

Ongoing developments in the data transfer, storage and reporting of Coating Inspection Data

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Coating Inspection – Trends

- Originally it was coating thickness but now other factors in the coating process are recognised as key to coating performance
- Project specifications are requiring inspection at all key stages of the application process
 - Surface Preparation
 - Climate Conditions
 - Film Thickness
 - Adhesion & Porosity
 - Appearance

Coating Inspection – Trends

- The coatings market is demanding:
 - Increased inspection throughout the whole process
 - Proof that inspections were completed
- Proof of inspection requires formal reporting
- The amount of measurements and data is increasing
- Trend is for electronic data capture
- Electronic data capture reduces risk of human error

Coating Inspection – The Solution

Elcometer have developed a range of Gauges and Reporting Packages in response to these market demands



Data Collection – Elcometer Solution

- Surface Preparation
 - Elcometer 224 Surface Profile Gauge
 - 150,000 readings in 2,500 batches
 - Bluetooth and USB connectivity
 - Compatible with ElcoMaster



Data Collection – Elcometer Solution

- Surface Preparation
 - Elcometer 130 Salt Contamination Meter
 - 150,000 readings in 2,500 batches
 - Salt Mapping capability
 - Bluetooth and USB connectivity
 - Compatible with ElcoMaster



Data Collection – Elcometer Solution

- Climatic Conditions
 - Elcometer 319 Dewpoint Meter
 - 25,000 readings in 999 batches
 - Measuring RH%, Ta, Ts, Td and $T\Delta$
 - Bluetooth and USB connectivity
 - Compatible with ElcoMaster



Data Collection – Elcometer Solution

- Coating Thickness
 - Elcometer 456 Dry Film Thickness Gauge
 - 150,000 readings in 2,500 batches
 - Bluetooth and USB connectivity
 - Compatible with ElcoMaster



Data Collection – Elcometer Solution

- Adhesion
 - Elcometer 510 Automatic Adhesion Tester
 - Measurement range up to 100 MPa
 - 10,000 readings and load graph memory
 - Bluetooth and USB connectivity
 - Compatible with ElcoMaster



Data Collection – Elcometer Solution

- Appearance
 - Elcometer 480 Glossmeter
 - Automatic Calibration and Diagnostics
 - Measurement range up to 2000 GU
 - 40,000 readings in 2,500 batch memory
 - Bluetooth and USB connectivity
 - Compatible with ElcoMaster



Data Storage & Reporting – The Solution

- To host, store and report the data collected during inspection Elcometer have developed software packages:
 - ElcoMaster 2 for PC and Laptop
 - ElcoMaster Mobile for Tablet and Phone
- Both packages provide one standard platform for all gauges
- Data can be stored on Cloud, Server, Host Unit and Email

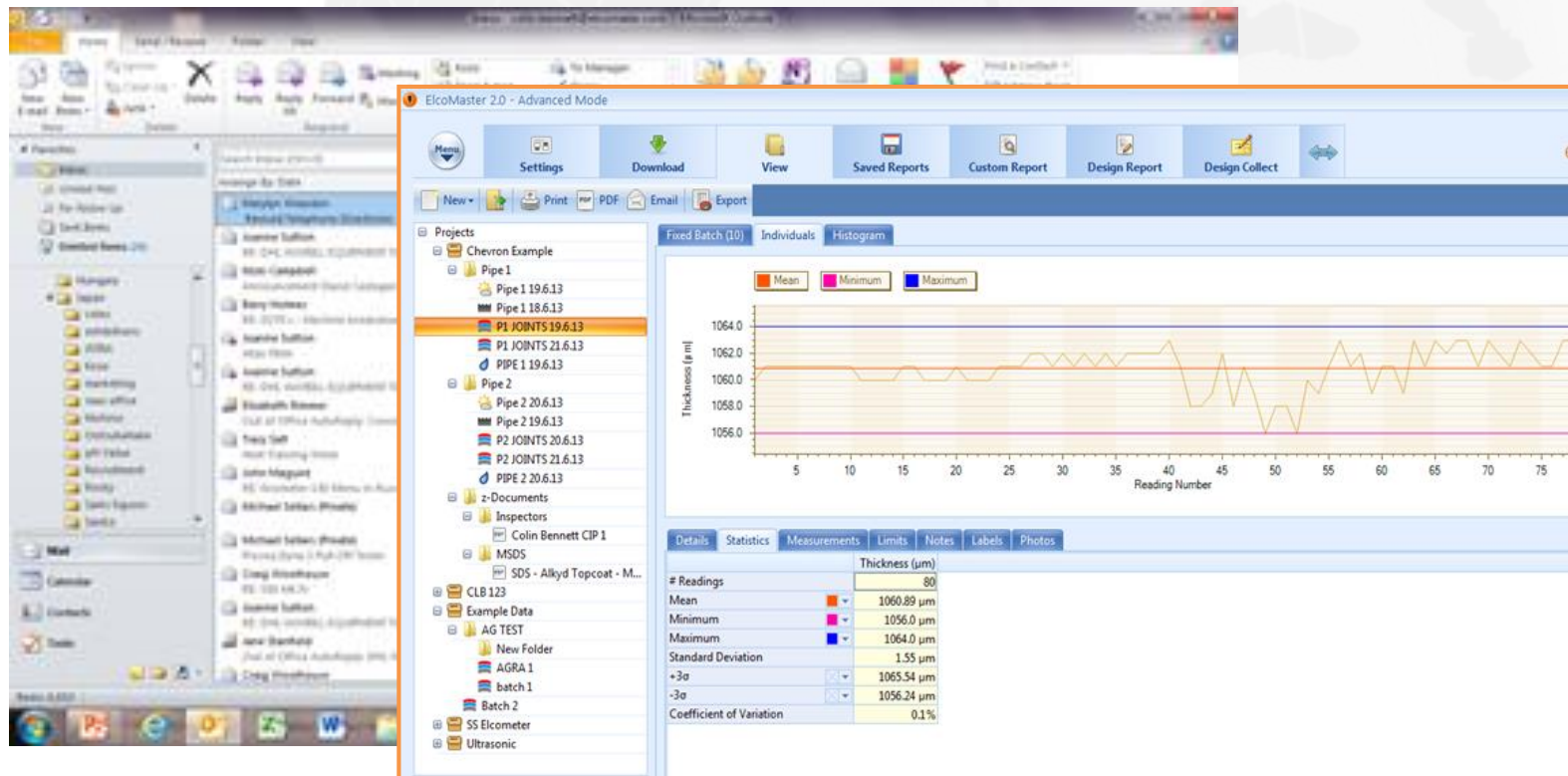
Data Storage & Reporting – ElcoMaster 2

- Visual appearance and data storage based on windows applications



Data Storage & Reporting – ElcoMaster

- Data is organised into Projects/Folders/Batches – all details of the batch readings can be seen

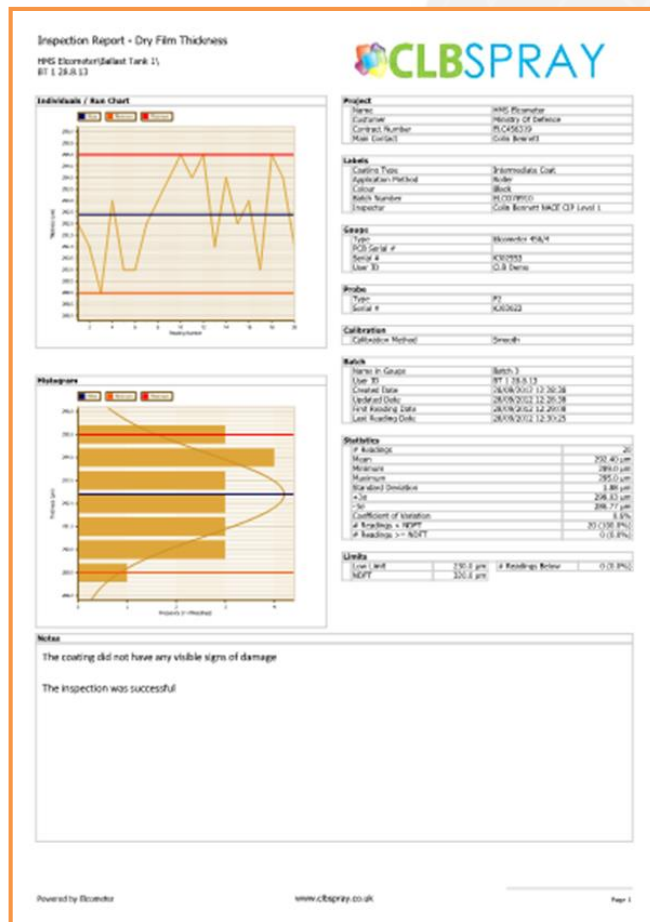


Data Storage & Reporting – ElcoMaster

- Reports are generated as PDF or editable ElcoMaster Files
- A variety of reports can be produced from a one page summary to a full multi-page Project Report
- Customer specific report formats are widely used

Data Storage & Reporting – ElcoMaster

- Batch Summary Page



Data Storage & Reporting – ElcoMaster

- Batch Photographs

The screenshot displays an inspection report for 'Dry Film Thickness' (DFT) for 'HSC Elemevator/Salad Tank 1)' on 'BT 1 28.A.13'. The report is branded with the 'CLBSPRAY' logo.

Individuals / Bar Chart: A line graph showing DFT measurements over 10 points. The y-axis ranges from 200 to 300. A blue line represents the data, fluctuating between approximately 220 and 280. Horizontal lines indicate target ranges: a red line at 280, a blue line at 250, and an orange line at 220.

Histogram: A bar chart showing the distribution of DFT measurements. The y-axis ranges from 200 to 300. The x-axis is labeled 'Number of Readings' with values 1, 2, 3, 4. The bars are yellow, and a blue curve is overlaid on them. Horizontal lines indicate target ranges: a red line at 280, a blue line at 250, and an orange line at 220.

Product Information:

Product Name	HSC Elemevator
Customer	Metrolia of Salada
Contract Number	
Material Code	

Labels:

Coating Type	
Application Method	
Color	
Batch Number	
Inspector	

Serials:

Type	
ISO Serial #	
Serial #	
User ID	

Probe:

Type	
Serial #	
Calibration	
Calibration No.	

Batch:

Name in Batch	
User ID	
Created Date	
Updated Date	
First Reading	
Last Reading	

Statistics:

# of Readings	
Mean	
Minimum	
Maximum	
Standard Dev.	
CV	
Coefficient of Variation	
# of Readings > of Threshold	

Limits:

Low Limit	
High Limit	

Notes:

The coating did not have any visible signs of damage

The inspection was successful

Batch Photograph: A photograph showing a close-up of a metal rail track with a curved profile, likely the 'Salad Tank' mentioned in the report.

Powered by Elcometer www.elcometer.co.uk

Data Storage & Reporting – ElcoMaster

- Batch Readings

The screenshots show the following components of the ElcoMaster reporting interface:

- Report Header:** "Inspection Report - Dry Film Thickness" for "HFG Elcometer (Salt Tank 1)" with report ID "BT 1 28-A-13".
- Product Information:** "CLBSPRAY" logo and details for "HFG Elcometer" and "Honey of Saline".
- Labels:** "Coating Type", "Application Method", "Color", "Batch Number", and "Inspector".
- Graphs:**
 - Individual / Bar Chart:** A line graph showing thickness readings over 10 measurements. The y-axis ranges from 200 to 300. A blue line fluctuates around a mean of approximately 250.
 - Histogram:** A bar chart showing the distribution of the 10 readings. The x-axis is "Mean of Readings" (0-4) and the y-axis is "Frequency" (0-200). A normal distribution curve is overlaid on the bars.
- Batch Data Table:** A table listing individual readings with columns for "Date & Time", "R", and "Thickness (µm)".

Date & Time	R	Thickness (µm)
28/06/2012 12:28:00	1	252.0
28/06/2012 12:28:22	2	251.0
28/06/2012 12:28:27	3	289.0
28/06/2012 12:28:21	4	293.0
28/06/2012 12:28:24	5	296.0
28/06/2012 12:28:20	6	290.0
28/06/2012 12:28:32	7	252.0
28/06/2012 12:28:35	8	293.0
28/06/2012 12:28:29	9	294.0
28/06/2012 12:28:44	10	295.0
28/06/2012 12:28:45	11	294.0
28/06/2012 12:28:52	12	295.0
28/06/2012 12:28:56	13	291.0
28/06/2012 12:28:03	14	294.0
28/06/2012 12:28:16	15	292.0
28/06/2012 12:28:06	16	293.0
28/06/2012 12:28:12	17	294.0
28/06/2012 12:28:06	18	295.0
28/06/2012 12:28:20	19	294.0
28/06/2012 12:28:25	20	291.0
- Notes:** "The coating did not have any visible signs of damage" and "The inspection was successful".
- Footer:** "Powered by Elcometer" and "www.clbpray.co.uk".

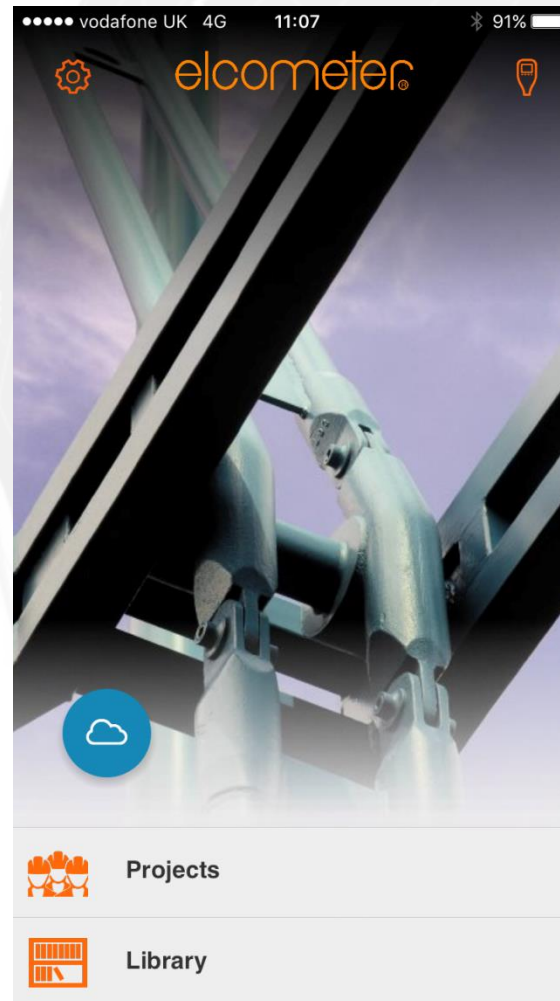
Introducing the 2017 ElcoMaster Mobile for Android and iOS

Data Storage & Reporting – ElcoMaster Mobile

- ElcoMaster 2 links with ElcoMaster Mobile
 - Android and iOS platforms
 - Tablet
 - Mobile Phone
 - Bluetooth
 - Cloud

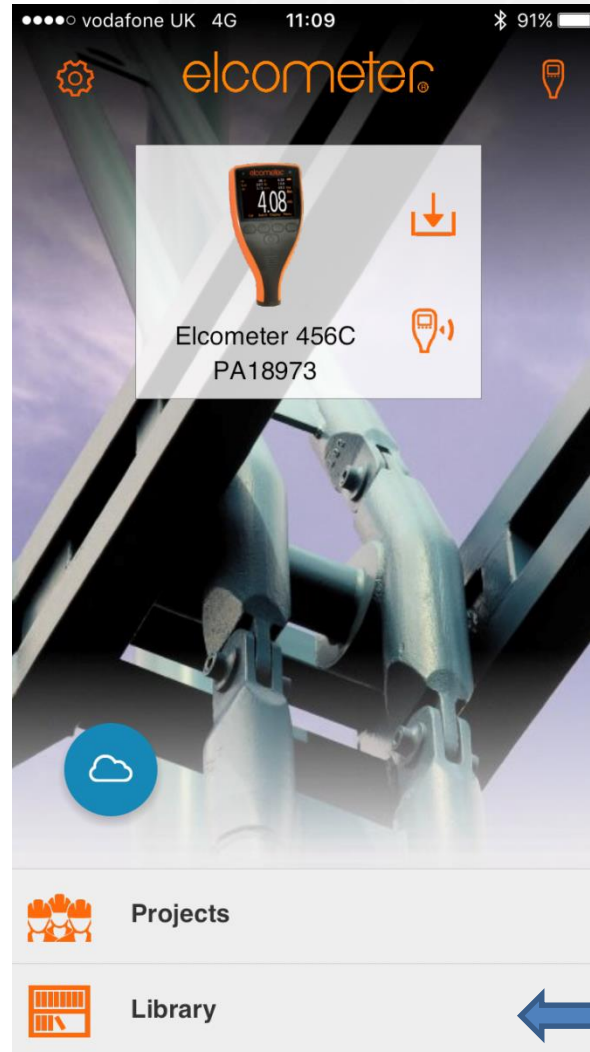


ElcoMaster Mobile from 2017



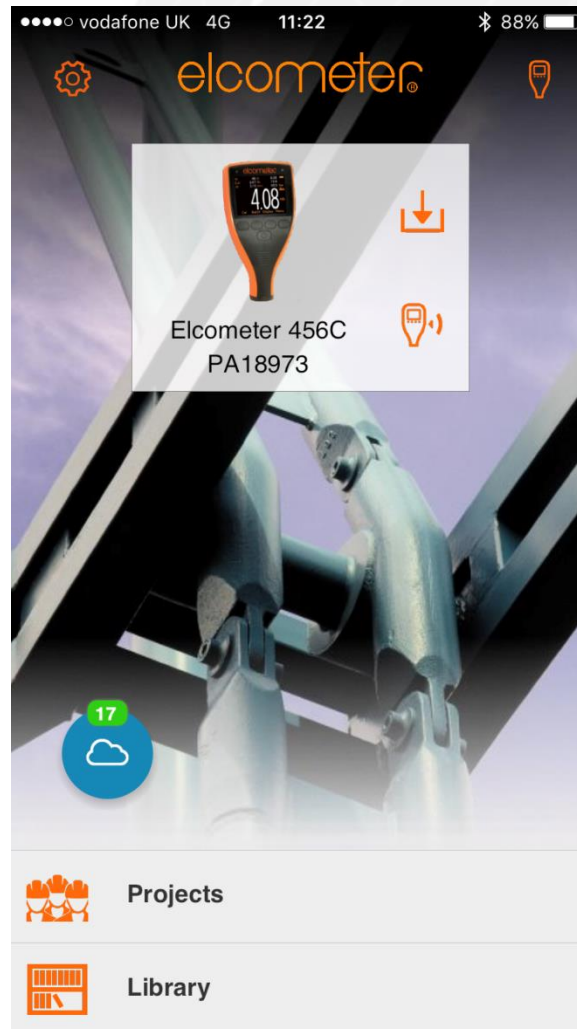
Data Management – ElcoMaster Mobile

- Report Template Library



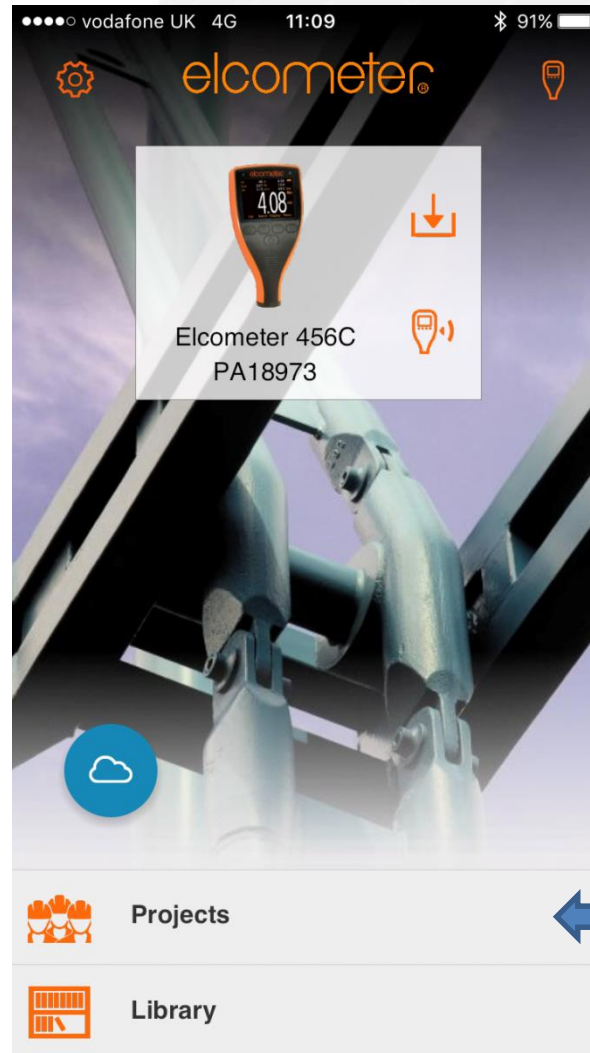
Data Management – ElcoMaster Mobile

- Synchronise your Cloud Library
example shows 17 files to update



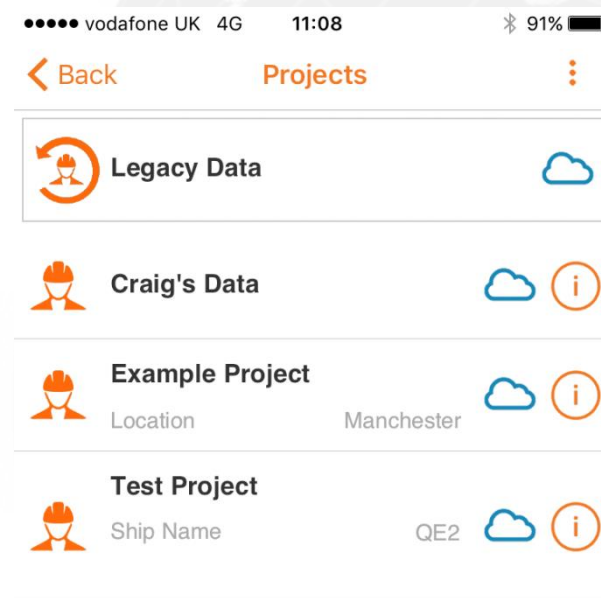
Data Management – ElcoMaster Mobile

- Add a project



Data Management – ElcoMaster Mobile

- Add a project



Data Management – ElcoMaster Mobile

- Add a project

Vodafone IN 11:15 97%

Cancel Create

Name
Sheraton Pune

Cloud Synchronise

Project Labels >

Batch Labels >

Done

"Pune" Puneetha Puneetha's

q w e r t y u i o p

a s d f g h j k l

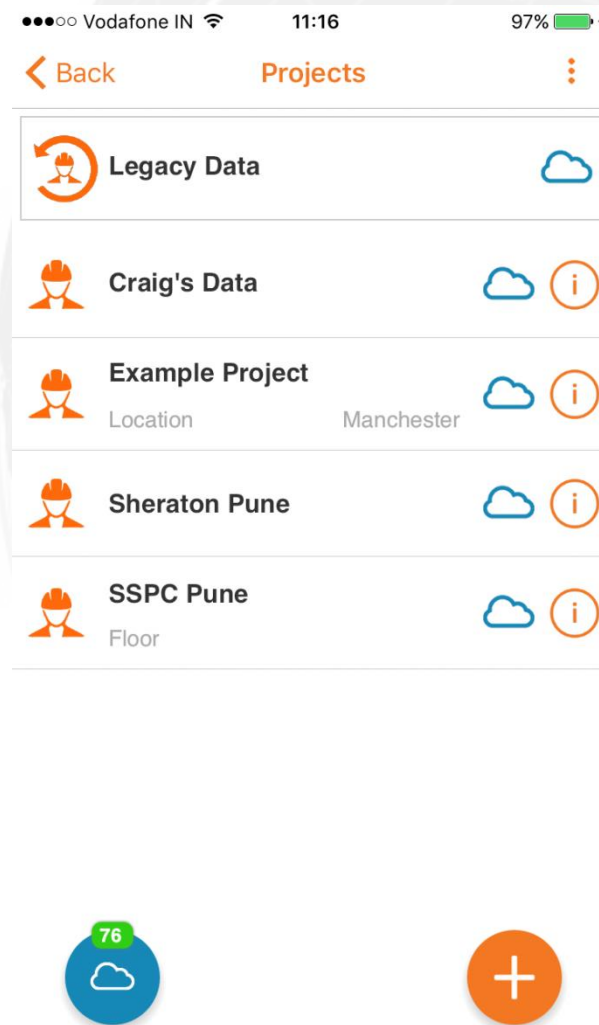
z x c v b n m

123 space return



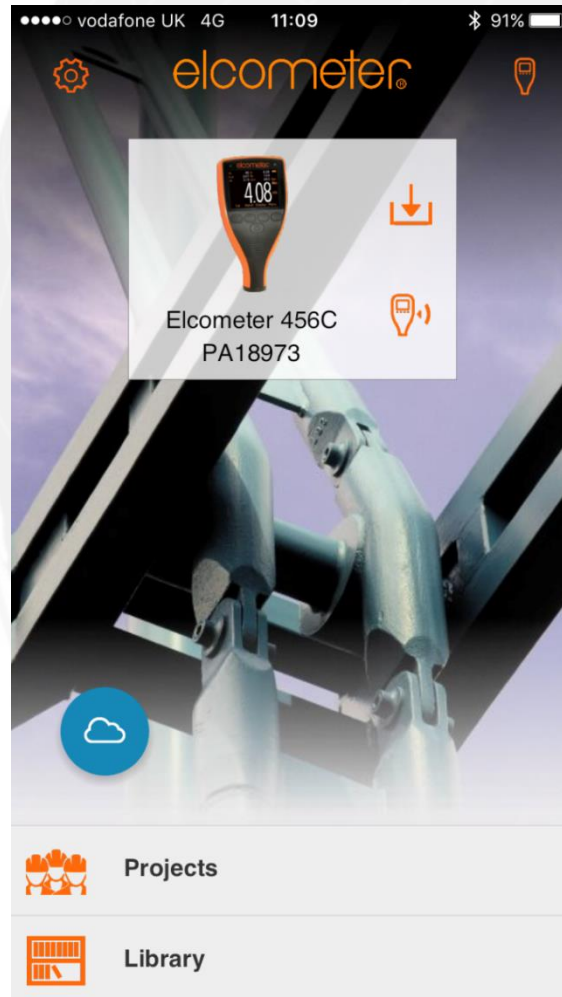
Data Management – ElcoMaster Mobile

- Add a project



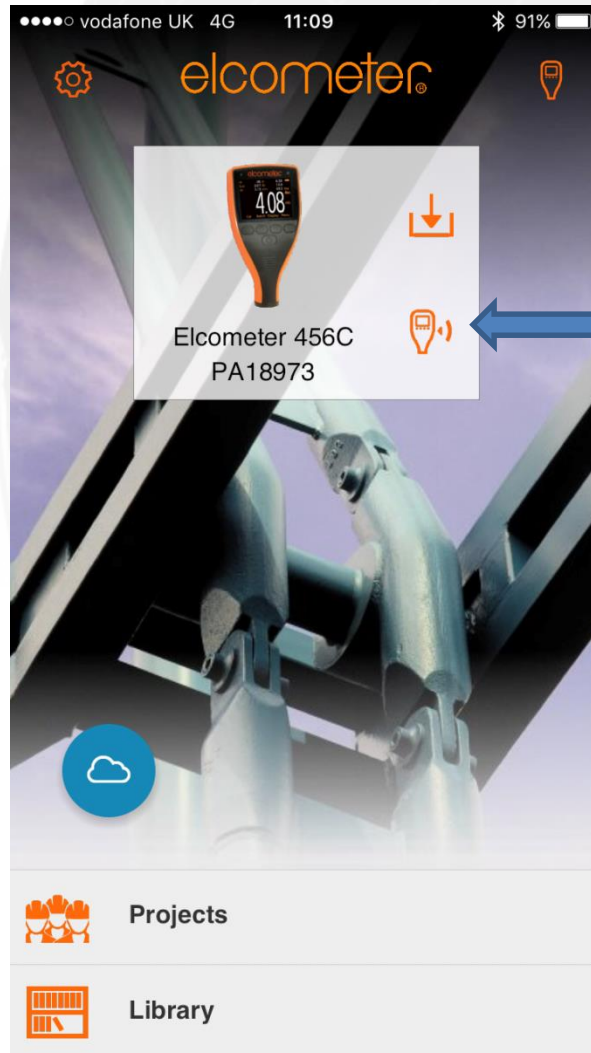
Data Management – ElcoMaster Mobile

- Adding a gauge



Data Management – ElcoMaster Mobile

- Add live readings from a gauge



Data Management – ElcoMaster Mobile

- Add live readings from a gauge

Vodafone IN 11:28 100%

Hotel Done

Thickness (µm)

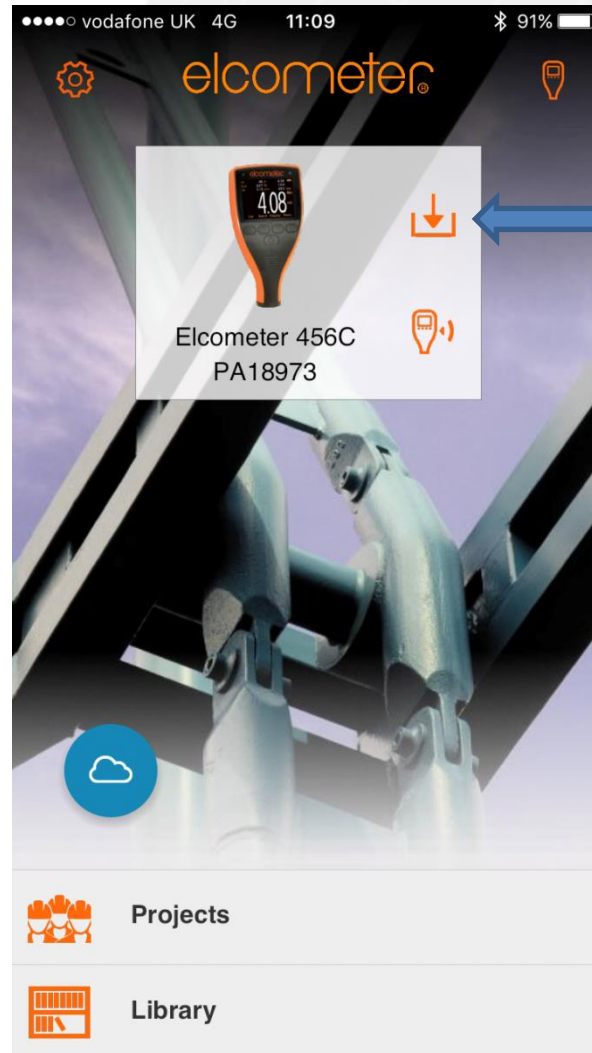
# Readings	5	> High Limit
Mean	27.60 µm	< Low Limit
Maximum	30.0 µm	>= Nominal
Minimum	25.4 µm	< Nominal
Range	4.6 µm	

1	16/02/2017 11:27:51	30.0	i
2	16/02/2017 11:27:53	28.9	i
3	16/02/2017 11:27:54	25.4	i
4	16/02/2017 11:28:00	26.4	i
5	16/02/2017 11:28:01	27.3	i



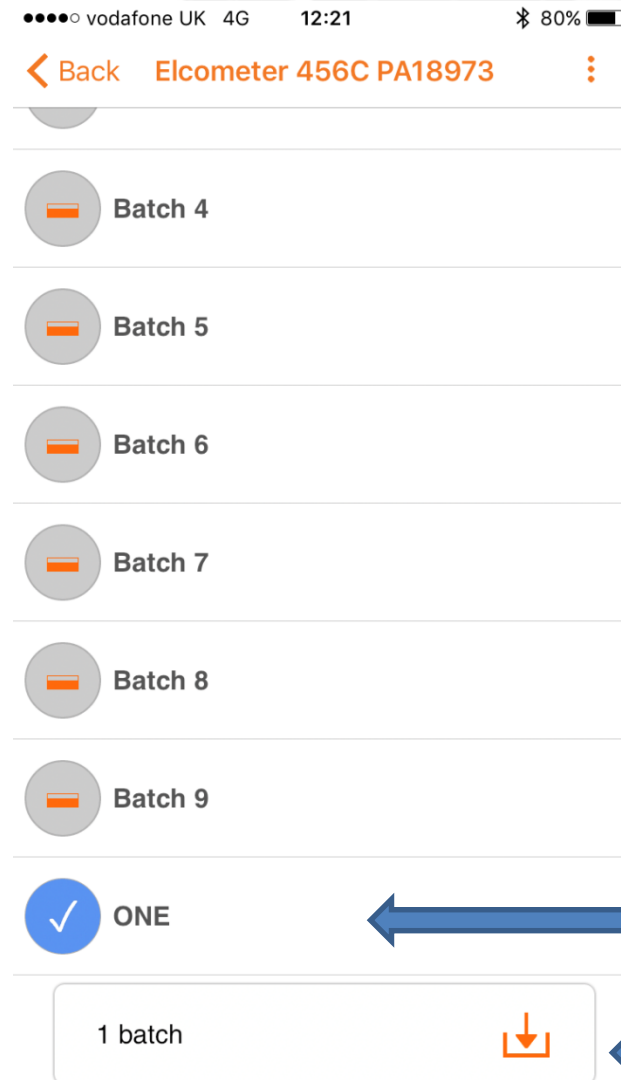
Data Management – ElcoMaster Mobile

- Download from a gauge



Data Management – ElcoMaster Mobile

Select batch
or batches
and download



ElcoMaster Mobile - view data

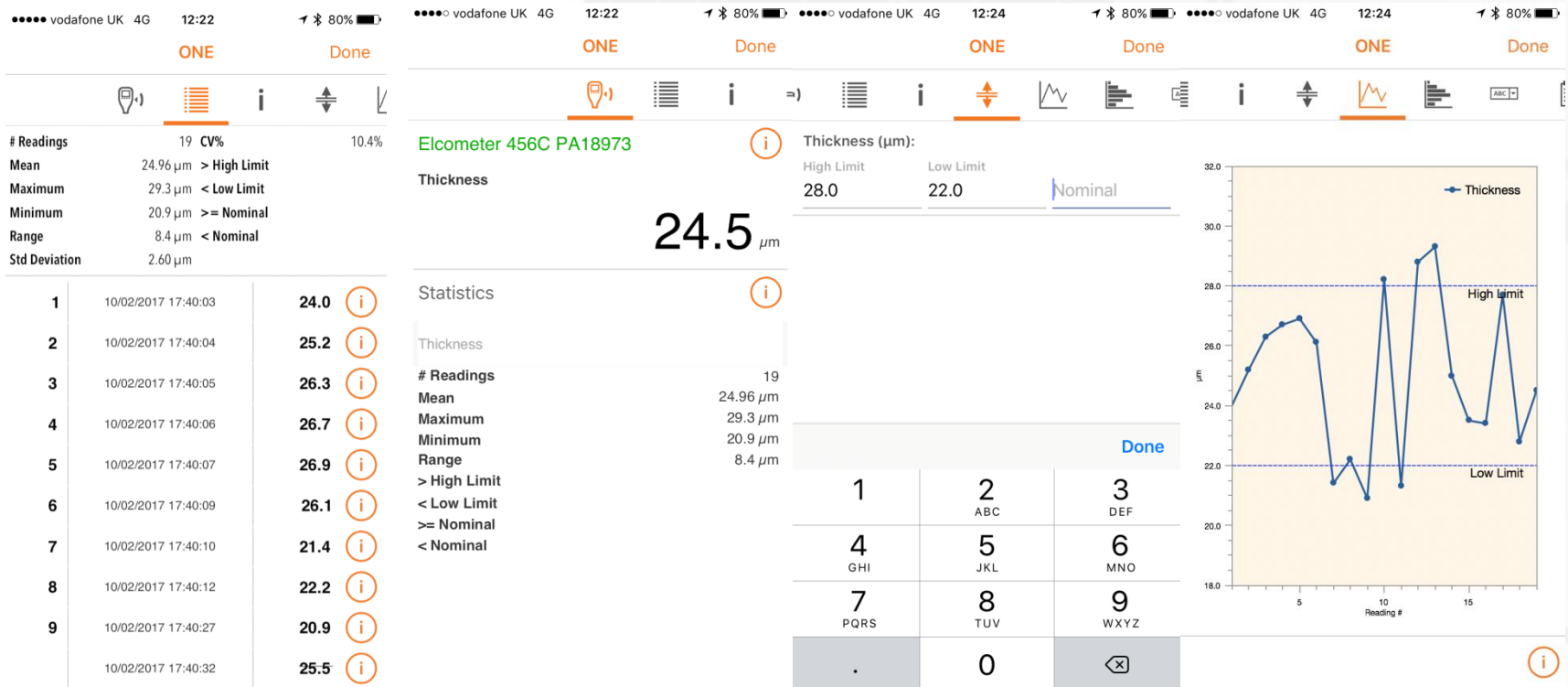
- View batch and tab through batch information

The screenshot displays the ElcoMaster Mobile interface for viewing batch data. The top status bar shows 'vodafone UK 4G 12:22' and '80%' battery. The left pane shows the project 'SSPC Pune' and 'Dry Film Thickness' with a 'ONE' room selected. The right pane shows summary statistics and a list of 19 individual readings.

Summary Statistics	
# Readings	19 CV% 10.4%
Mean	24.96 μm > High Limit
Maximum	29.3 μm < Low Limit
Minimum	20.9 μm >= Nominal
Range	8.4 μm < Nominal
Std Deviation	2.60 μm

Reading #	Timestamp	Value (μm)	Status
1	10/02/2017 17:40:03	24.0	Info
2	10/02/2017 17:40:04	25.2	Info
3	10/02/2017 17:40:05	26.3	Info
4	10/02/2017 17:40:06	26.7	Info
5	10/02/2017 17:40:07	26.9	Info
6	10/02/2017 17:40:09	26.1	Info
7	10/02/2017 17:40:10	21.4	Info
8	10/02/2017 17:40:12	22.2	Info
9	10/02/2017 17:40:27	20.9	Info
	10/02/2017 17:40:32	25.5	Info

ElcoMaster Mobile - view data



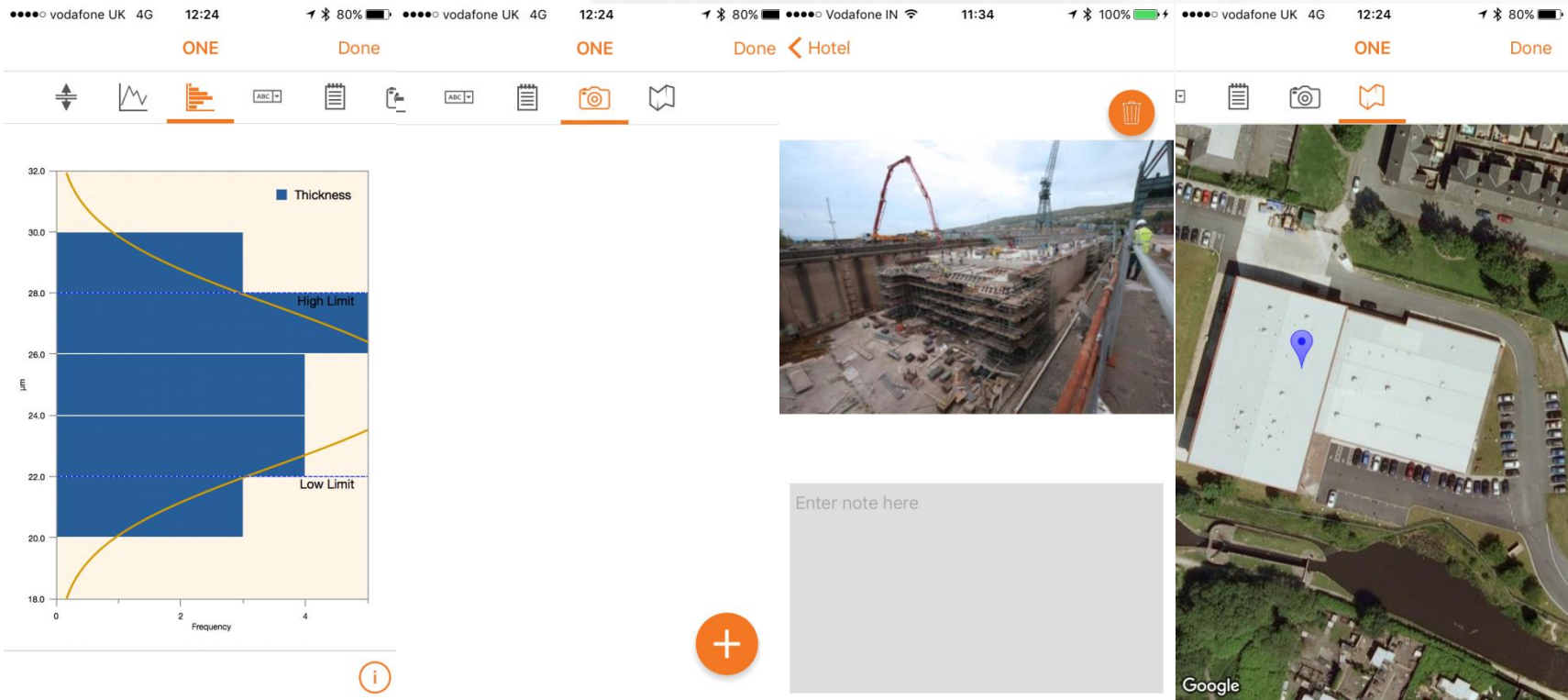
Readings Data

Individual Data

Add Limits

Run Chart

ElcoMaster Mobile - view data



Histogram

Add Photograph

Photograph

Add GPS data

ElcoMaster Mobile – generate report

The collage consists of four screenshots from an iPhone:

- Top Left:** The 'Project Sections' screen for 'SSPC Pune'. It shows a list of sections, with 'Dry Film Thickness' selected and 'ONE' checked. A context menu is open with options: Email PDF Report, Email ElcoMaster Archive, Save PDF Report, Clear selection, Rename, Move, Copy, and Delete.
- Top Middle:** An email composition screen titled 'ElcoMaster Report'. The recipient is 'Craig Woolhouse' (To: Craig Woolhouse). The subject is 'ElcoMaster Report'. A PDF attachment 'ElcoMasterReport.pdf' is shown with a 'Tap to Download' button (4.3 KB).
- Top Right:** The received email interface. It shows the sender 'Craig Woolhouse' and the subject 'ElcoMaster Archive Today at 12:26'. The PDF attachment is visible with the same 'Tap to Download' button.
- Bottom Right:** A preview of the 'Inspection Report - Dry Film Thickness' PDF. The report includes a line graph showing thickness over time, a table of inspection parameters, and a signature section. The page number '1 / 3' is visible at the bottom.

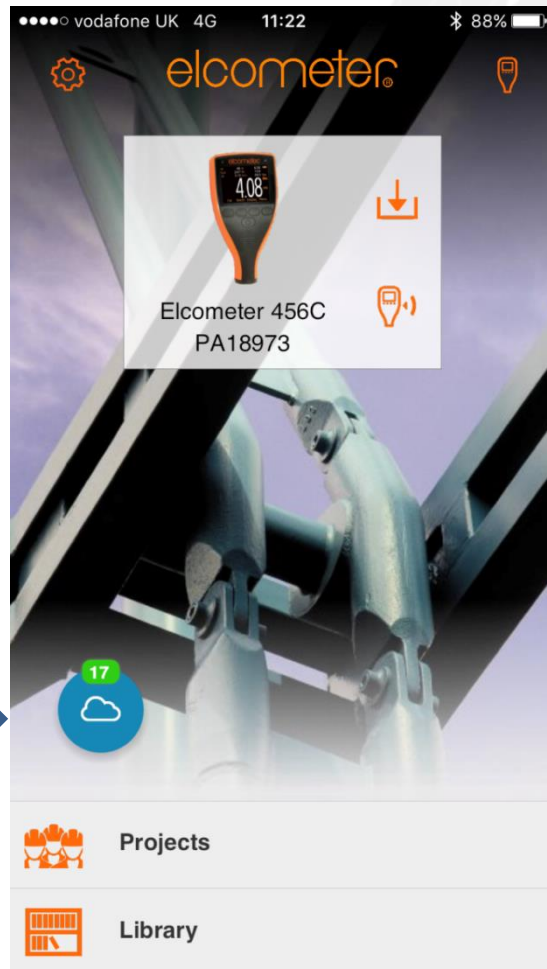
Select Report Type

Auto email

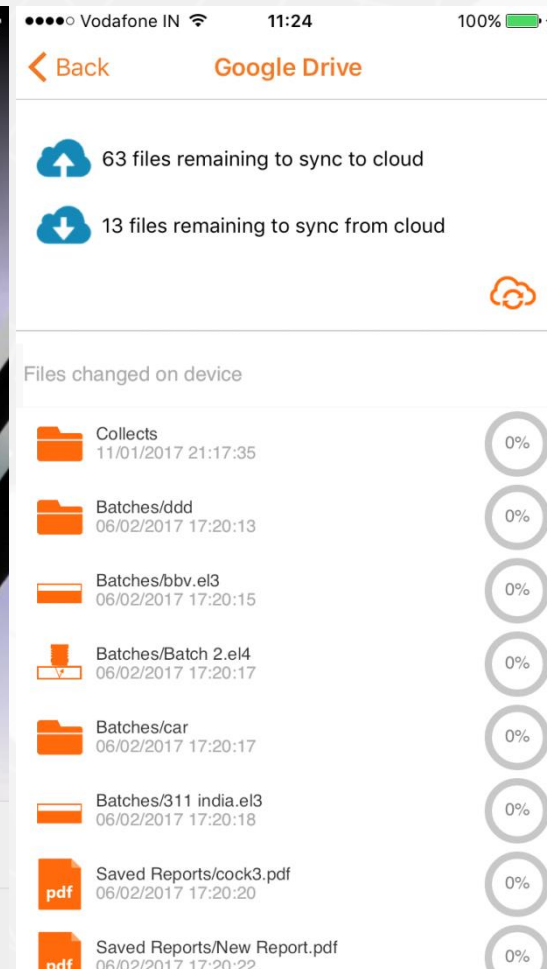
Receive email

Store/Amend Report

ElcoMaster Mobile – Cloud Storage



Simply click here



and then here



ElcoMaster Mobile – Summary

- Intuitive to use Android and iOS software package
- Stores data from multiple gauge types
- Supports live reading function
- Simple Report Formats
- Cloud, Server, PC and Host storage available
- Available since April 2017
- Free download from Google Play and App Store

ElcoMaster Mobile – what is next?

- Bespoke Report Format
- Two way communications with Gauge
- Bespoke Customer Specific Packages

ElcoMaster – where to find it?

- ElcoMaster PC Version
 - Free download from www.elcometer.com
- ElcoMaster Mobile
 - Free download from Google Play and App Store



Thank you for your time

Questions?