



SDMS

(Sample Data Management System)

A General Solution for LIMS Raw Data Entry

NEMC Speaker: Bin Yu

AIS International, Ltd dba BTSoft



<http://www.btsoft.com/>



7136751100



info@btsoft.com

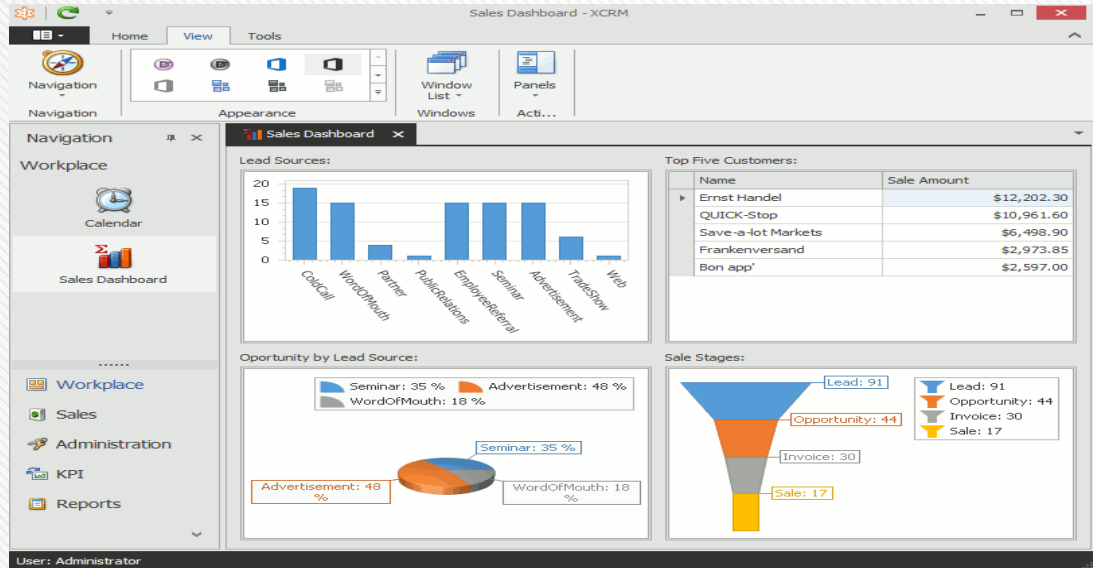
About BTSoft

Headquarters: Houston, TX
Employees: 40+
Funded: 2008



Products:

BTLIMS_Environmental
BTLIMS_Marine
BTLIMS_IH
LDM (Lab Data Master)
ICM (Inventory Control Manager)
SDMS



Issues Raised when Implementing LIMS

DIVERSIFIED SAMPLE TYPES

- Sample elements or matrices in environmental monitoring include: Water, Wastewater, Soil, Solid Waste, Gas, Bulk, Swap, Food, Media, Noise...

MULTIPLE ANALYTICAL TECHNIQUES

- The main monitoring categories comprise: Field Sampling, Web Chemistry, Metals, Organic, Micro, Asbestos, Mold...

COUNTLESS TEST PARAMETERS

- There can be hundreds and thousands of test parameters

One of The Biggest Challenges in LIMS Implementation

HOW TO HANDLE RESULT ENTRY FOR A TEST?

It may require to cover the following:

- Batch basic information
- Calibration curve if necessary
- Traceability of chemicals or medias being used in the batch
- Traceability of instruments, tools and supplies being used in the batch
- The entire raw data of the whole process
- Instrument data transfer
- Traceable calculation formulas
- The raw data batch report

Customer raw data entry templates: TSS, TDS, %TS, %VS, VS

04-15-21_MC_RS_DR_JAM [Compatibility Mode] - Excel

File Home Insert Page Layout Formulas Data Review View Add-ins Help LOAD TEST Team Tell me what you want to do

Clipboard Font Alignment Number Styles Cells Editing

113 RS TAP

Filtration Date:		04/15/21		By:		JAM		Comment:				LCS STANDARD			
Evaporation Oven ID:		Fisher Isotemp S/N 407N0129 Batch ID:				3,4						Inventory #		2021-19	
180°C Drying Oven ID:		Fisher Isotemp		S/N 41924375								Quality Control Criteria			
Batch ID:		7	8	10	12						≤ 10	90 - 110	≤ 10		
Beaker Process Date:		04/14/21	04/15/21	04/16/21	04/16/21										
Technician:		JAM	JAM	JAM	JAM										
Balance ID:		OHAUS Adventurer		S/N E3001200350338											
Beaker ID	Filter Chemical Inventory Number	Beaker @ 180°C		Sample @ 180°C		LIMS ID	SPL Bottle ID	Sample ID	Sample Volume (mL)	Beaker Constant Weight Confirmed	Sample Constant Weight Confirmed	TDS (mg/L)	LRB Result (mg/L)	LCS Recovery (%)	LD RPD (%)
		Weight 1	Weight 2	Weight 1	Weight 2										
I	2020-177	77.8174	77.8174	77.8175	77.8174	NA		LRB	100	PASS	PASS	<	10.0	0.0	
WY	2020-177	78.7408	78.7404	78.7517	78.7518	2104166.01	1	MC TAP	50	PASS	PASS		228.0		
A	2020-177	74.8697	74.8694	74.8804	74.8805	2104166.01LD1	1	LD	50	PASS	PASS		222.0		2.7
N	2020-177	77.4131	77.4128	77.4235	77.4236	2104161.01	1	RS TAP	50	PASS	PASS		216.0		
OO	2020-177	75.7808	75.7807	75.7905	75.7909	2104160.01	2	DAF RAW	50	PASS	PASS		204.0		
WF	2020-177	74.5039	74.5037	74.5086	74.5087			LCS	50	PASS	PASS		100.0	100	
L9	2020-177	65.3006	65.3005	65.3008	65.3005	NA		LRB	100	PASS	PASS	<	10.0	0.0	

Customer raw data entry template (multiple analytes): Monitoring

Log example - Excel

File Home Insert Page Layout Formulas Data Review View Help Tell me what you want to do

A13

1 2 3 4 5 6 7 8 9 10 11 12 13 X Y

A B C D E F G H I J K L M N O P Q R S T U V W

Add header

Time	RAW WATER							R. MIX		Settled Water			Filtered				Distribution			OPER
	Flow	Temp	pH	Turb (ntu)	Cl ² Res	Alk	Cl ² Res	pH	pH	Turb (ntu)	Cl ² Res	Chlorine		pH	Turb (ntu)	Chlorine				
												Free	Total			Free	Total	Chart		
0:00																				
1:00																				
2:00																				
3:00																				
4:00																				
5:00																				
6:00																				
7:00																				
8:00																				
9:00																				
10:00																				
11:00																				
12:00																				
13:00																				
14:00																				
15:00																				
16:00																				
17:00																				
18:00																				
19:00																				

DEER PARK
EST. 1892

WATER PURIFICATION PLANT
State Mandated Testing

DATE: _____
DAY: _____

Do not write below this point.

Filter Data

1) _____ 5) _____
2) _____ 6) _____
3) _____ 7) _____


State Mandated Testing

Sheet1 Wellsite Data

Customer raw data entry templates: Total Petroleum Hydrocarbons

Methane /Total hydrocarbon/Non-methane total hydrocarbonGas Chromatography Analysis of Original Record Table									
ProjectID	SHEDT19002136012	ReportingMatix	<input type="checkbox"/> Ambient air <input checked="" type="checkbox"/> Exhaust gas	Test	<input checked="" type="checkbox"/> Methane <input type="checkbox"/> Non-methane total hydrocarbon	Method	<input type="checkbox"/> HJ 604-2017 <input checked="" type="checkbox"/> HJ 38-2017		
Chromatograph model	GC9800	LabwareID	AI-077	Detector	FID	Injection volume	1 mL	tion chamber tem	100 °C
Column temperature	80 °C	Detector temperature	200 °C	Air flow	0.085 Mpa	Hydrogen flow	0.060 Mpa	MDL	0.07mg/m ³
Column	Column1	Stainless steel packed column, GDX-502 60~80mesh,3×3m				Column 1 carrier gas flow		0.085 Mpa	
	Column 2 (methane column)					Column 2 carrier gas flow		0.060 Mpa	
Standard substance name		Purifying air		Standard batch number	75608186	Standard concentration (In C)(mg/m ³)		0	
Methane in nitrogen		Standard batch number	L31304183	478508	84909095	Test	Methane	Resultmg/m ³	10.9
		Standard concentration (In C)(mg/m3)	5.36	10.7	70.7	RPD%	2	MB	0.00
SampleID	17C-Q12170101	DF		Result (mg/m ³)	5.00	Result (mg/m ³)	10.00	Result (mg/m ³)	5.00
				Standard dry exhaust (m ³ /h)	80661	Emission rate (kg/h)	0.403	SampleID	

Customer raw data entry templates: Colilert 18

Sample Information							
	Sample ID:	MB	Batch ID:	12982	Collect Date/Time:	NA	
	Lab ID:	402710	pH:	NA	Residual Chlorine:	NA	
Analytical Information							
Setup Analyst:	1589	Incubation Start Time:	12:47:00	Incubator ID#:	INC-15		
Setup Date/Time:	2/14/20 12:36	Waterbath Incubation Start Time:	12:48:00	Waterbath ID#:	WB-04		
Readback Analyst:	1589	Date/Time Out of Incubator:	2/15/20 8:36	Incubator Shelf:	Upper		
Readback Date/Time:	2/15/20 8:38	Date/Time Out of WB Incubator:	2/15/20 8:37	Media Lot Number:	GR728		
Cell Count		Result From Table		Dilution Factor	Final Results		Reportable Results (Place R to report)
Total Coliform		Total Coliform			Total Coliform		
Large Wells	Small Wells	MPN/100mL			MPN/100mL		
0	0	<1		1	0.0		R
x		XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX			0.0		
E.coli - Fluorescence		E.coli - Fluorescence			E.coli - Fluorescence		
Large Wells	Small Wells	MPN/100mL			MPN/100mL		
0	0	<1		1	0.0		R
x		XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX			0.0		
Fecal Coliform		Fecal Coliform			Fecal Coliform		
Large Wells	Small Wells	MPN/100mL			MPN/100mL		
0	0	<1		1	0.0		R
x		XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX			0.0		
Comments							
2/14/2020 @ 12:19 PM INC-15 35.06 C Upper, 35.17 C Middle, 35.12 C Lower, WB-04 44.31 C 2/15/2020 @ 08:34 AM INC-15 35.06 C Upper, 35.22 C Middle, 35.12 C Lower, WB-04 44.43C							

Customer raw data entry templates: Multiple Tube Fermentation

Sample Information

Batch ID	12975
Lab ID	C2002130027
Sample ID	OUTFALL 002A

SM 9221 B,C, E & F - CCWRD Total and Fecal Coliforms 15 tube MPN

	24 Hours	48 Hours	72 Hours	96 Hours	Final	
Presumptive Coliforms	7	7	7	7	7	MPN/100 mL
Total Coliforms		7	17	17	17	MPN/100 mL
Fecal Coliforms		2	2	2	2	MPN/100 mL
E-Coli		2	2	2	2	MPN/100 mL

STAGE: 96

Calc

Analytical Information

Date	02/13/20	LTB#	026-20.COL0027-20
Prep Start Time	12:39	Dil H2O #	NA
Incubation Start Time	12:47	Incubator ID	INC-10
Analyst	1868	Incubator Shelf	Upper
Dilution	1.0 - 1	CL ₂ Residual	0
Collect Date/Time	2/13/2020 10:06	pH	6.76

Dilution	1	0	-1	-2	-3
T/C Presumptive	2	1	0	0	0
T/C Confirmed	4	1	0	0	0
F/C Confirmed	0	1	0	0	0
E-Coli	0	1	0	0	0

24 Hour Readback

Date	02/14/20	Time	10:52
Analyst	1589	Incubator ID	INC-10, WB-03
BGB	COL0028-20	Incubator Shelf	Upper
FCM	COL0029-20		

Dilution # of Positives

Dilution	# of Positives
1	2
0	1
-1	0
-2	x
-3	x

From 24hr LTB

48 Hour Readback

Date	02/15/20	Time	9:49
Analyst	1589	Incubator ID	INC-10, WB-03
BGB	COL0028-20	Incubator Shelf	Upper
FCM	COL0029-20		

Dilution # of Positives Turbid Tubes Dilutions # of Positives

Dilution	# of Positives	Turbid Tubes	Dilutions	# of Positives
1	0	3L	1	2
0	0	2L	0	1
-1	0	0	-1	x
-2	x		-2	x
-3	x		-3	x

From 24hr LTB

From 24hr LTB

Dilutions	# of Positive	Fluoresce
1	0	0
0	1	1
-1	x	x
-2	x	x
-3	x	x

From 48hr LTB

72 Hour Readback

Date	02/16/20	Time	8:33
Analyst	1868	Incubator ID	INC-10, WB-03
		Incubator Shelf	Upper

Dilutions # of Positives

1	x
0	x
-1	x
-2	x
-3	x

Dilutions # of Positive: (+) Turbid Tubes Dilutions # of Positive: # Fluoresce

Dilutions	# of Positive: (+)	Turbid Tubes	Dilutions	# of Positive: #	Fluoresce
1	2	2L	1	0	0
0	0	0	0	0	0
-1	x		-1	x	x
-2	x		-2	x	x
-3	x		-3	x	x

From 48hr LTB

96 Hour Readback

Date	02/17/20	Time	8:49
Analyst	1868	Incubator ID	INC-10
		Incubator Shelf	Upper

Dilutions # of Positive: (+) Turbid Tubes

1	0	0
0	0	0
-1	x	
-2	x	
-3	x	

Customer raw data entry template: Particle Size Distribution

GRAIN SIZE DISTRIBUTION TEST DATA									
Client:		Dunn Heat Exchangers							
Project:		05/2020 K050 BOX TC 02							
Project Number:		20051574							
Location:		05/2020 K050 BOX TC 02							
Sample Number:		20051574.01							
Material Description:		Sludge							
Date:		43973		PL:				LL:	
Tested by:		CO				Checked by:		MBJ	
Sieve Test Data									
Post #200 Wash Test Weights (grams):					Dry Sample and tare =				
					Tare Wt. =				
					Minus #200 from wash =				
Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer				
93.78	0	#4	395.60	384.70	88.4				
		#10	320.30	295.90	62.4				
		#20	305.10	279.60	35.2				
		#40	291.30	273.40	16.1				
		#50	272.30	269.50	13.1				
		#70	269.20	258.60	1.8				
		#100	268.00	264.40	0.0				
		#140	259.60	251.50	0.0				
		#200	247.20	246.60	0.0				
Hydrometer Test Data									
Hydrometer test uses material passing #4									
Percent passing #4 based upon complete sample =					88.4				
Weight of hydrometer sample =					93.78				
Hydroscopic moisture correction:									
Moist weight and tare =					100				
Dry weight and tare =					93.78				
Tare weight =					0				
Hydroscopic moisture =									
Automatic temperature correction									
Composite correction (fluid density and meniscus height) at 20 deg. C =					-2.5				
Meniscus correction only =					1.34490576				
Specific gravity of solids =					1.00463015				
Hydrometer type = 152H									
Hydrometer effective depth equation: L = 19.294964 - 0.164 x Rm									
Elapsed Time (min.)	Temp. (deg. C)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer	
2.00	25.2	3.0	1.8	0.0129	4.0	15.6	0.0361	1.8	
4.00	25.2	3.0	1.8	0.0129	4.0	15.6	0.0255	1.8	
30.00	25.2	3.0	1.8	0.0129	4.0	15.6	0.0093	1.8	
60.00	25.2	3.0	1.8	0.0129	4.0	15.6	0.0066	1.8	
120.00	25.2	3.0	1.8	0.0129	4.0	15.6	0.0047	1.8	
240.00	25.2	3.0	0.8	0.0129	3.0	15.8	0.0033	0.8	

Particle Size Distribution Report

% Boulders	% +3"	% Pebbles	% Granules	V. Crs.	Crs.	Med.	Fine	V. Fine	Crs.	Med.	Fine	V. Fine	% Clay

PARTICLE SIZE	PERCENT FINER	SPEC * PERCENT	PASS? (X=NO)	Material Description	
4.75	88.3771			Sludge	
2	62.3587				
0.85	35.1674				
0.425	16.0802			Atterberg Limits LL = 5/27/2020 PI = @ 0800	
0.3	13.0945				
0.21	1.79143				
0.15	0				
0.106	0			Coefficients D90 = 4.2444 D60 = 1.8500 D50 = 1.3359 D30 = 0.7331 D15 = 0.3544 D10 = 0.2674 Cu = 6.92 Cc = 1.09	
0.075	0				
0.0361	1.84				
0.0255	1.84				
0.0093	1.84				
0.0066	1.84			Classification USCS = AASHTO =	
0.0047	1.84				
0.0033	0.84				
0.0014	0.84			Remarks	

* (no specification provided)

Location:	05/2020 K050 BOX TC 02	
Sample Number:	20051574.01	
	Date: 43973	

A & B Labs	Client: Dunn Heat Exchangers
Houston, Texas	Project: 05/2020 K050 BOX TC 02
	Project No.: 2E+07

Tested By: CO	Checked By: MBJ
----------------------	------------------------

Our Solution: Sample Data Management System (SDMS)

- How to solve the problems and meet the goal?
- Use SDMS.

It is a General Solution for LIMS Implementation Raw Data Entry!

- What can SDMS do?
...

The Capabilities of SDMS

We are able to use SDMS to

- 1) design any custom raw data result entry templates
- 2) create multiple level calibration regression curve
- 3) manage single or multiple parameters (analytes)
- 4) set up formulas for calculations in any field
- 5) have data parsing functions to define fields and save to database
- 6) build parsers for instrument data imports
- 7) design and create complex custom raw data reports
- 8) set up run sequences with automatic QC batch creation
- 9) set up multi-level result approval process
- 10) Intergrade with any LIMS with our API

Solve the Problems with SDMS!

Examples to demonstrate what have been achieved
with Sample Data Management System

Select a Test in SDMS

The screenshot displays the LIMS software interface with a 'Test' selection dialog box open. The dialog box contains a table with the following columns: Test, Matrix, Method, Template Name, and Sx. The 'COD' test is selected and highlighted in blue.

Test	Matrix	Method	Template Name	Sx
% Solid	Solid	SM 2540G-2015	%Solid	1
Alkalinity, Total	Liquid	EPA 600 310.2mod	Alkalinity	6
Ammonia	Liquid	SM 4500NH3 D-2...	Ammonia	67
Anions	Liquid	EPA 600 300.0Mod	Anions	32
BOD5	Liquid	SM 5210B-2016	BOD	30
CBOD5	Liquid	SM 5210B-2016	CBOD	1
COD	Liquid	Hach 8000	COD	14
Calcium Chloride	Liquid	SM 2540G-2015	Total Chloride	20

Retrieve Samples in SDMS

The screenshot displays the BTLIMS software interface. The main window is titled "SDMS Result Sheet" and shows a list of samples. A pop-up window is open, displaying a table of sample details. The table has the following columns: Test, Matrix, Method, Template Name, and Sx. The data in the table is as follows:

Test	Matrix	Method	Template Name	Sx
% Solid	Solid	SM 2540G-2015	%Solid	1
Alkalinity, Total	Liquid	EPA 600 310.2mod	Alkalinity	6
Ammonia	Liquid	SM 4500NH3 D-2...	Ammonia	67
Anions	Liquid	EPA 600 300.0Mod	Anions	32
BOD5	Liquid	SM 5210B-2016	BOD	30
CBOD5	Liquid	SM 5210B-2016	CBOD	1
COD	Liquid	Hach 8000	COD	14
Calcium, Colloidal	Liquid	SM 2000 2004	Total Calcium	22

The interface also shows a menu bar with options like File, Home, Insert, Page Layout, Formulas, and View. The status bar at the bottom indicates "Sheet1" and "BTSOFT".

Form a Sequence After Sorting

The screenshot shows the SDMS software interface with the 'Sample And QC Entry' dialog box open. The dialog is overlaid on an Excel spreadsheet. The 'Add Samples' table is highlighted with a red box, and a red arrow points to the 'Instrument' dropdown menu.

Dialog Fields:

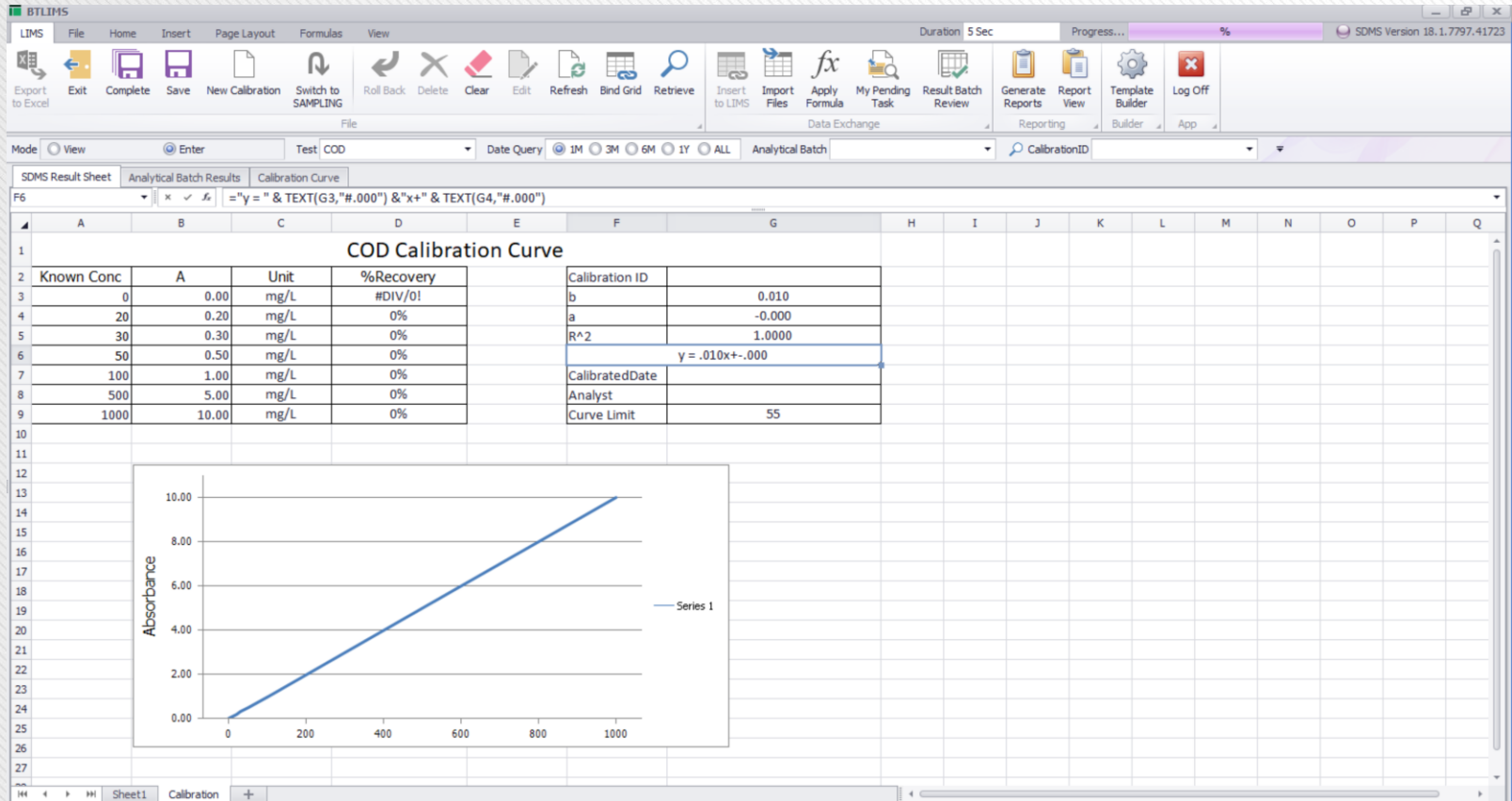
- Test: COD
- Job ID: 21041302, 20102301
- No Of Run: 1
- AnalysedBy: admin
- Instrument: Spec 6

Add Samples Table:

QCTYPE	SAMPLEID	SYSSAMPLECODE	SAMPLENAME	COLLECTIONDATE	PROJECTID	CLIENTNAME
Calb		Calb 1				
MB	MB	MB1				
ICV		ICV1				
RLV		RLV1				
SAMPLE	20102301.01	20102301-01	outfall 1			Red Baron Building
MS	20102301.01	20102301-01MS1	outfall 1			
Duplicate	20102301.01	20102301-01Duplic...	outfall 1			
SAMPLE	21041302.01				32	HL Processing
SAMPLE	20102301.02	20102301-02	a			Red Baron Building
SAMPLE	21041302.02				32	HL Processing
SAMPLE	20102301.03	20102301-03	b			Red Baron Building
SAMPLE	20102301.04	20102301-04	c			Red Baron Building
SAMPLE	20102301.05	20102301-05	d			Red Baron Building
SAMPLE	20102301.06	20102301-06	e			Red Baron Building
SAMPLE	20102301.07	20102301-07	f			Red Baron Building
SAMPLE	20102301.08	20102301-08	g			Red Baron Building
SAMPLE	20102301.09	20102301-09	h			Red Baron Building

Record 1 of 23

Building a Linear Regression Curve for a Test



Data Entry and Calculation in a Template

BT LIMS

LIMS File Home Insert Page Layout Formulas View Duration 5 Sec Progress... % SDMS Version 18.1.7797.41723

Export to Excel Exit Complete Save New Calibration Switch to SAMPLING Roll Back Delete Clear Edit Refresh Bind Grid Retrieve Insert to LIMS Import Files Apply Formula My Pending Task Result Batch Review Generate Reports Report View Template Builder Log Off

Mode View Enter Test COD Date Query 1M 3M 6M 1Y ALL Analytical Batch CalibrationID

Export to Excel Analytical Batch Results Calibration Curve

A1 x ✓ ✗

COD														
2	Test	COD	Reactor ID & Temp (obs/cor°C)								20 ppm Cal std & RLV	LT00001		
3	Method	Hach 8000	Reactor ID & Temp (obs/cor°C)				Entered By				admin	30 ppm Cal std	LT00002	
4	Matrix	Liquid	Thermometer T:				112233.0	Analyzed Date				08/02/21 15:33	50 ppm Cal std	LT00003
5	Spectrophotometer	Spec 6	Pipettor(s) P:				223344.0	Analyzed By				admin	100 ppm Cal std & CCV	LT00004
6			Reagent water				98765.0	100 ppm ICV (B)				LT00007	500 ppm Cal std	LT00005
7			COD Vials				12345.0	100 ppm MS (200 µL A)				LT00008	1000 ppm Cal std	LT00006
8	Comments													
9	QCType	SysSampleCode	VolUsed (mL)	DF	Reading	Numeric Result (mg/L)	Result (mg/L)	RptLimit	Spike Amount (mg/L)	% Recovery	% RPD	% Recovery CtrlLimit	% RPD CtrlLimit	Qualifier
10	MB	MB1	50	1	0.0002	0.021	BRL	20.0						
11	ICV	ICV1	50	1	1.0050	100.500	100.5		100	100.5				
12	RLV	RLV1	50	1	0.2102	21.020	21.0		20					
13	0.20.2012	20102301-01	50	1	0.0012	0.123	BRL	20.0						
14	MS	20102301-01MS1	50	1	1.0931	109.310	109.3		100	109.3	80-120			
15	Duplicate	20102301-01Duplicate1	50	1	0.0012	0.120	0.1				0.0		-20-20	
16	SAMPLE	20102301-02	50	1	0.0002	0.021	BRL	20.0						
17	SAMPLE	20102301-03	50	1	0.0002	0.021	BRL	20.0						
18	SAMPLE	20102301-04	50	1	0.0002	0.021	BRL	20.0						
19	SAMPLE	20102301-05	50	1	0.0002	0.021	BRL	20.0						

Sheet1 Calibration

Parsing Results to db from the Spreadsheets after Saving

BTLMIMS

LIMS File Home Insert Page Layout Formulas View Duration 3 Sec Progress... % SDMS Version 18.1.7797.41723

Export to Excel Exit Complete Save New Calibration Switch to SAMPLING Roll Back Delete Clear Edit Refresh Bind Grid Retrieve Insert to LIMS Import Files Apply Formula My Pending Task Result Batch Review Generate Reports Report View Template Builder Log Off

File Data Exchange Reporting Builder App

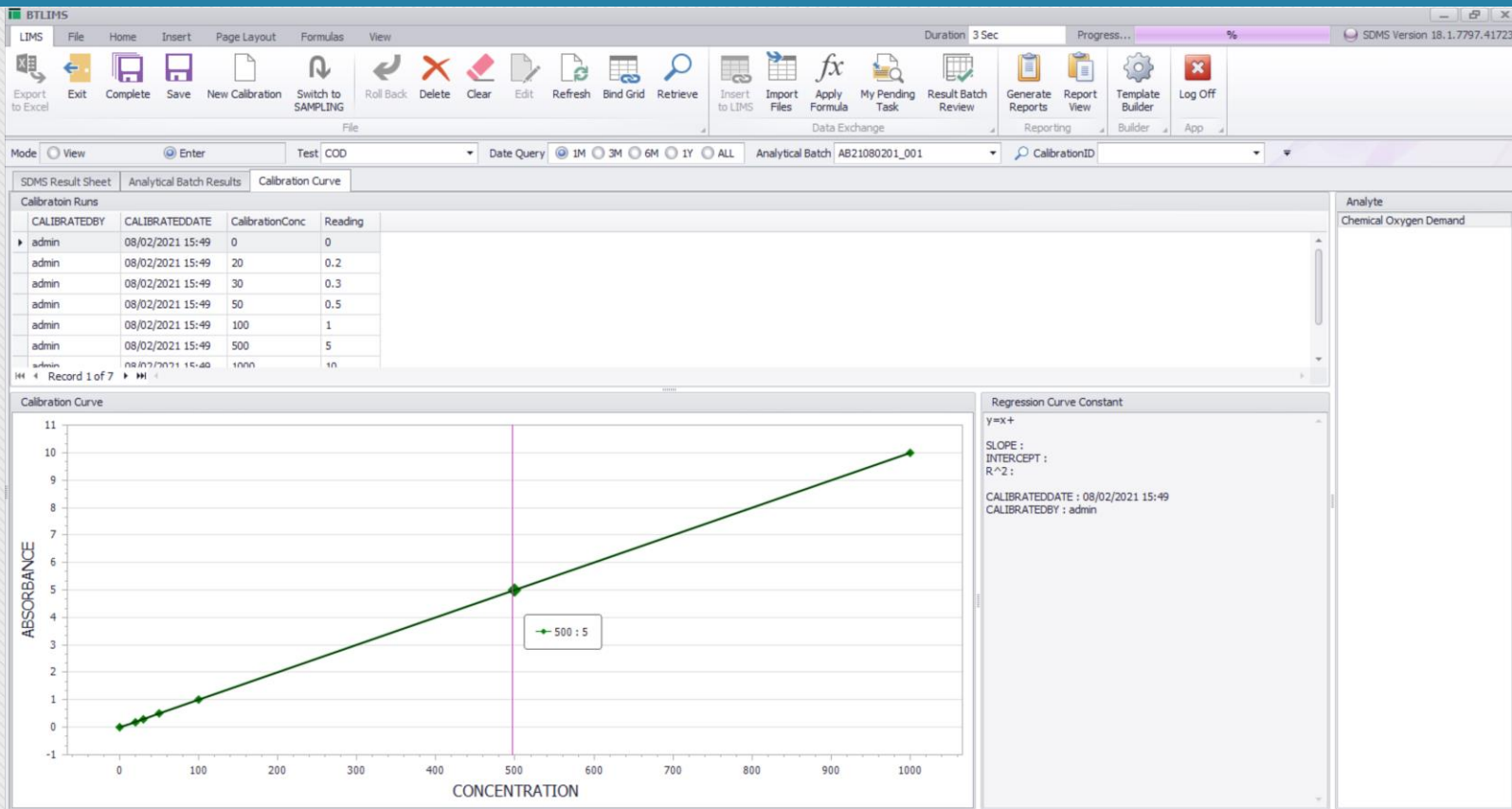
Mode View Enter Test: COD Date Query 1M 3M 6M 1Y ALL Analytical Batch: AB21080201_001 CalibrationID

SDMS Result Sheet Analytical Batch Results Calibration Curve

	QCType	SampleID	SysSampleCode	VolumeUsed	DF	Reading	NumericResult	Result	Units	RptLimit	%RPD	SpikeAmount	%Rec	Instrument	Test	Method	Matrix	Parameter	Analyst	AnalyzedDate	RunType	RunNo
<input checked="" type="checkbox"/>	Calib		Calib121080201_001							20				Spec 6	COD	Hach 8000	Liquid	Chemical Oxygen Demand	admin	08/02/2021 15:33	STANDARD	1
<input checked="" type="checkbox"/>	MB		MB1	50	1	0.0002	0.02	BRL		20.0				Spec 6	COD	Hach 8000	Liquid	Chemical Oxygen Demand	admin	08/02/2021 15:33	METHODBLANK	1
<input checked="" type="checkbox"/>	ICV		ICV121080201_001	50	1	1.0050	100.50	100.50		20			100.5	Spec 6	COD	Hach 8000	Liquid	Chemical Oxygen Demand	admin	08/02/2021 15:33	STANDARD	1
<input checked="" type="checkbox"/>	RLV		RLV121080201_001	50	1	0.2102	21.02	21.00		20		20		Spec 6	COD	Hach 8000	Liquid	Chemical Oxygen Demand	admin	08/02/2021 15:33	STANDARD	1
<input checked="" type="checkbox"/>	MS	20102301.09	20102301-01MS1	50	1	1.0931	109.31	109.30				100	109.3	Spec 6	COD	Hach 8000	Liquid	Chemical Oxygen Demand	admin	08/02/2021 15:33	SPIKE	1
<input checked="" type="checkbox"/>	Duplicate	20102301.09	20102301-01Duplicate1	50	1	0.0012	0.12	0.10			0.0			Spec 6	COD	Hach 8000	Liquid	Chemical Oxygen Demand	admin	08/02/2021 15:33	SPIKE	1
<input checked="" type="checkbox"/>	SAMPLE	21041302.01								20				Spec 6	COD	Hach 8000	Liquid	Chemical Oxygen Demand	admin	08/02/2021 15:33	SAMPLE	1
<input checked="" type="checkbox"/>	SAMPLE	20102301.02	20102301-02	50	1	0.0002	0.02	BRL		20.0				Spec 6	COD	Hach 8000	Liquid	Chemical Oxygen Demand	admin	08/02/2021 15:33	SAMPLE	1
<input checked="" type="checkbox"/>	SAMPLE	21041302.02								20				Spec 6	COD	Hach 8000	Liquid	Chemical Oxygen Demand	admin	08/02/2021 15:33	SAMPLE	1
<input checked="" type="checkbox"/>	SAMPLE	20102301.03	20102301-03	50	1	0.0002	0.02	BRL		20.0				Spec 6	COD	Hach 8000	Liquid	Chemical Oxygen Demand	admin	08/02/2021 15:33	SAMPLE	1
<input checked="" type="checkbox"/>	SAMPLE	20102301.04	20102301-04	50	1	0.0002	0.02	BRL		20.0				Spec 6	COD	Hach 8000	Liquid	Chemical Oxygen Demand	admin	08/02/2021 15:33	SAMPLE	1
<input checked="" type="checkbox"/>	SAMPLE	20102301.05	20102301-05	50	1	0.0002	0.02	BRL		20.0				Spec 6	COD	Hach 8000	Liquid	Chemical Oxygen Demand	admin	08/02/2021 15:33	SAMPLE	1
<input checked="" type="checkbox"/>	SAMPLE	20102301.06	20102301-06	50	1	0.0002	0.02	BRL		20.0				Spec 6	COD	Hach 8000	Liquid	Chemical Oxygen Demand	admin	08/02/2021 15:33	SAMPLE	1
<input checked="" type="checkbox"/>	SAMPLE	20102301.07	20102301-07	50	1	0.00	0.00	BRL		20.0				Spec 6	COD	Hach 8000	Liquid	Chemical Oxygen Demand	admin	08/02/2021 15:33	SAMPLE	1
<input checked="" type="checkbox"/>	SAMPLE	20102301.09	20102301-09	50	1	0.00	0.00	BRL		20.0				Spec 6	COD	Hach 8000	Liquid	Chemical Oxygen Demand	admin	08/02/2021 15:33	SAMPLE	1
<input checked="" type="checkbox"/>	MS	20102301.09	20102301-09MS2	50	1	0.00	0.00	0.00				100	0.0	Spec 6	COD	Hach 8000	Liquid	Chemical Oxygen Demand	admin	08/02/2021 15:33	SPIKE	1
<input checked="" type="checkbox"/>	Duplicate	20102301.09	20102301-09Duplicate2	50	1	0.00	0.00	0.00			0.0			Spec 6	COD	Hach 8000	Liquid	Chemical Oxygen Demand	admin	08/02/2021 15:33	SPIKE	1
<input checked="" type="checkbox"/>	SAMPLE	20102301.10	20102301-10	50	1	0.00	0.00	BRL		20.0				Spec 6	COD	Hach 8000	Liquid	Chemical Oxygen Demand	admin	08/02/2021 15:33	SAMPLE	1
<input checked="" type="checkbox"/>	SAMPLE	20102301.11	20102301-11	50	1	0.00	0.00	BRL		20.0				Spec 6	COD	Hach 8000	Liquid	Chemical Oxygen Demand	admin	08/02/2021 15:33	SAMPLE	1
<input checked="" type="checkbox"/>	CCV		CCV121080201_001	50	1					20		100		Spec 6	COD	Hach 8000	Liquid	Chemical Oxygen Demand	admin	08/02/2021 15:33	STANDARD	1
<input checked="" type="checkbox"/>	CCB		CCB121080201_001	50	1					20.0				Spec 6	COD	Hach 8000	Liquid	Chemical Oxygen Demand	admin	08/02/2021 15:33	METHODBLANK	1

Record 1 of 21

Saving Calibration ID and Details into the db



Run Time Raw Data Report Bench Level Preview

BTLLIMS Report Viewer Duration: 3 Sec

Mode: View Enter

SDMS Result Sheet Analytical Batch Results

QCType	SampleID	SysSampleCode
<input checked="" type="checkbox"/>	Calib	Calib 121080201
<input checked="" type="checkbox"/>	MB	MB1
<input checked="" type="checkbox"/>	ICV	ICV121080201
<input checked="" type="checkbox"/>	RLV	RLV121080201
<input checked="" type="checkbox"/>	MS	20102301.09 20102301-09MS
<input checked="" type="checkbox"/>	Duplicate	20102301.09 20102301-01Du
<input checked="" type="checkbox"/>	SAMPLE	21041302.01
<input checked="" type="checkbox"/>	SAMPLE	20102301.02 20102301-02
<input checked="" type="checkbox"/>	SAMPLE	21041302.02
<input checked="" type="checkbox"/>	SAMPLE	20102301.03 20102301-03
<input checked="" type="checkbox"/>	SAMPLE	20102301.04 20102301-04
<input checked="" type="checkbox"/>	SAMPLE	20102301.05 20102301-05
<input checked="" type="checkbox"/>	SAMPLE	20102301.06 20102301-06
<input checked="" type="checkbox"/>	SAMPLE	20102301.07 20102301-07
<input checked="" type="checkbox"/>	SAMPLE	20102301.09 20102301-09
<input checked="" type="checkbox"/>	MS	20102301.09 20102301-09MS
<input checked="" type="checkbox"/>	Duplicate	20102301.09 20102301-09Du
<input checked="" type="checkbox"/>	SAMPLE	20102301.10 20102301-10
<input checked="" type="checkbox"/>	SAMPLE	20102301.11 20102301-11
<input checked="" type="checkbox"/>	CCV	CCV121080201
<input checked="" type="checkbox"/>	CCB	CCB121080201

COD

Report Date: 08/02/2021

Test:	COD	LCS/LCS/MS CCVLT:	Date Time In:
Method:	Hach 8000	ICVLT:	Date Time Out: admin
Matrix:	Liquid	VCal LT: 112233	Analyst: admin
Instrument:	Spec 6	Reactor Temp (°C): 223344	Analyzed Date: 08/02/21 15:33

SysSampleCode	VolUsed (mL)	DF	Readings MillVolts	Numeric Result	Result (mg/L)	RPD	Spike Amount	% Recovery	Rpt Limit	%RPD CtrlLimit	%Recovery CtrlLimit
SysSampleCode	VolUsed (mL)	DF	Reading	Numeric Result (mg/L)	Result (mg/L)	%RPD	Spike Amount (mg/L)	% Recovery	Rpt Limit	%RPD CtrlLimit	%Recovery CtrlLimit
MB1	50	1	0.0002	0.021	BRL				20.0		
ICV1	50	1	1.0050	100.500	100.5		100	100.5			
RLV1	50	1	0.2102	21.020	21.0		20				
20102301-01	50	1	0.0012	0.123	BRL				20.0		
20102301-01MS1	50	1	1.0931	109.310	109.3		100	109.3			80-120
20102301-01Duplicate1	50	1	0.0012	0.120	0.1	0.0				-20-20	
20102301-02	50	1	0.0002	0.021	BRL				20.0		
20102301-03	50	1	0.0002	0.021	BRL				20.0		
20102301-04	50	1	0.0002	0.021	BRL				20.0		
20102301-05	50	1	0.0002	0.021	BRL				20.0		
20102301-06	50	1	0.0002	0.021	BRL				20.0		
20102301-07	50	1	0.0002	0.021	BRL				20.0		

Analyst	AnalyzedDate	RunType	RunNo
admin	08/02/2021 15:33	STANDARD	1
admin	08/02/2021 15:33	METHODBLANK	1
admin	08/02/2021 15:33	STANDARD	1
admin	08/02/2021 15:33	STANDARD	1
admin	08/02/2021 15:33	SPIKE	1
admin	08/02/2021 15:33	SPIKE	1
admin	08/02/2021 15:33	SAMPLE	1
admin	08/02/2021 15:33	SAMPLE	1
admin	08/02/2021 15:33	SAMPLE	1
admin	08/02/2021 15:33	SAMPLE	1
admin	08/02/2021 15:33	SAMPLE	1
admin	08/02/2021 15:33	SAMPLE	1
admin	08/02/2021 15:33	SAMPLE	1
admin	08/02/2021 15:33	SAMPLE	1
admin	08/02/2021 15:33	SAMPLE	1
admin	08/02/2021 15:33	SAMPLE	1
admin	08/02/2021 15:33	SPIKE	1
admin	08/02/2021 15:33	SAMPLE	1
admin	08/02/2021 15:33	SAMPLE	1
admin	08/02/2021 15:33	STANDARD	1
admin	08/02/2021 15:33	METHODBLANK	1

Record 1 of 21

Locating an Instrument File to Import Results

The screenshot displays the LIMS software interface with the 'Import Instrument Files' dialog box open. The background is a spreadsheet with the following data:

QCType	SysSampleCode	DateTime
Calib	Calib1	
Initial IPC	Initial IPC1	
QCS	QCS1	
CCB	CCB1	
MB	MB1	
LCS	LCS1	
LCSD	LCSD1	
SAMPLE	20102601-02	
MS	20102601-02MS1	
MSD	20102601-02MSD1	
SAMPLE	20102601-03	

The 'Import Instrument Files' dialog box contains the following information:

- Import Instrument Files:** C:\Users\byu22\OneDrive\Desktop\Mercury
- Instrument File Type:** Single (selected), Multiple (deselected), Mercury
- Upload Progress:** (Progress bar)
- Imported Files:**

File Name	Date	Size	Pages	Date Added	Remove
Calib1		3 KB		1 02 Aug 202...	X

Build an SDMS Template

SpreadSheetTemplateBuilder

LIMS File Home Insert Page Layout Formulas Data Review View Mail Merge

Export To Excel Add New Save Save As Cancel Clear Edit Update Script Scientific Data Utility Default Settings Sequence Setup

Template

Test	Method
COD	EPA 410.4
Phenols	EPA 420.1
Total Phosphorous	SM 4500-P B.
Hexavalent Chro...	SM 3500-Cr B
MBAS	SM 5540C 21:
Cyanide, Total	EPA 335.4
Total Suspended ...	SM 2540D 21:
MBAS / DW	SM 5540C 21:
Ortho Phosphorus	SM 4500-P B.
Total Solids	SM 2540B 21:
Total Dissolved So...	SM 2540C 21:
Volatile Solids	EPA 160.4
% TS	SM 2540B 21:
%VS	EPA 160.4
Volatile Suspende...	SM 2540 E 21
MLSS	SM 2540D 21:
MLVSS	SM 2540 E 21
% TS	SM 2540B 21:
%VS	SM 2540 E 21
Volatile Solids	EPA 160.4
Fixed Dissolved S...	SM 2540C 21:

General Info Field Info Parsing Data Data Transfer And Reporting

Test Assignment

Operation: ELN Sampling

Template Name: COD_1_BECK
 Template Type: Colorimetric
 Matrix: Aqueous
 Test: COD
 Method: EPA 410.4
 Parameter: Chemical Oxygen Demand
 Supporting Parameter:

Active:
 Retire:
 Created By: admin
 Created Date: 10/26/2017 8:19 PM
 Updated By: admin
 Updated Date: 7/2/2019 4:09 PM

Calibration Level: 6
 Data Transfer SheetID: 0

Template

D13

COD Analysis Result Entry											
1											
2	Matrix	[MATRIX]	Room Temp		Wave Lenth (nm)		Rpt Litr				
3	Test	[TEST]	Humidity		Cell Lenth (cm)						
4	Method	[METHOD]	Reagent ID		Analysis Date	[ANALYZEDDATE]					
5	Instrument	[INSTRUMENT]	MDL	[MDL]	Analyzed By	[ANALYZEDBY]					
6											
7	QCType	SampleID	Dilution	A	Response mg/L	Calculated mg/L	Result	Spike Amt	TrueValue	QC Acceptance	%Recovi
8	[QCTYPE]	[SAMPLEID]	1			=+(F8*D8)	=IF(G8<VALUE(\$G				

Record 1 of 37

COD_Samples Calibration

Building a Test Template – Data Field Settings in the Sheets

The image illustrates the configuration of data field settings in a LIMS software template. It shows three main windows:

- Template Window:** Lists available fields such as [%RD], [%RDCtrlLimit], [%RecCtrlLimit], [%TsFinalWt], A(NO2), A(NO2)X, A0, Ab, Ab1, Ab11, Ab12, Ab2, Ab21, Ab22, An, AnalyticalBatchID, AvgResult, and Aw.
- General Info Window:** Displays settings for a specific field (e.g., M8).

Sheet ID	RunType	FieldName	Position	Formula
1	RawDataTable	SpikeTV	J8	=IF(ISNUMBER(SEARCH("Spike",B8,1))=TRUE,IF(D8=1,(AVERAGEIFS(G:G,C:C,B8,"<>">">888)/2)+H8/2,((AVERAGEIFS(F:F,C:C,B8,B,"<>">88i
1	RawDataTable	UserDefined1	L8	=IF(OR(ISNUMBER(SEARCH("CV",B8,1)),ISNUMBER(SEARCH("CCV",B8,1))),IF(AND(M8>90,M8<110),"YES","NO!!!"),IF(ISNUMBER(SEARCH("BLAI
1	RawDataTable	[%Recovery]	M8	=IF(OR(ISNUMBER((SEARCH("SPIKE",B8,1)))=TRUE),IF(D8=1,G8/J8*100,F8/J8*100),IF(ISNUMBER((SEARCH("CCV",B8,1)))=TRUE,(G8/I8)*100,I
1	RawDataTable	RPD	J8	=IF(ISNUMBER(SEARCH("DUP",B8,1))=TRUE,(ABS(G8-AVERAGEIFS(G:G,B8,"SAMPLE",C:C,C8)))/AVERAGE(AVERAGEIFS(G:G,B8,B8),AVERAGEIF
2	CalibrationTable	CurveLimit	G10	=+A\$8*1.1
- Data Transfer And Reporting Window:** Shows a spreadsheet for 'COD Analysis Reagent ID' with columns: Dilution, A, Response mg/L, and Calculated mg/L. A formula is shown: $=+(F8*D8)$.

Red arrows indicate the mapping of data from the template fields to the spreadsheet columns. A text box in the bottom right of the spreadsheet window reads: "Binding data source to parser fields".

Design an Analysis Report

The image shows two overlapping windows from Microsoft Office. The top window is 'SpreadSheetTemplateBuilder' with the 'Data Transfer And Reporting' tab selected. The bottom window is 'frmDynamicReporting' (Report Designer) showing a report layout with a table and various controls.

SpreadSheetTemplateBuilder - Data Transfer And Reporting

Name	View	Delete
RawDataTableData...		

Name	File Type	View	Delete	SubReport
COD_Rpt	DEV	View	Delete	

frmDynamicReporting - Report Designer

Report Designer interface showing a report layout with a table and various controls.

Field List: DynamicDataSource > SampleInfo > Parameters

Table Structure:

Detail
tableCell1 tableCell2 tableCell3

Set up a Run Sequence

The screenshot shows the 'frmSequenceSetup' application. The 'Sequence Setup View' tab is active, displaying a table of test methods and their associated matrices. The 'Sequence Test' tab is also visible, showing test parameters such as 'Frequency (F) Of QC Analysis, Once Per Every 6 Samples' and 'Insert a Duplicate Sample In a Batch After the No. 2 Sample'. A red box highlights the 'Frequency' field, and red arrows point to the 'Samples' field and the 'Insert a Duplicate Sample...' text. Another red box highlights the 'Initial QC test run' and 'Sample QC test run' sections, with red arrows pointing to the 'Order' column in the table below.

Matrix	Test	Method
Aqueous	COD	EPA 410.4
Aqueous	Total Phosp...	SM 4500-P ...
Aqueous	Phenols	EPA 420.1
Aqueous	Hexavalent ...	SM 3500-Cr ...
Aqueous	MBAS	SM 5540C 2...
Aqueous	Cyanide, Total	EPA 335.4
Aqueous	Total Suspe...	SM 2540D 2...
Aqueous	MBAS / DW	SM 5540C 2...
Aqueous	Ortho Phos...	SM 4500-P ...
Aqueous	Total Solids	SM 2540B 21st
Aqueous	Total Dissol...	SM 2540C 2...
Aqueous	Volatile Solids	EPA 160.4

QCType	QCRole	RootRole	Order	QCType	QCRole	RootRole	Order
ICV	Standard	Standard	1	Dup	Duplicate	Duplicate	1
Blank	Blank	Blank	2	50:50 Spike	Spike	Spike	2
				CCV	Standard	Standard	1

The screenshot shows the 'SDMS Result Sheet' application. The 'Sample Sequence Edit' dialog box is open, displaying test parameters and a table of samples. The 'Test' is set to 'COD', 'Job ID' is '181015001,181012...', and 'No. Runs' is '1'. The 'AnalysedBy' is 'admin'. The 'Add QC' list includes '50:50 Spike', 'Blank', 'CCV', 'Dup', and 'ICV'. The 'Add Sample' table lists samples with their respective QCTypes, SampleIDs, RunNos, Station, Layer, collection Date, ProjectID, and ClientName.

QCType	SampleID	RunNo	Station	Layer	collection Date	ProjectID	ClientName
ICV	ICV	1					
Blank	Blank	1					
SAMPLE	181011010.02	1			10/11/2018	Parshall Flume	Jim Beam Brands (CL)
SAMPLE	181012002.02	1			10/12/2018	Parshall Flume	Jim Beam Brands (CL)
Dup	181012002.02	1					
50:50 Spike	181012002.02	1					
SAMPLE	181012010.02	1			10/12/2018	Effluent - Monthly - C...	Jim Beam Brands (FF)
SAMPLE	181012012.02	1			10/12/2018	Effluent - Weekly - Co...	Jim Beam Brands (FF)
SAMPLE	181015001.02	1			10/13/2018	Parshall Flume	Jim Beam Brands (CL)
CCV	CCV	1					
Blank	Blank	1					

Test Template Development with SDMS: Polarized Light Microscopy (PLM)

The screenshot displays the SDMS software interface for test template development. The window title is "BTLIMS" and the version is "SDMS Version 18.1.7858.38772". The interface includes a menu bar (File, Home, Insert, Page Layout, Formulas, View), a toolbar with various actions (Export to Excel, Exit, Complete, Save, New Calibration, Switch to SAMPLING, Roll Back, Delete, Clear, Edit, Refresh, Bind Grid, Retrieve, Insert to LIMS, My Pending Task, Import Files, Result Batch Review, Apply Formula, Date Query), and a mode selector (Mode: View, Enter, Review, Verify). The current test is "PLM_Bulk" and the analytical batch is "Analytical Batch".

The main configuration area is titled "Sample Query" and "Stereoscopic Observation PLM Exam". It contains a table of sample queries and a list of properties to be tested.

SAMPLEL #	STATUS
2106210...	Entered
2106210...	Pending
2106210...	Pending
2106210...	Pending
2106210...	Pending
2106210...	Pending
2106210...	Pending

The configuration area is divided into several sections:

- Material:** A list of materials with checkboxes. "Acoustic Ceiling Tile# Adhesive" is selected. A dropdown menu is open showing options like "Acoustic Ceiling Material", "Acoustic Ceiling Tile", "Adhesive", "Adhesive Strips", "Air Duct Insulation", "Air Filter", "Aluminum Foil", "Ash", and "Ash - This is not vermiculite".
- Texture:** Checkboxes for "Foam", "Fibrous", "Firm", "Granular", "Non Fibrous", "Tar", and "Other".
- Homogeneity:** Checkboxes for "Homogeneous", "Non-Homogeneous", "Layered", and "Other".
- Color:** Checkboxes for "Beige", "Black", "Blue", "Brown", "Clear", "Gray", "Green", "Pink", "Red", "Tan", "White", and "Other".
- Stereoscopic:** Checkboxes for "Fibers Present".
- Friability:** Radio buttons for "Yes", "No", and "N/A".
- Sample:** Checkboxes for "Acid", "Ash", "Grou", "HCL", "Mat", "Non", "Solv", "Tea", and "Oth".

Buttons for "OK" and "Cancel" are visible at the bottom of the configuration area.

Customer raw data entry templates: Chlorophyll

Department: BIOL

Batch ID: 12978

Parameter: Chlorophyll-A/Pheophytin

Method/SOP: SM10200 H/S03-0016 rev. 2.0

Analysis Information		Instrument Information		0.1N HCl Information		Acetone Solution Information		Working Chlorophyll-a Check Standard Information (Spinach)	
Analyst:	1652	Instrument ID:	SPEC04	Standard ID #:	NIT0928-20	Standard ID #:	PHYS0041-20	Standard ID #:	PHYS0042-20
Sample Prep Date/Time:	2/14/20 9:00 AM	Instrument Model:	SHIMADZU UV-1800	Concentration:	0.1 N	Percent Acetone Concentration:	90.00	Concentration:	0.5 mg/L
Date/Time Sample placed in refrigerator to steep:	2/14/20 9:56 AM	Date Wavelengths Checked:	10/15/2019	Date Opened:	2/14/2020	Prep Date:	2/14/2020	Prep Date:	2/14/2020
Date/Time Sample removed from refrigerator:	2/14/20 12:25 PM	Date Wavelengths Check Due:	10/15/2020	Expiration Date:	3/14/2020	Expiration Date:	3/14/2020	Expiration Date:	3/14/2020

Date & Time of Chlorophyll-a Analysis	Sample Information		Chlorophyll-a Analysis								Date & Time of Pheophytin Analysis	Pheophytin Analysis				
			Cell #	Volume (mL)	Absorbance				Ca	Chlorophyll-a (mg/m3)		Absorbance		Corrected ABS. C665	Pheophytin (mg/m3)	
					750nm	664nm	647nm	630nm				750nm	665nm			
2/14/2020 12:55:16	CHLA CK	PHYS0042-20	1	1000.0	-0.00225	0.04219	0.01041	0.00536	0.50661	5.06611	2/14/2020 13:17:33	-0.00143	0.02516	0.02659	0.04445	0.20105
2/14/2020 12:56:26	C2002120074	WQS-BLANK	2	1000.0	0.00107	0.00098	0.00105	0.00108	-0.00104	-0.01037	2/14/2020 13:18:25	0.00165	0.00177	0.00012	-0.00009	0.07850
2/14/2020 12:57:19	C2002120078	CR346.4E	3	1000.0	0.00067	0.00749	0.00214	0.00204	0.07844	0.78444	2/14/2020 13:19:12	0.00064	0.00529	0.00465	0.00682	0.28970
2/14/2020 12:58:13	C2002120075	CR342.5E	4	1000.0	0.00294	0.01050	0.00540	0.00548	0.08559	0.85594	2/14/2020 13:20:04	0.00238	0.00752	0.00514	0.00756	0.31453
2/14/2020 12:58:57	C2002130033	WQS-BLANK	5	1000.0	0.00050	0.00012	0.00014	0.00023	-0.00393	-0.03927	2/14/2020 13:20:52	0.00092	0.00078	-0.00014	-0.00038	0.03791
2/14/2020 13:00:09	C2002130037	LWLVB3.5E	6	1000.0	0.00514	0.01186	0.00749	0.00751	0.07582	0.75823	2/14/2020 13:21:41	0.00401	0.00888	0.00487	0.00672	0.41625
2/14/2020 13:01:03	C2002130034	LWLVB2.7E	7	1000.0	0.00497	0.01268	0.00706	0.00710	0.08797	0.87975	2/14/2020 13:22:30	0.00398	0.00993	0.00595	0.00771	0.64213

Test Template Development with SDMS: Particle Size Distribution_1

SDMS Result Entry

File Home Insert Page Layout Formulas View

Duration: 2 Sec Progress: %

File Data Exchange Reporting Builder App

Mode: View Enter Test: Particle Size Date Query: 1M 3M 6M 1Y ALL Analytical Batch CalibrationID

Search Particle Size Data

SYSSAMPLECODE	SAMPLEID
21060390-07	21060390.07
21060390-08	21060390.08

SDMS Result Sheet Analytical Batch Results

H4 06/28/2021 18:55:31

Basic Information									
Client	Dunn Heat Exch:Test			Partical Size		Temp (°C)			
Project ID	Project 1 - Cy, SvMethod			IHM		Humidity (%)			
Project Name	5/2020 K050 Box Matrix			Solid		Analyzed Date		06/28/2021 18:55:31	
Sample Location	Sample ID			21060390.07		Analyst		Admin	
Collection Date	06/23/2021 09:00 Client Sample ID			21060390_CSID					
Data Entry									
Sample Weight & Hydrometer	Test Data	Sieve #	Size (mm)	Weight Retained (g)	Sieve Weight (g)	Elapsed Time (ET) (min)	Temp (deg. C)	Actual Reading R	
Dry Sample & Tare (g)	93.78	4	4.75	395.60	384.70	2.00	25.2	3.0	
Tare (g)	0	10	2	320.30	295.90	4.00	25.2	3.0	
Hydroscopic Moisture, Mh	5.50%	20	0.85	305.10	279.60	30.00	25.2	3.0	
Composit Correction, Cc	-2.5	40	0.425	291.30	273.40	60.00	25.2	3.0	
Specific Gravity, GS	2.63	50	0.3	272.30	269.50	120.00	25.2	3.0	
Moist Weight & Tare (g)	100	70	0.21	269.20	258.60	240.00	25.2	2.0	
Meniscus correction only	1	100	0.15	268.00	264.40	1440.00	25.2	2.0	
		140	0.106	259.60	251.50				
		200	0.075	247.20	246.60				

Record 1 of 2

Sheet1 Sheet2 Sheet3 Sheet4

Test Template Development with SDMS: Particle Size Distribution_2

to Excel | File | Formula | Task | Review | Reports | View | Build

to LIMS | Data Exchange | Reporting | Build

Mode: View | Enter | Test | Partial Size | Date Query: 1M | 3M | 6M | 1Y | ALL | Analytical Batch | CalibrationID

Search Particle Size Data

SYSSAMPLECODE	SAMPLEID
21060390-07	21060390.07
21060390-08	21060390.08

SDMS Result Sheet | Analytical Batch Results

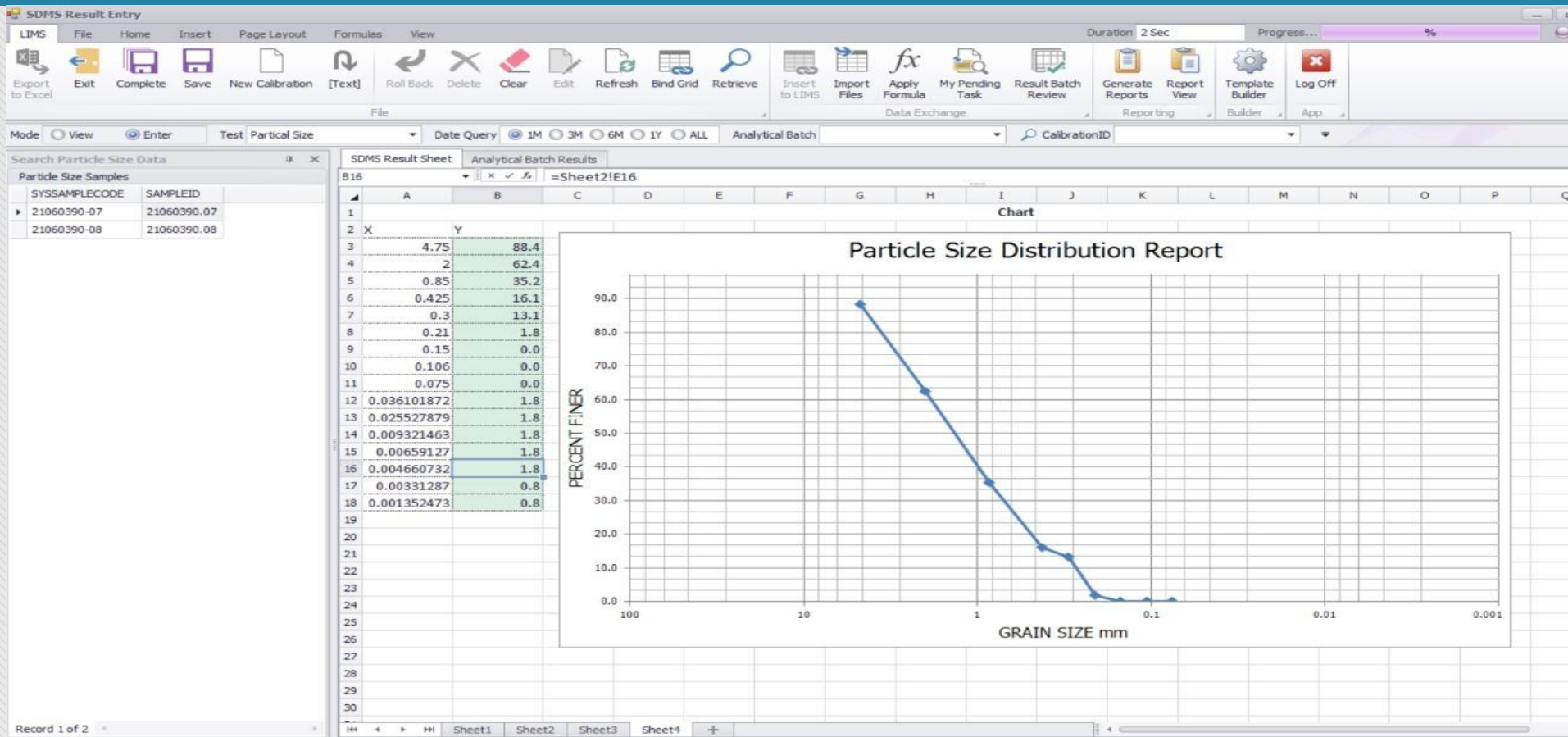
J11

	A	B	C	D	E	F	G	H	I	J	K	L
1	Summary											
2	GRAIN SIZE DISTRIBUTION TEST DATA											
3												
4	Client:	Dunn Heat Exchangers										
5	Project:	5/2020 K050 Box TC 02										
6	Project Number:	21060390										
7	Location:											
8	Sample Number:	21060390.07										
9	Material Description:	Sludge									PL:	
10	Date:	06/23/2021 09:00:00									LL:	
11	Tested by:	CO									Checked by:	MBJ
12	Sieve Test Data											
13	Post #200 Wash Test Weights (grams):				Dry Sample and tare =							
14					Tare Wt. =							
15					Minus #200 from wash =							
16												
17	Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer						
18	93.78	0	#4	395.60	384.70	88.4						
19			#10	320.30	295.90	62.4						
20			#20	305.10	279.60	35.2						
21			#40	291.30	273.40	16.1						
22			#50	272.30	269.50	13.1						
23			#70	269.20	258.60	1.8						
24			#100	268.00	264.40	0.0						
25			#140	259.60	251.50	0.0						
26			#200	247.20	246.60	0.0						
27	Hydrometer Test Data											
28	Hydrometer test uses material received at											

Record 1 of 2

Sheet1 | Sheet2 | Sheet3 | Sheet4

Test Template Development with SDMS: Particle Size Distribution_3



SDMS Application in a Web Program

Browser: LDMWP | 106.51.2.102:5280/LDM_Waterpurifier/Default.aspx#ViewID=SDMS

杭州迪码净水器检验检测实验室信息管理系统 | Administrator | Log Off

Search Navigation item | Search

- My Desktop
 - Calendar
 - Pending Agenda
 - Task Tracking
 - Project Tracking
 - 我的日志
- Sample Tracking
 - Sample Registration
 - Sample Disposition
- Inspection
- Sample Preparation
- Analysis
 - Analysis Queue
 - QC Batch
 - SDMS**
 - Result Entry
 - Result View
- Data Review
 - Reporting
 - Inventory Management
 - Maintenance
 - Settings
 - Audit Trail
 - Data Explorer

SDMS Result Sheet | Analytical Batch Results

SDMS | File | Home | Insert | Page Layout | Formulas | Data | Review | View

Mode: Enter | Test: 无机非金属 | AnalyticalBatch: AB21061501_Administrato

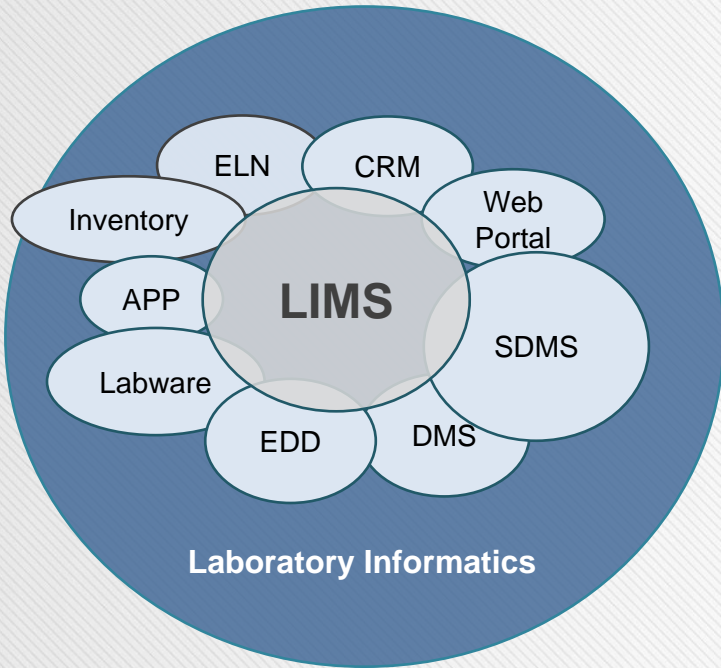
Retrieve | Complete | Save | RollBack | Delete | Clear | Edit | BindGrid | Import Files | Upload Image | Report | Full Screen

=D9*E9

	A	B	C	D	E	F	G	H	I	J	K
1	报告编号	re23	无机非金属试验记录								
2	工作编号	210615001	样品类别	Liquid	试验员	Administrator	分析日期	2021/6/15		标准样品	氟化物
3	温度 (°C)	5	相对湿度 (%)	6	试验地点	无机分析室				标准号	GBW(E)0826
4	仪器及型号	Bio Tech		仪器编号	890	仪器计量有效期至				标准值	1000mg/L
5	检测方法及依据:		《生活饮用水标准检验方法 非金属指标》3.2 离子色谱法							相对扩展不确定度 (k=2)	1%
6	色谱柱:	A4-250	淋洗液流速:	1.0	mL/min	进样环体积:	20.00	μL		有效期至	5/12/2020
7	淋洗液组成: 1.7mmol/L碳酸钠+1.8mmol/L碳酸氢钠										
8	样品编号	样液编号	检测参数	检出浓度c(μg/L)	稀释倍数	数字结果	报出值	单位	检出限	备注	质控类型
9	210615001-01	water	硫酸盐			#VALUE!	#VALUE!	mg/L	0.30		Sample
10	210615001-01	water	氯化物			#VALUE!	#VALUE!	mg/L	0.02		Sample
11	210615001-01	water	硝酸盐氮			#VALUE!	#VALUE!	mg/L	0.07		Sample
12	210615001-01	water	氟化物			#VALUE!	#VALUE!	mg/L	0.04		Sample

Sample | Calibration | +

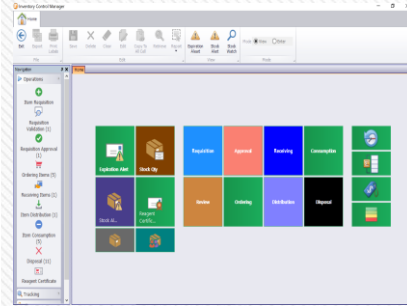
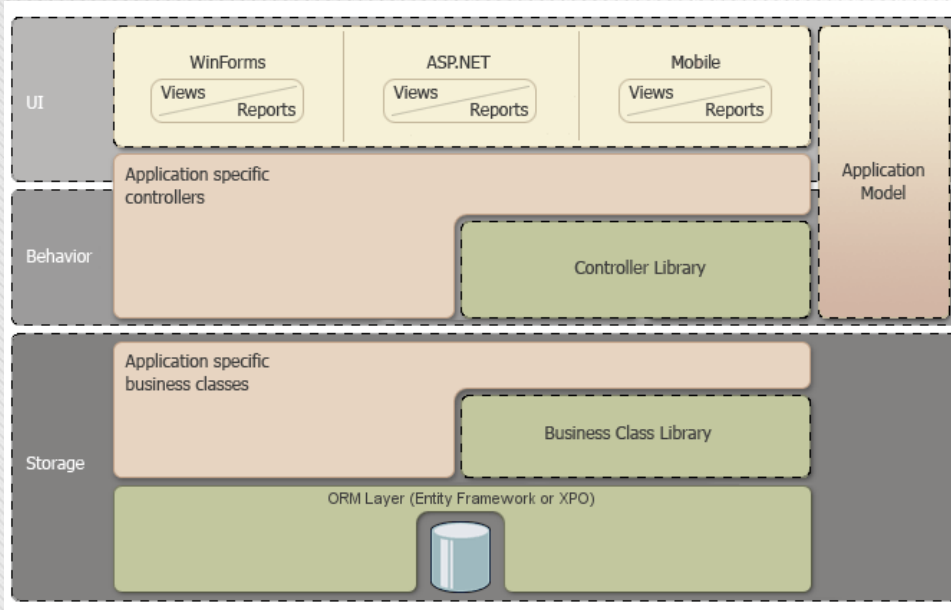
SDMS vs LIMS



LIMS	SDMS
Covers entire workflow	A plug-in module; a tool
Industry dependent characteristics are obvious	A supplement to LIMS; Provides functionality that most LIMS do not have
Difficult to manage ongoing customization requests	Able to manage any customization on raw data result entry and report templates
Not easy to implement	Easily implemented

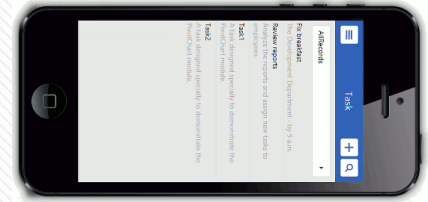
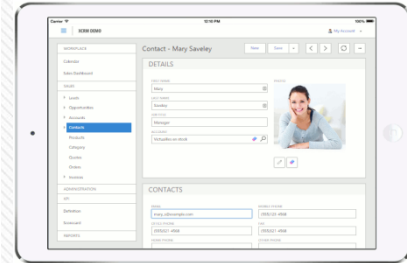
Product Architecture

Windows, Web, Mobile



A screenshot of a web application showing a table with columns for Item Requisition, Status, and various attributes. The table contains multiple rows of data, including item names, quantities, and dates.

Item Requisition	Status	Item Name	Quantity	Unit	Category	Location	Priority	Request Date
New Item	001	PS50	50kg	MPC	Media	Social Expenses		
Partially received	013	PS50	10 pieces	Pure Sample	Simple Analysis	Environmental Expenses		
Partially received	008	PS50	10 kg	Laboratory	Pure Chemical	Environmental Expenses		
Cancelled	008	PS50	10 kg	Laboratory	Pure Chemical	Environmental Expenses		
New Item	005	PS50	1000 kg	GD	Media	SHDQR 2		
Partially received	012	PS50	1000g	Laboratory	Simple	miscellaneous		
Partially received	011	PS50	40.4g	Laboratory	Simple	miscellaneous		
New Item	001	PS50	50kg	MPC	Media	Social Expenses		
New Item	001	PS50	50kg	MPC	Media	Social Expenses		
Power Merged	013	PS50	100g	Pure Sample	Simple Analysis	Social Environmental		



SDMS Technology for Every Lab



SUMMARY

1. A practical solution to LIMS implementation
2. No programming involved
3. Easy operation and popular
4. Wide adaptability and scope of application
5. Simple integration or stand-alone
6. Improved productivity and ROI

The image displays three overlapping screenshots of the Scientific Data Management System (SDMS) interface.

The top screenshot shows the 'SDMSLogin Settings' page with the heading 'Welcome to Scientific Data Management System'. It features a login form with fields for 'UserName' (containing 'admin') and 'Password'. A background image shows three scientists in a lab.

The middle screenshot shows a data table with columns for 'Sample ID', 'Client', 'Sample Name', 'Date Received', 'Response', 'Calculated Result', and 'Result'. The table contains several rows of data for sample ID 101.

The bottom screenshot shows the 'Analysis Results GC-MS, BTEX' page. It includes a table with columns for 'Job ID', 'Client', 'Sample ID', 'Parameter', 'Response', 'Calculated Result', 'Result', and 'Sample Name'. The table contains data for job ID 1300424003.

Thank you !

We will now be answering questions

Contact: Bin Yu

<http://www.btsoft.com/>

713-253-1684

info@btsoft.com