

CEMQual – Quick guide – Results Page

NOTE: For further details on the Configuration, Advanced and Manual Data Entry tabs, please see the full CEMQual manual (Found on our website)

Once a QAL3 test has been performed, select 'New Data' to analyse the data

Double click the Group or Channel to select another measurement. Select 'Span' or 'Zero' to examine the QAL3's results

'Print all' print all measurement results. 'Print this' print only the page selected. 'Copy Data' allows the user to select which components they wish to export (JPEG Screenshots, Excel spreadsheets, QAL Data or Charts). 'Save JPEG' take a screenshot 'Save as XL' export results to Excel.

Select a standard data date range for the latest data, or a custom date range from the calendar

'Analyse data' examines the QAL3 results and sorts them into a report format, stating **PASS**, **WARN** or **FAIL** results for each channel – illustrated on the next page

Select control chart type

Configure the appearance of the graph

Analyse the selected measurement results and displays the calculated Sams (Standard Deviation), exportable to a spreadsheet

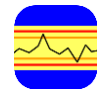
Analyse all results and display Sams as set and as calculated, also provides an assessment of their suitability.

The screenshot displays the 'QAL3 analysis' software interface. At the top, there are tabs for 'QAL3 analysis', 'Configuration', 'Advanced', and 'Manual Data Entry'. Below these are controls for 'Display range' (Start: 03/07/2019, End: 30/09/2019) and 'Get data' options (New data, Abandon). A 'Select measurand' dropdown is set to 'Line 1 Duty' with a status of 'NO'. 'Print / file operations' include 'Print all', 'Print this', 'Copy data', 'Save JPEG', and 'Save as XL'. A table of 'CURRENT DATA' lists 8 'Ext. QAL3' entries with columns for No., Name, Date, Time, y t, x t, d t, ΣPos, ΣNeg, Sp, and Comments. Below the table are 'Drift factors', 'Precision factors', and 'Standard Deviation' for 'Sams'. A 'New reference value' is set to 10.00. Control chart options include 'Graph' and 'Spreadsheet', with 'Control check' selected. Graph settings include 'Show comments', 'Redraw graph', and scales for 38 and 200. At the bottom, 'Analyse results' and 'Analyse all Sams' buttons are visible. A control chart is overlaid on the data, showing a blue line fluctuating around a mean, with horizontal lines for warning (orange) and failure (red) limits. A text box on the chart says 'Report of any errors over the analysis period'.

Each result is assessed and the **PASS**, **FAIL** or **WARN** results are indicated at the bottom of the chart

Left click on a comments box to write any relevant details e.g. Faulty O2 Cell. Right click to cycle between 'RESET QAL3' & 'NO QAL3'. Note: 'Show comments' must be checked – bottom left

When the 'Graph' button is selected, the results are shown over the selected display range (top left). The **ORANGE** horizontal line usually represents the warning, while the **Red** line represents a failure. These limits vary between different control charts



CEMQual – Quick guide - Report

An overall report is generated when 'Analyse Data' is selected. QAL3 Analysis Report shows the results of the QAL3 tests. In the example shown, Line 1 Duty SO2 is nearing a failure (**WARN**), while all other channels are within drift tolerances (**PASS**). When a test's results do exceed the limits, the result will '**FAIL**'

Note: the analysis is conducted over the selected display range at the top left

Note: the results are taken from the final result in the analysis period, and will not indicate earlier problems

Required control charts may be selected in the 'Advanced' tab. Once a control method is selected in the 'A' column, it's result (PASS, FAIL or WARN) will show in the report. If it has been selected in the 'P' column, this chart will be printed.

QAL3 Auto Settings

Span data Zero data

Selection	P	A
CUSUM Drift	<input type="checkbox"/>	<input type="checkbox"/>
CUSUM Precision	<input type="checkbox"/>	<input type="checkbox"/>
Shewhart	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
EWMA	<input type="checkbox"/>	<input type="checkbox"/>
VCR	<input type="checkbox"/>	<input type="checkbox"/>
Spreadsheet	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

When displaying this report, 'Save all' replaces the print all function, and when pressed will save all charts and data for all selected measurements, for zero and span results as images.

QAL3 analysis Configuration Advanced Manual Data Entry About

Display range Start: 09/04/2019 End: 07/04/2020

Get data: New data, Abandon

Select measurand: GT1 NOx

Print / file operations: Save all, Copy data, Save JPEG, Print this, Save as XL

Drift factors: hx/ Sams 2.85, lx/ Sams 0.501

Precision factors: hs/ Sams 6.90, ks/ Sams 1.85

Standard Deviation: S ams 2.00

Analyse data, Report

New reference value: 0.00 Apply

Graph select: CUSUM - Drift, CUSUM - Precision, Shewhart, EWMA, VCR, Custom

Show comments, Redraw graph, Scale 1 (20), Scale 2 (200), Join points, Thick lines, Draw points, Analyse results, Analyse all Sams

QAL3 Analysis Report

Compiled by: rg
Date range: 09/04/2019 - 07/04/2020

Control chart

Location	Measurand	Test	CUSUM Drift	CUSUM Precision	Shewhart	EWMA	VCR	Latest QAL3 date
GT1	NOx	SPAN	PASS	PASS	PASS	PASS	PASS	17/03/2020
	NOx	ZERO	FAIL	PASS	PASS	PASS	-	17/03/2020
	CO	SPAN	FAIL	PASS	PASS	PASS	PASS	17/03/2020
	CO	ZERO	PASS	PASS	PASS	PASS	-	17/03/2020
	O2	SPAN	PASS	PASS	PASS	PASS	PASS	17/03/2020
	O2	ZERO	PASS	PASS	PASS	PASS	-	17/03/2020
GT2	NOx	SPAN	PASS	PASS	PASS	PASS	PASS	17/03/2020
	NOx	ZERO	PASS	PASS	PASS	PASS	-	17/03/2020
	CO	SPAN	PASS	PASS	PASS	PASS	PASS	17/03/2020
	CO	ZERO	PASS	PASS	PASS	PASS	-	17/03/2020
	O2	SPAN	PASS	PASS	PASS	PASS	PASS	17/03/2020
	O2	ZERO	PASS	PASS	PASS	PASS	-	17/03/2020
GT3	NOx	SPAN	PASS	PASS	PASS	PASS	PASS	17/03/2020
	NOx	ZERO	PASS	PASS	PASS	PASS	-	17/03/2020
	CO	SPAN	PASS	PASS	PASS	PASS	PASS	17/03/2020
	CO	ZERO	PASS	PASS	PASS	PASS	-	17/03/2020
	O2	SPAN	PASS	PASS	PASS	PASS	PASS	17/03/2020
	O2	ZERO	PASS	PASS	PASS	PASS	-	17/03/2020

'Print' or 'Save' the generated report

Ensure that the 'Latest QAL3 date' is correct

Click on a **PASS**, **FAIL** or **WARN** message to go to the relevant control chart