

# OvenRIDER® NL 2+

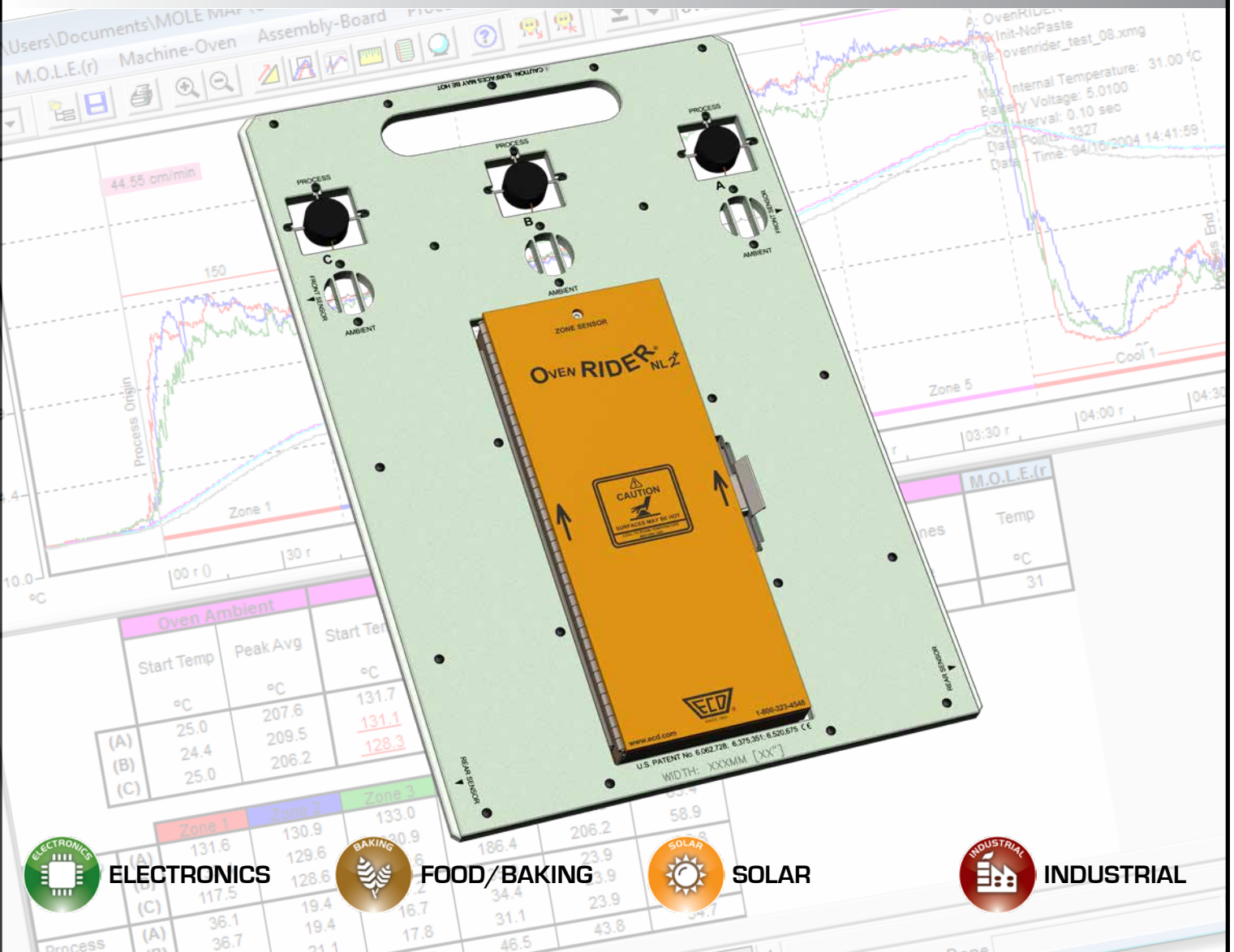
CONVECTION REFLOW OVEN VERIFICATION

## OvenRIDER® NL 2+

The patented OvenRIDER® NL 2+ travels through your oven with a M.O.L.E.® inside collecting data for analysis and SPC charting. A combination of thermal and process sensors measure oven performance, delivering consistent data that can be used to identify modest trends which may be developing, or serious conditions that have already arrived. Simple PCB profiling cannot detect all the subtleties which can have a profound effect on PCB production quality.



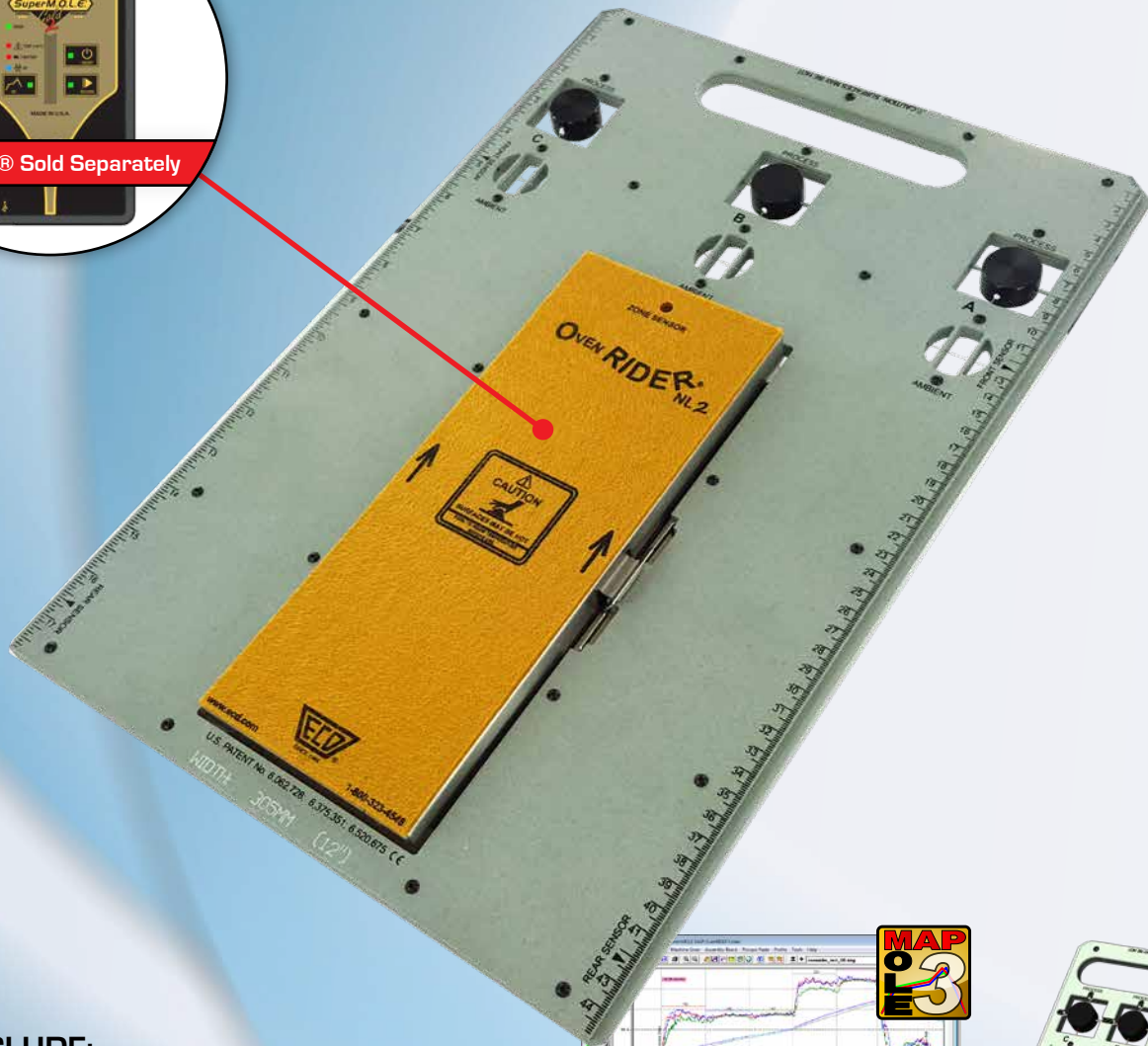
[www.ecd.com/products/overrider](http://www.ecd.com/products/overrider)



Look to ECD's OvenRIDER® NL 2+ if you need to VERIFY an oven's performance:  
 • post-maintenance • pre-production • pre-purchase • pre-repair •



M.O.L.E.® Sold Separately



**KITS INCLUDE:**

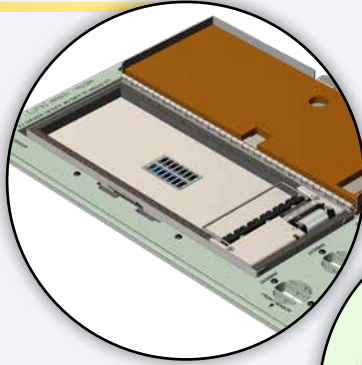
- OvenRIDER® NL 2+ Pallet
  - Includes 6 sensors & Thermal Barrier
- M.O.L.E.® MAP Software
- Start/Zones Magnet Kit
- Quick Reference Guide
- Carrying Box
- 1 year warranty on materials and workmanship



***Focused on Quality, Driven by Passion***

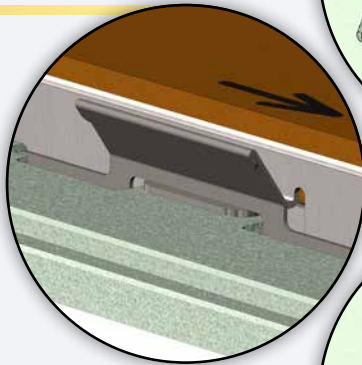
## THERMAL BARRIER

This barrier also is equipped with external insulation on the top and bottom, which provides the extra thermal protection needed for Lead-Free processes. This barrier is lowered 0.685" [17.40mm] into the plane of the pallet for extra oven clearance.



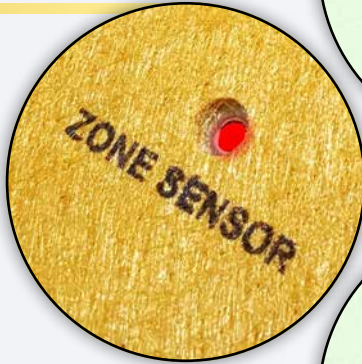
## BARRIER LATCH

- Mechanically robust and secure for longer life.
- Prevents M.O.L.E.® Thermal Profiler from over-temperature
- Prevents accidental dropping of M.O.L.E.® Thermal Profiler while handling



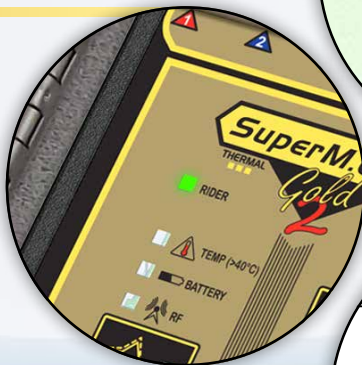
## ZONE SENSOR LIGHT

There is an LED porthole on the top of the barrier cover that illuminates when the OvenRIDER® NL 2+ detects zone boundary. This LED is powered by a replaceable 3.6 volt 1/2 AA lithium battery.



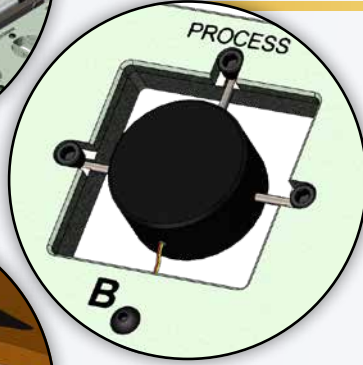
## RIDER LED

The Rider LED Indicates when SuperM.O.L.E.® Gold 2 is connected to a OvenRIDER® NL 2+ test pallet.



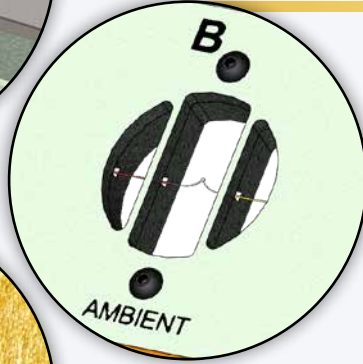
## PROCESS SENSORS

Three high mass pucks measure the effect of convection to drive heat evenly into a product. Each oven zone reports a Process Delta to verify convection consistency for SPC. This detects a failed fan, restricted vent or incorrect oven convection setting.



## AMBIENT SENSORS

Three exposed fast response thermocouples average the center 70% of the measured air temperature in each zone to verify consistency for SPC. This detects a failing heater or wrong oven setting. The NL 2+ pallet design offers added protection from accidental damage.



## SPEED SENSORS

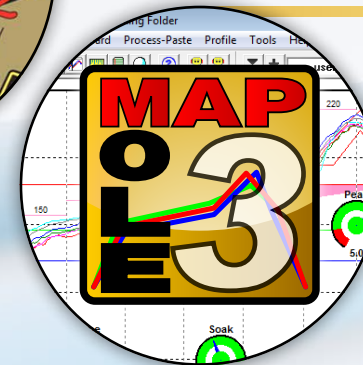
Front & Rear Speed Sensors define process origin and conveyor speed with rail-mounted 'Start' magnet. Belt speed verified for consistency (SPC). Detects the wrong oven setting or maintenance requirement.



## M.O.L.E.® MAP SOFTWARE

Download and analyze the data with the ECD award winning software.

- SPC predicts performance - reduces rework/scrap
- CP and Cpk - capability indices - calculated and presented automatically



# SPECIFICATIONS

## PHYSICAL: OvenRIDER® NL 2+

**Length (Pallet):** 452 mm [17.8 in]

**Height (Thermal Barrier):** 31.75 mm [1.25 in]

- 20.55 mm [0.81 in] above conveyor chain

**Width:**

- Standard: 167 mm [6.6 in], 305 mm [12 in], 458 mm [18 in]
- Custom: >167 mm [6.6 in]

**Weight:**

- 6.6": 1.74 kg [3.84 lb], 12": 2.81 kg [6.19 lb], 18": 3.54 kg [7.8 lb]

**Max. Operational Temperature (Pallet):** 300°C [572°F]

**Max. Operational Temperature (Thermal Barrier):**

- 200°C [392°F] for 9.5min. / 230°C [446°F] 8 min.

## PALLET SENSORS

6 (Process & Ambient)

Special Limits of Error K-Type thermocouple wire  
(± 1.1°C or 0.4%, whichever is greater)

## DATA ACQUISITION: SuperM.O.L.E.® Gold / 2

**Data Capacity:**

- SuperM.O.L.E.® Gold: 9 minutes 6 seconds
- SuperM.O.L.E.® Gold 2: 2,500 minutes (100% memory)

**Time Accuracy:** ±10 millisecond

**Time Resolution:** 0.1 Second

**Temperature Accuracy:** +/- 0.5°C [0.9°F]

**Temperature Resolution:** 0.056°C [0.1°F]

**Measurement Range:**

- SuperM.O.L.E.® Gold: 0°C to 300°C (32°F to 572°F)
- SuperM.O.L.E.® Gold 2: -200°C to 1271°C (-328°F to 2320°F)

## PATENT

U.S. PATENT No. 6,062,728; 6,375,351; 6,520,675

## WARRANTY

1 year parts and labor

## WEBSITE

[www.ecd.com](http://www.ecd.com)



## SYSTEM KITS:

### OvenRIDER® NL 2+ Standard Systems

- E56-6836-05: 168 mm [6.6 in] wide pallet
- E56-6836-15: 305 mm [12 in] wide pallet
- E56-6836-25: 458 mm [18 in] wide pallet

### OvenRIDER® NL 2+ Custom System

- E56-6836-35: >167 mm [6.6 in] wide pallet



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