

TruIDL™ Logger E-Coat Process Data



2011

- **Miniature**
- **Waterproof**
- **Intuitive Interface**
- **Easy to Use**

Provides Reliable & Accurate Monitoring

The TruIDL™ (Immersible Data Logger) is a diagnostic tool that measures voltage at specific points on the surface of the ware in an E-coat paint system. Voltage is directly related to the amount of E-coat paint film that has formed on the ware. The TruIDL voltage sensors are attached with magnets to the ware. Voltage is logged as the ware moves through the tank. The result is a graph that displays the ware's voyage through the paint bath.

The TruIDL module is a small battery powered logger. A Mini USB port enables Microsoft Excel to be used as a communications portal. Once a configuration file is uploaded to the TruIDL logger it is ready to start working for you. After it is tilted once, it becomes armed. Live data is recorded when any of the voltage sensors measure greater than 8 volts, and logging stops 10 seconds after the last sensor goes below 8 volts. The logger must be removed from the ware after the last rinse (prior to the ovens). The run data is downloaded back into the same Excel file for viewing.

Product Advantages

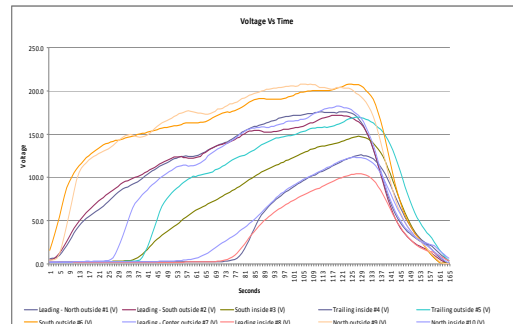
Measure Complex Shapes: Up to 10 voltage sensors allow you to monitor the voltage change over very complex geometries - Do more in less time - In just one run, you can check 10 locations for E-coat film build. Built in magnets make attaching the logger to the ware easy.

Anode Monitor Alternative: If you've been contemplating the purchase of a Membrane Electrode (ME) Cell Current Monitor, then you should consider the TruIDL Logger as a smart investment alternative. Although it doesn't record electric current detail, it provides a relative overview of ME Cell performance for the entire E-coat tank.

Process Monitoring: Use the TruIDL Logger to gather baseline data. Subsequent runs over regular intervals allow you to create trend line charts and diagnose performance issues such as:

- **Electrical Ground:** When all the curves begin going down quickly the ware has most likely lost its ground. If the ware is lightweight, then perhaps it requires a different hook style or there may be an issue with the conveyer grounding system, misdirected eductor jet, etc.
- **ME Cell Condition:** A dip in one curve may indicate poor performing ME Cell in that area of the tank. This could be caused by increased resistance in the ion-exchange membrane; an eroded electrode; loose electrical connection; low/no anolyte fluid inside cell, etc.

Voltage Vs Time



Voltage is the potential available to carry or push electric current. Electric current is what causes the E-coat paint solids to form on the ware. Voltage is affected by resistance; therefore places in the E-coat tank with more resistance display a curve with less voltage. In the chart above, at the start, the voltage at the ware is very low, but as time goes on the E-coat film begins to form and so does its resistance. Hence, voltage increases towards the end of the E-coat paint cycle. As the ware moves past the last ME Cell the voltage then trails off eventually to zero.

TruIDL Dashboard: How It Works

Because of its small size, the TruIDL module does not have a built-in display, or keyboard. It communicates via a Mini USB cable. The TruIDL Dashboard serves as the portal and is an Excel-based file that displays information used for defining sampling parameters and retrieving logged process data.

The TruIDL logger has two modes: Access and Logging. Access mode allows loading configuration files or retrieving data after a run. Logging mode occurs when the unit is armed and collects process data.

Access Mode - Configuration:

- Plug in Mini USB cable
- Start Microsoft Excel and open TruIDL Dashboard
- Click on “Configure a Run” tab; Under the Values Column fill in each of the blanks. Drop down choices, like voltage sensor locations, are provided for some of the parameters (customized location names can be created as well).
- After all the fields are completed, press the “Save Configuration Data” button
- Upload configuration file to the TruIDL module

Parameter	Value	Description
Customer Name	UFS Corporation	Name of the Customer
Customer Location	2001 450 East	What is the city of the Customer's plant
E-Coat Tank Name	E-coat	What is the name of the E-coat tank where the test is being performed
Technician	Fredrik	Your name
Test Date	27-Aug-2011	Date the test was conducted
Test Description	3 1 2 entry	What is the P/O or description of the ware used in the Plant
Plan Label	Baseline test	Why the test is being conducted (will assist with future recall of this report)
Sample Rate	1	Sample Rate (0.250, 0.500, 0.750, 1.000, 2.000, 4.000)
Shooting Number	4	Number of Samples in a Reading Average (1, 4, 8 or 16)
Shutdown Time	1	Duration in Minutes (1:00) of no activity before turning out.
Temperature Units	C	Select temperature units of Celsius or Fahrenheit
Voltage Sensor #1 Label	Sensor #1	Select a location for Voltage Sensor #1
Voltage Sensor #2 Label	Sensor #2	Select a location for Voltage Sensor #2
Voltage Sensor #3 Label	Sensor #3	Select a location for Voltage Sensor #3
Voltage Sensor #4 Label	Sensor #4	Select a location for Voltage Sensor #4
Voltage Sensor #5 Label	Sensor #5	Select a location for Voltage Sensor #5
Voltage Sensor #6 Label	Sensor #6	Select a location for Voltage Sensor #6
Voltage Sensor #7 Label	Sensor #7	Select a location for Voltage Sensor #7
Voltage Sensor #8 Label	Sensor #8	Select a location for Voltage Sensor #8
Voltage Sensor #9 Label	Sensor #9	Select a location for Voltage Sensor #9
Voltage Sensor #10 Label	Sensor #10	Select a location for Voltage Sensor #10
Zone 1 Voltage	1	Voltage (1 - 500) used in Zone 1.
Zone 1 Duration	1	Dwell Time in seconds (1 - 999), Zone 1
Zone 2 Voltage	0	Voltage (0 - 500) used in Zone 2.
Zone 2 Duration	0	Dwell Time in seconds (0 - 999), Zone 2.
Zone 3 Voltage	0	Voltage (0 - 500) used in Zone 3.
Zone 3 Duration	0	Dwell Time in seconds (0 - 999), Zone 3.
Zone 4 Voltage	0	Voltage (0 - 500) used in Zone 4.
Zone 4 Duration	0	Dwell Time in seconds (0 - 999), Zone 4.
Zone 5 Voltage	0	Voltage (0 - 500) used in Zone 5.
Zone 5 Duration	0	Dwell Time in seconds (0 - 999), Zone 5.
Previous TruIDL Run Time Check	Yes	Enter a Yes or No.
Date	1-Jan-2011	Enter today's date in DD-MMM-YYYY Format
Time	18:30	Enter the time in 24-H format as HH:MM

Logging Mode:

The TruIDL can be installed before the pretreatment system since it can withstand elevated temperatures and will only start recording once inside the E-coat bath.

Once configured and disconnected from the computer, the logger is carried to the ware, all sensors are attached to the ware and the sensor wiring harness is connected to the TruIDL. Tilt the logger once to Arm it. The green and blue LEDs will now begin to blink, about once every 4 seconds. The logger is looking for live voltages. Once a measurement over 8 volts is found, the green LED goes off and the logging begins with the blue LED flashing every 4 seconds. Recording continues until 10 seconds past the time the last voltage sensor falls below 8 volts.

At the end of the run, the green LED should be back On, the blue LED turned Off and the amber LED blinking indicating the status of the run. Remove the TruIDL and Voltage Sensor Harness from the ware; rinse and clean the module and sensors with DI water and clean with isopropyl alcohol.

Access Mode - Viewing The Data:

- Return to the computer - Connect the module to the computer with the Mini USB cable
- Download the run data file to the computer
- Open the saved Excel spreadsheet
- Click on the “Import Data from Run” button on the “View Data” page
- Click on the “Chart” tab to see the possible performance issues. Note - exterior sensor readings will always rise sooner and higher than interior/recessed readings.

Features



TruIDL Module



Carrying Case



TU5 Harness



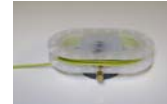
Module mounting magnet



Class "A" voltage sensor



Horseshoe voltage sensor



Oval voltage sensor

Module

- Compact and lightweight 8 cm x 7 cm x 5 cm (3" x 2-3/4" x 2") module; battery operated; with up to 10 voltage sensors
- Mini USB connectivity to computer
- TruIDL Dashboard is the easy to use communications portal with the logger and uses Microsoft Excel
- Tilt switch is used to wake the module up and arm it for a run
- Has 2 round magnets for mounting to the ware plus a lanyard for extra security
- Can be run through cleaning and pretreatment stages. Must be removed prior to ovens.
- Circular connector for detaching the voltage sensor wiring harness

Accessories Included

- Waterproof carrying case 27.4 cm x 25.1 cm x 11.3 cm (10.8" x 9.9" x 4.5") with foam cuts
- Mini USB retract cable
- USB thumb drive with manuals and files
- 9 volt battery and test clips
- Customizable voltage sensor harness
- Plastic squeeze bottle for rinsing out paint solids and stainless steel wire brush
- Sensor repair kit
- Plastic coated TSA & Customs Agent information sheet when placed into checked bags

Voltage Sensor Harness

- Horseshoe, Oval or Class "A" magnet style - horseshoe pull is 58 N (13 lb) oval pull is 31 N (7 lb) Class "A" is 22 N or (5 lb)
- Color-coded wire scheme
- IP-67 Circular connector
- Auxiliary ground cable is 1.2 m (4 ft) made from coiled wire
- Other lengths are available upon request.
- Innovative wire capture device shown with Oval style

Model Selector

TU5

- 5 voltage sensors
- Standard length is 1 wire @ 3.5 m (11.5 ft), 1 wire @ 3 m (9.8 ft), 1 @ 2.5 m (8.2 ft), 2 @ 2 m (6.6 ft)
- Upgradeable to TU10

TU10

- 10 voltage sensors + Temperature
- Standard body harness - 2 wires @ 3.5 m (11.5 ft), 2 @ 3 m (9.8 ft), 2 @ 2.5 m (8.2 ft), 4 @ 2 m (6.6 ft)

System Requirements

- PC with Windows XP/7 or Mac
- Microsoft Excel, 2003 - 2010

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