DIGITAL DATA MANAGEMENT FOR TANK COATING INSPECTION

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Joe Walker
VP, Elcometer, Inc.
Joe@elcometerusa.com
Recent Developments in Inspection Equipment

- Automating inspection data maximizes efficiency
- Gauges such as:
  - Elcometer 456 Coating Thickness Gauge
  - Elcometer 224 Surface Profile Gauge
  - Elcometer 319 Digital Dewpoint Meter

lead the way in digital data capture
Recent Developments in Inspection Data Management

- Elcometer offers two (2) digital data management systems which allow the user to capitalize on our digital data capture abilities:

  ElcoMaster™ 2.0

  ElcoTank®
**Scenario:** The tank you’re working consists of coating areas that measure approximately 3,000,000 ft\(^2\). To begin, we’ll assume the work will be carried out in 3,000 1000 ft\(^2\) sections. We’ll be taking DFT measurements in accordance with SSPC-PA 2. We’ll also assume a three-coat system is to be applied.

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**Each Flat Area Requires 5 Spot Measurements**

= Average of 3 Individual Readings

= 15 Gage Readings/Flat Area

15 Gage Readings/Flat Area X 3000 Flat Areas

= 45,000 Readings/Coat

45,000 Readings/Coat X 3 Coats

= 135,000 Readings
135,000 Readings x 0.5 Minutes/Reading = 67,500 Minutes

67,500 Minutes/60 Minutes/1 Hour = 1,125 Hours

1,125 Hours/8 Hours/Shift/Day =

141 Days of just coating thickness data collection
Recent Developments in Inspection Data Management

ElcoMaster™ 2.0 software provides a means to collect, analyze, report and archive data.
Recent Developments in Inspection Data Management

Using our “drag and drop” technology, data is displayed in the form or format you choose in minutes.
Recent Developments in Inspection Data Management

- ElcoMaster™ 2.0 software allows users to
  - Monitor measurements remotely via Bluetooth
  - Download readings directly from the gauge into the ElcoMaster data management system
Recent Developments in Inspection Data Management

ElcoMaster™ 2.0 software allows users to:

- Keep survey notes, inspection reports, photographs, and other inspection information in one key location.
- Create accurate, professional reports configured to allow the data to be easily understood at all levels.
- Create PDF, Excel, or CSV versions of all reports and email them directly.
- From conventional formats to actual site photos and construction drawings.
Inspection Requirements

ElcoTank is a paperless solution designed to meet all your coating inspection requirements (visual, manual and electronic) in one easy to use software package which:

- Minimizes report writing
- Maximizes on site inspection time
- Delivers significant cost savings
Inspection Requirements

- **Primary**
  - **NDFT:** 90/10
  - **Cleanliness:** Sa2½
  - **Profile:**
  - **Climate:** %RH, Dewpoint
  - **Cleanliness:** mg.m⁻²

- **Secondary**
  - **NDFT:** 90/10
  - **Cleanliness:** Sa2½
  - **Profile:**
  - **Cleanliness:** mg.m⁻²
  - **Dust:**

- **Miscellaneous**
  - **Climate**
  - **NDFT:** 90/10
  - **Defects:** pinholes, bubbles, voids
How is data collection linked to the Inspection Requirements?

- For the various coating systems;
- at every stage of the construction;
- with numerous inspectors;
- across different railcar types;
- in facilities around the country;
- with different methods
How is data collection linked to the Inspection Requirements?

The key is planning the coating inspection within the overall build/refit plan using ElcoTank® software.
ElcoTank®

ElcoTank® takes a holistic approach:

- ElcoTank® is designed to be a coating inspection database for the whole facility or group of facilities.
ElcoTank

- ElcoTank® can be broken down into 6 sections:
  - From the tank specification:
    - Structure
    - Coatings Library
    - Coating System Library
  - From the inspection processes:
    - Inspector’s Register
    - Inspection Records
    - Data Collection
  - All supported by a structured data collection regime, and a “change log”
Structure
SIGMACUARD 240
(SIGMACUARD TANKSHIELD PRIMER)

DESCRIPTION
Two-component high solids polyamine cured epoxy primer

PRINCIPAL CHARACTERISTICS
- To be used for blast cleaned (black application or in situ spraying)
- Outstanding adhesion and resistance to stress cracking
- Excellent corrosion resistance
- Good resistance to chemicals and chemical attack
- Resistant to well-defined cathodic protection
- Good in high temperature curing

COLOURS AND GLOSS
Yellowish green - gloss

BASIC DATA AT 20°C
- Solid content: 54.5% (min)
- Solvent content: 45.7% (max)
- Density: 1.4 g/cm³

Viscosity
- Viscous: min. 167B (max. 12000 B/SE, SED)
- Viscous (approx. 2000 B/SE): min. 236B

Recommended dry film thickness
- Theoretical spreading rate: 6.2 ml/m² (min) / 6.2 ml/m² (max)
- Actual spreading rate: max. 7 ml/m²
- Recommended dry film thickness: 125 - 150 μm
- Cure time: 6 - 24 hours

Cleaning
- Use a suitable solvent
- Store at 5°C for 24 hours

Dry film thickness (µm)
- 125 - 150

Curing conditions and temperatures
- Steel, blast cleaned to a minimum of BS ISO 8501-2, Class 2
- Steel with atmospheric dust and any abrasive
- Steel with an appropriate disc and polyurethane primer
- Steel with SSPS-0 or PPS-0 or PPS-1 or PPS-2 or PPS-3
- Prime with primer 24 hours after priming
- Cure at ambient temperature
- Temperature of the air to be maintained above 3°C
- Maintain relative humidity below 85%
- Application of temperatures down to 3°C is possible but curing to hardness takes longer
- Complete drying will be reached when temperature increases

SYSTEM SPECIFICATION
- manufacturer systems sheet 3100
Register of Inspectors
Register of Inspectors
Register of Inspectors

NACE

Certified Inspector

This is to certify that Jane Podkin is a certified NACE Inspector

Certification Number:

Expires:

Signed:

February 1st, 2010

AN Other
President
Inspection Records

![Graphical representation of Inspection Records interface]
Inspection Records
Data Collection

Data can be collected 3 ways:

- Gauge - ElcoTank
- Gauge – Smart Device; Smart Device - ElcoTank®
- Gauge – PC; PC - ElcoTank® via attachment
Data Collection - in a structured manner

- Inspection of a unit, block etc. can be scheduled by ElcoTank® and:
  - Sent to the Inspector’s Smart Device via **e-mail or pc sync.**
  - Printed out as a **hard copy** inspection record

- Once the data has been collected - including visual & digital inspection, photographs & digital signature, it can be:
  - e-mailed from the Smart Device back to Elcotank® for automatic update
  - transferred via pc sync.
  - Scanned and attached as a file in Elcotank®
Data Collection - in a structured manner
The Coatings Files

The Coatings Report can be created at the click of a mouse and

- Saved to file
- Printed
The Change Log - recording all actions automatically

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Elcometer® Software Solutions - Conclusions

- Direct links with digital gauges are facilitated
- Input from spreadsheets, scanned documents, .pdf, .doc and other formats are allowed
- ElcoTank provides a method for planning and recording the coating inspection processes during a build/refit.
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THANK YOU FOR YOUR ATTENTION

Questions & Answers