

Application Note:

Using the ThermoBlade™ and TC-Bridge™ for Conveyorized Oven Lateral Heat Verification

Objectives:

- Collect time vs temperature data in the lateral direction from left to right inside an oven
- Verify oven temperature distribution at multiple zones

Required Materials:

1. One Measurement System

- ThermoBlade (with built-in thermal insulation)
- TC-Bridge™
- GateWay™
- DataLink Lab software with ZoneCue™ add-in modules

2. Oven zone parameters such as ...

Number of oven zones 5 zones

Length of each oven zone ~30 feet

Oven belt speed 60 feet per minute

(150 foot oven with 2.5 minute bake time = 60 feet/minute)

Procedure for collecting temperature data

Step 1. Setup ThermoBlade as a data logger

- (1a) Install batteries in the ThermoBlade. Secure the cover.
- (1b) Connect ThermoBlade to TC-Bridge including all eight thermocouple connections.
- (1c) Start DataLink software on a laptop.
- (1d) Set up ThermoBlade as a data logger following the instructions in ThermoBlade Quick Start Guide.
- (1e) Copy down the keycode, required for data download.

Note: ThermoBlade is now collecting temperature data from TC-Bridge probes

- (1f) Close the software DataLink.



Procedure for collecting temperature data (cnt'd)

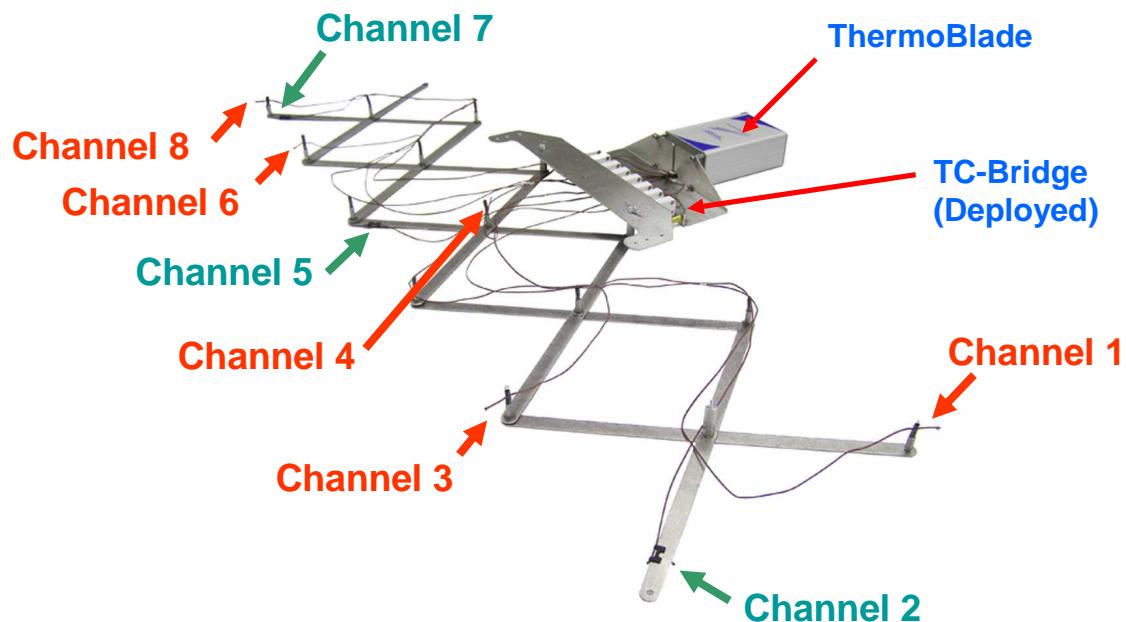
Step 2. Prepare hardware for placement in oven

(2a) Deploy TC-Bridge

(2b) Individual probes collect temperature readings at multiple locations

 Channels 1, 3, 4, 6, and 8 for air probes

 Channels 2, 5, and 7 for oven band surface probes



Procedure for collecting temperature data (cnt'd)

Step 3. Bring the ThermoBlade system to the cracker production line.

- (3a) Position ThermoBlade toward the oven entry.
- (3b) Allow TC-Bridge to follow the oven band motion to enter the oven.

Step 4. Getting ready to download data

- (4a) Wait for ThermoBlade / TC-Bridge to exit the oven.
CAUTION- DEVICES ARE HOT! POSSIBLE BURN HAZARD!
- (4b) Place the ThermoBiscuit / BreadScope system next to the laptop.

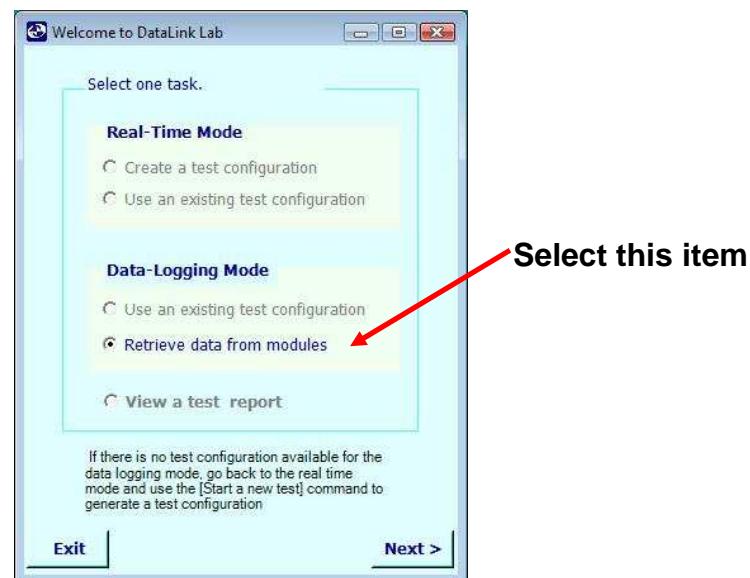
Note: ThermoBlade is now ready for download.

Procedure for collecting temperature data (cnt'd)

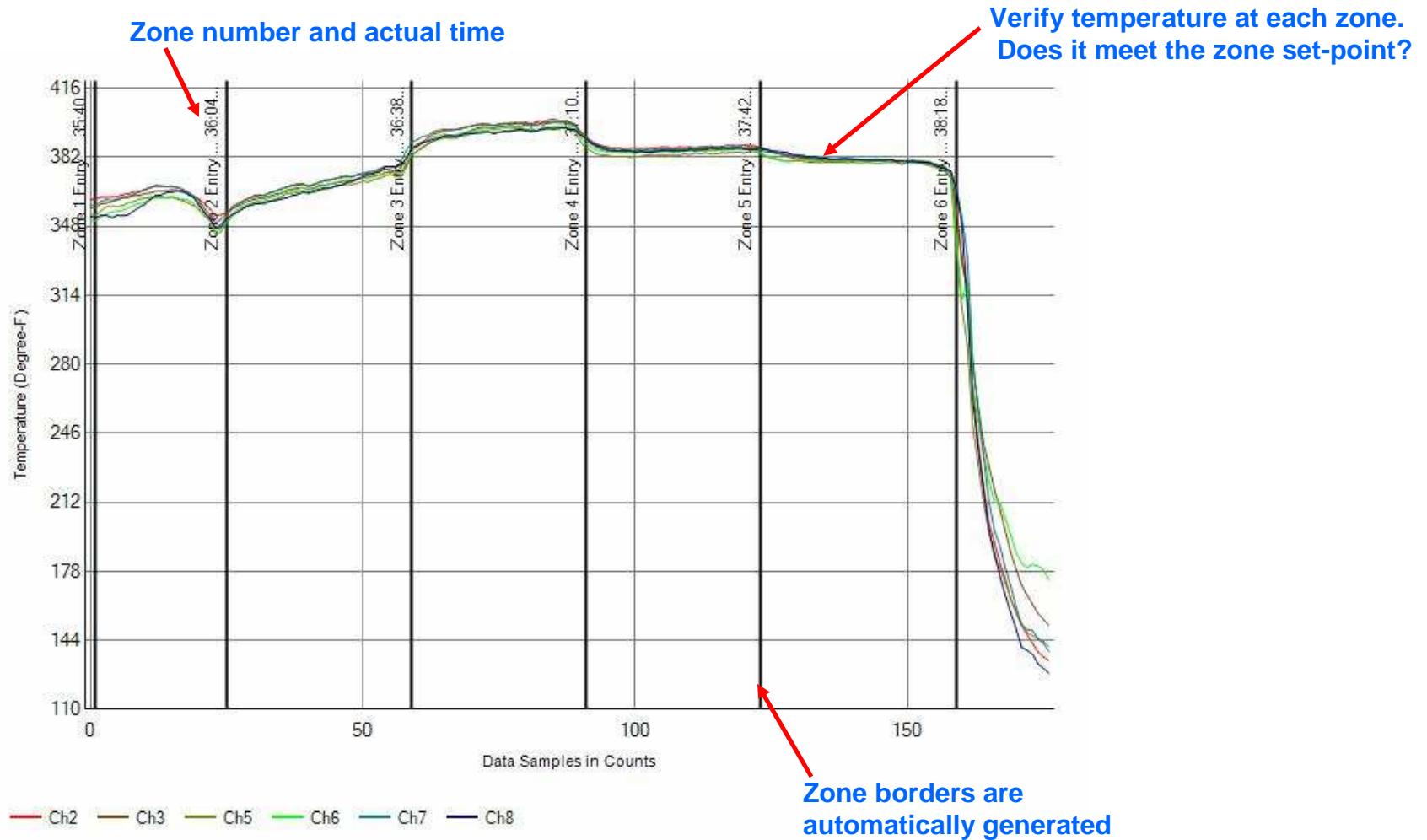
Step 5. Download temperature data

- (5a) Start the DataLink software and select [Retrieve data from a data logger].
- (5b) Follow instructions in ThermoBiscuit Quick Start Guide to download data.
- (5c) Remember to save the Excel report and the JPEG data chart.

Note: Data report is now available for review.



Oven Performance Analysis using temperature curves



Senario 1. Lateral temperatures vary from left to right

- Step 1. Compare air probe temperature readings (Channels 1, 3, 4, 6 and 8) to confirm that the data **from all five oven lateral locations** are consistent.
- Step 2. Compare surface band probe temperature readings (Channels 2, 5 and 7) to confirm that the data **from all three oven lateral locations** are consistent.
- Step 3. If there are any inconsistencies at either of the two steps above, verify the operations of the oven components at the anomaly zones.

Senario 2. Standard oven temperature profile for production

Step 2. Use the JPEG chart to provide a **standard oven temperature curve**.

Step 3. Generate a specific report for each product line configuration:

Different oven zones and speed

Different cracker ingredients

Different oven width

Step 4. Run the oven sanity check every week to confirm the production consistency.



*We are sure you will find
ThermoBlade system
useful for your production lines.*

Please enjoy its convenience and benefits.