zones / 1 Cool
- ▶ 60” Heated Tunnel length
- ▶ “Flighted” mesh belt for ease of Wafer on-load / off-load
- ▶ System capable of processing 4”(100mm), 5”(125mm), 6”(150mm), 8”(200mm) and 12”(300mm) wafers without tooling changeover
- ▶ Gen 6 Flux Separation System Eliminates maintenance
- ▶ Continuous Conveyor system protects against wafer damage
- ▶ Optional Configurations with integrated robot handler, fluxer, indexer and FOUP's available.



### 788 Vertical Curing Oven






This elevator format oven utilizes vertical space to accommodate curing applications of up to 4 hours while only occupying 96”(2.5m) of floorspace. Perfect for underfill and encapsulant.

- ▶ Versions available with 8’ (2.5m) and 10’ (3.0m) heights for varying cure times and throughputs.
- ▶ FIFO configuration ensures consistent results vs. batch system.
- ▶ PCB's up to 18” wide(460mm) can be processed
- ▶ Dual Feed option for ultra high throughput
- ▶ Pass through Cycle - Standard

# HELLER

## INDUSTRIES

THE INTELLIGENT CHOICE WORLDWIDE

	Overall Length	# of Heated Zones	# of Cooling Zones
 <p>CONVECTION MODULE</p> <p>COOL MODULE</p> <p><b>1700 SERIES</b></p>	134"	6 (1706) 7 (1707)	1 1
 <p><b>1800 SERIES</b></p>	183"	8 (1808) 9 (1809) 10 (1810)	2 2 2
 <p><b>1809-S</b></p>	150"	9	2
 <p><b>1812-S</b></p>	175" (Air) 200" (Nitrogen)	12 12	2 2
 <p><b>1900 SERIES</b></p>	232" (1912) 232" (1913)	12 (1912) 13 (1913)	2 or 3 2

### A Company founded on Technology

Founded in 1960, Heller Industries, pioneered convection reflow soldering in the 1980's. Over the years, Heller has worked in partnership with our customers to continually refine the systems to satisfy advanced application requirements. By embracing challenge and change, Heller continues in its position as the leader in Reflow technology. With the invention of the first waterless / filterless flux separation system, Heller won the prestigious Vision Award for Innovation in Soldering but more importantly extended maintenance intervals from weeks to months. With new Low nitrogen and Low KVA designs, Heller continues to lead the way with the lowest cost of ownership models in the industry.

Combining this unmatched engineering expertise with a business model that focuses on Regional Manufacturing and Centers for Excellence, Heller provides a "local" presence that goes beyond simple manufacturing. Localized Engineering, Service, Spares, Process Support and Training facilities separate Heller from the competition and make Heller the obvious choice for Reflow Soldering Solutions worldwide.

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