New perspective in your CIP!

Digital Solutions

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11 June 2019

ECOLAB®
Everywhere It Matters.™

Agenda

- Current Condition
- Can I have…….
- Enabling Digital Solutions

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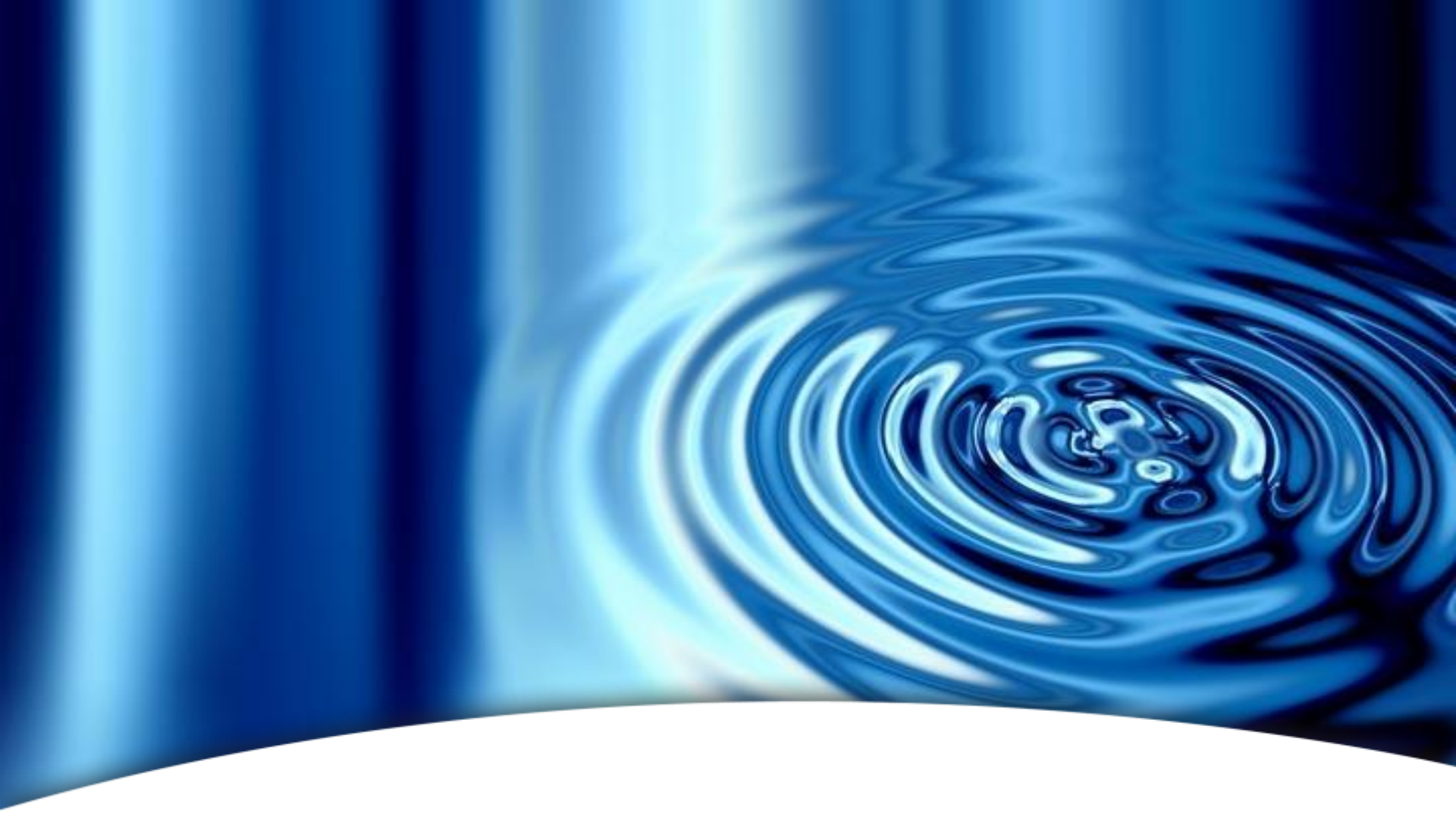

CURRENT CONDITION

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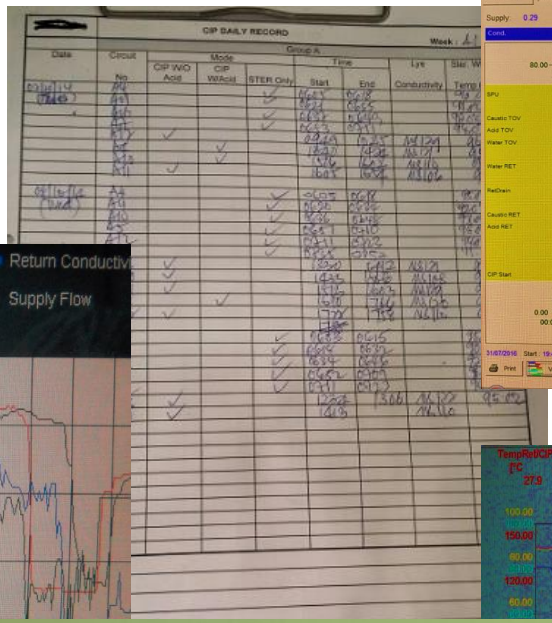
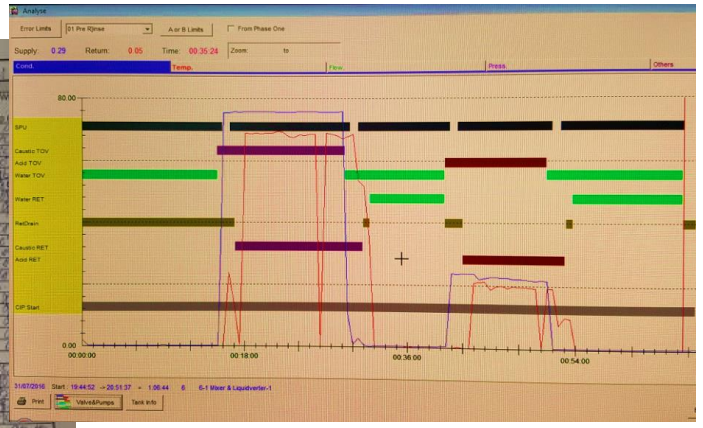
Current Condition

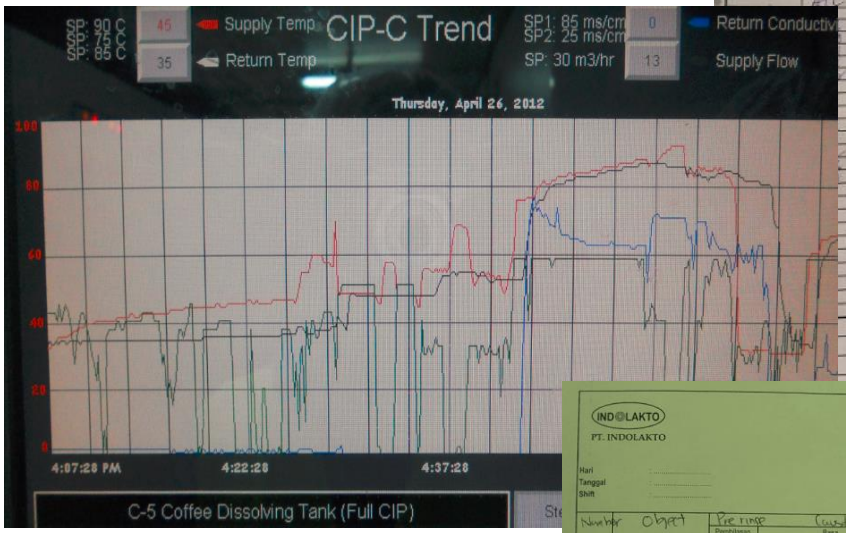
- Available data limited to 4Ts
- Anymore potential useful information from CIP
- What else can you benefit from this information

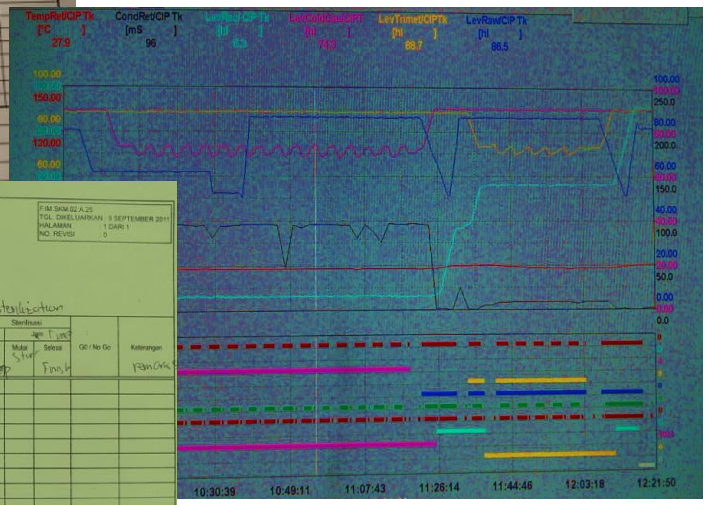
Current Condition

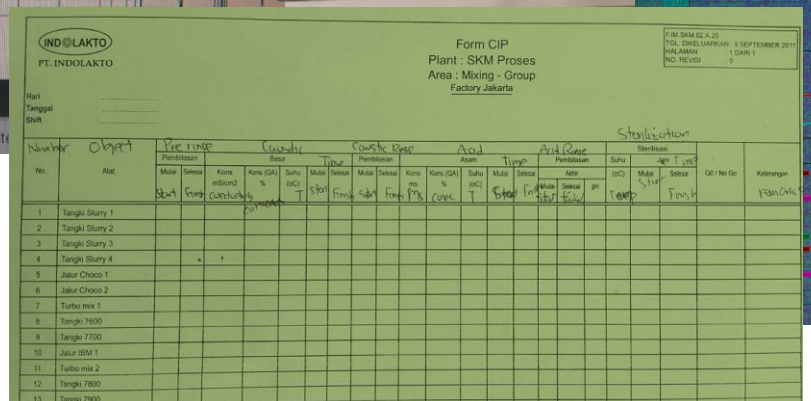
- Current recording methods used:-
  - Manual
  - Realtime trending
  - What else?











ECOLAB

Current Condition

- Can you get an answer for
  - How many wash in last 24 hrs?
  - How many of them is a good wash?
  - Are they running at optimum condition?
- What is the opportunity with these records
  - Anyone is assessing and analyze
  - Beside fulfilling compliance requirement, what can I do with this data?
  - Challenge in manual recording
    - Reliability of manually recorded data
    - Traceability for entire CIP process
    - Is it handy for troubleshooting
  - Trending
    - How/ who interpret this chart

CAN I HAVE……

The risks of occasional verification

Hundreds of CIP washes take place each month

Each wash is a **complex combination of temperature, time, flow, and concentration** across multiple phases (pre-rinse, alkaline, acid, sanitizer)

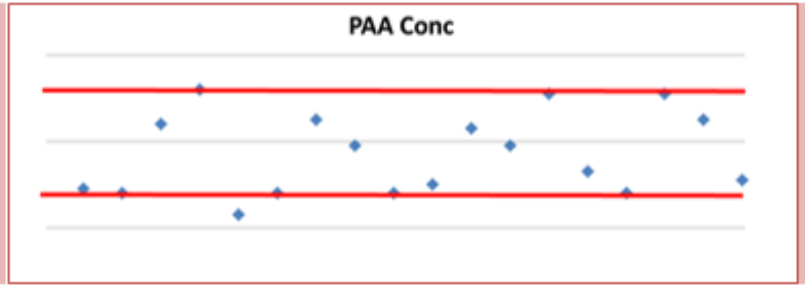
Any number of things can go wrong:

- Under-usage = **quality** issues
- Over-usage = **productivity, cost, sustainability** issues
- Equipment malfunctions > not always visible

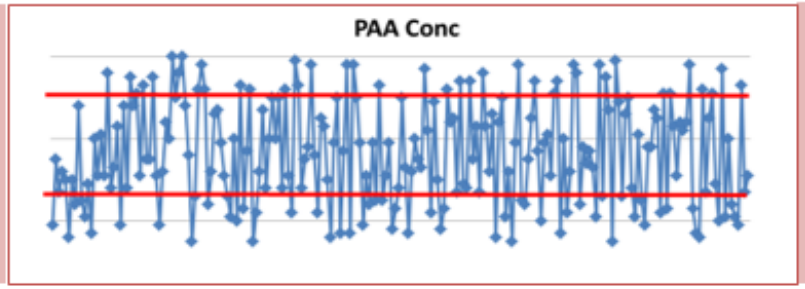
Yet, today only a fraction of washes are checked

Deliverables and Examples: Visibility

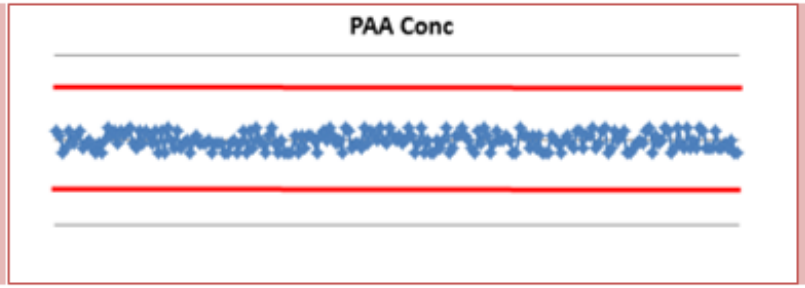
The risk of occasional verification*



If we measure occasionally, the data may look "good enough" . . .



. . . but we could be missing the overages and shortages. . .



If we could "see" everything, we could keep all washes within spec.

*Actual customer sanitizer data

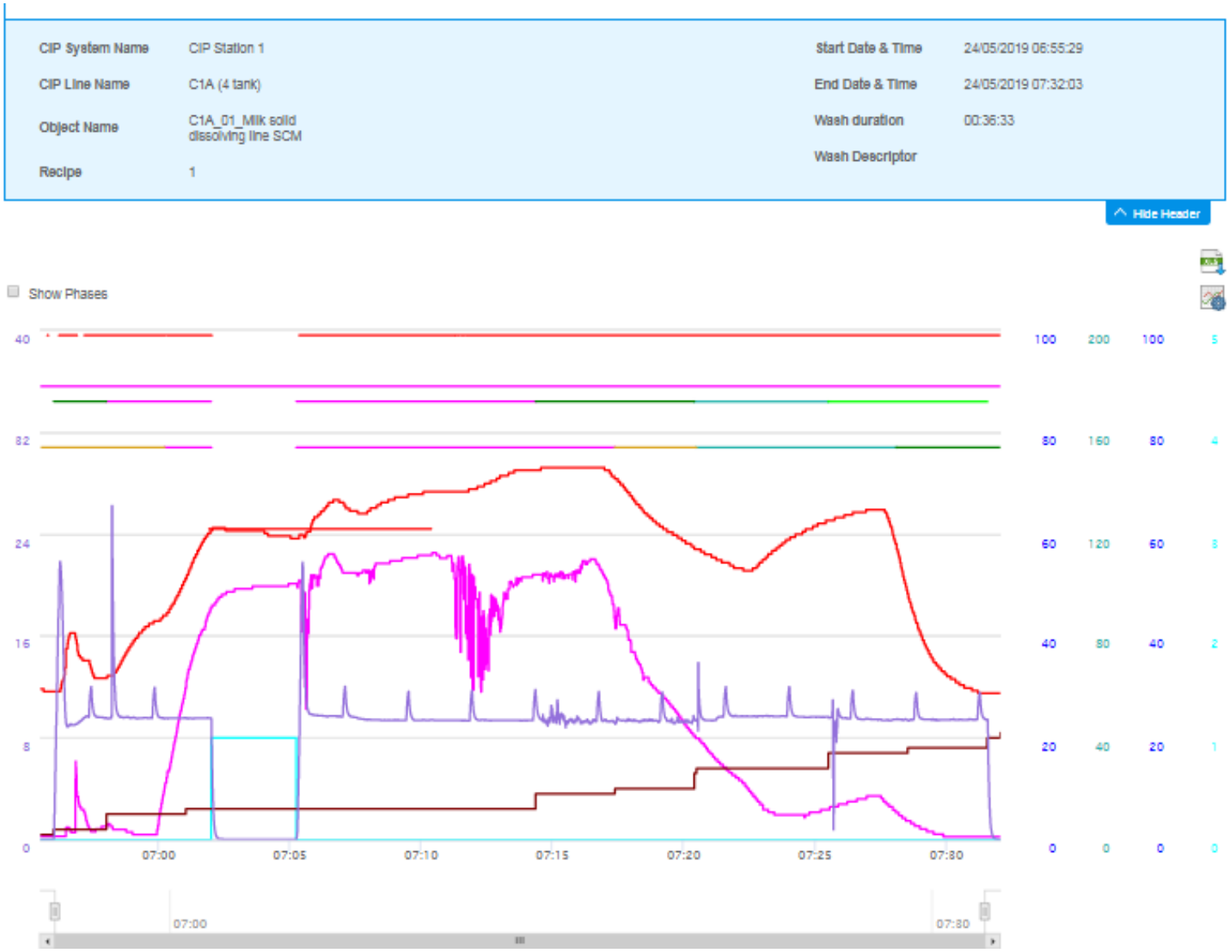
Deliverables and Examples: Visibility

Start Date/Time	Duration	CIP System	CIP Line	Object	Recipe
		1	C1A		
24/05/2019 09:47:06	00:04:53	CIP Station 1	C1A (4 tank)	C1A_04 Rework pipeline SCM	0
24/05/2019 09:11:35	00:33:15	CIP Station 1	C1A (4 tank)	C1A_04 Rework pipeline SCM	1
24/05/2019 09:01:41	00:01:36	CIP Station 1	C1A (4 tank)	C1A_03 Mixing pipeline SCM	0
24/05/2019 08:24:09	00:32:56	CIP Station 1	C1A (4 tank)	C1A_03 Mixing pipeline SCM	1
24/05/2019 08:10:38	00:03:58	CIP Station 1	C1A (4 tank)	C1A_01_Milk solid dissolving line SCM	0
24/05/2019 07:32:56	00:33:18	CIP Station 1	C1A (4 tank)	C1A_01_Milk solid dissolving line SCM	1
24/05/2019 06:55:29	00:36:33	CIP Station 1	C1A (4 tank)	C1A_01_Milk solid dissolving line SCM	1
24/05/2019 03:18:03	02:12:28	CIP Station 1	C1A (4 tank)	C1A_08 LN-transfer STD to TA Flex UHT	1
				C1A_09 Transfer	

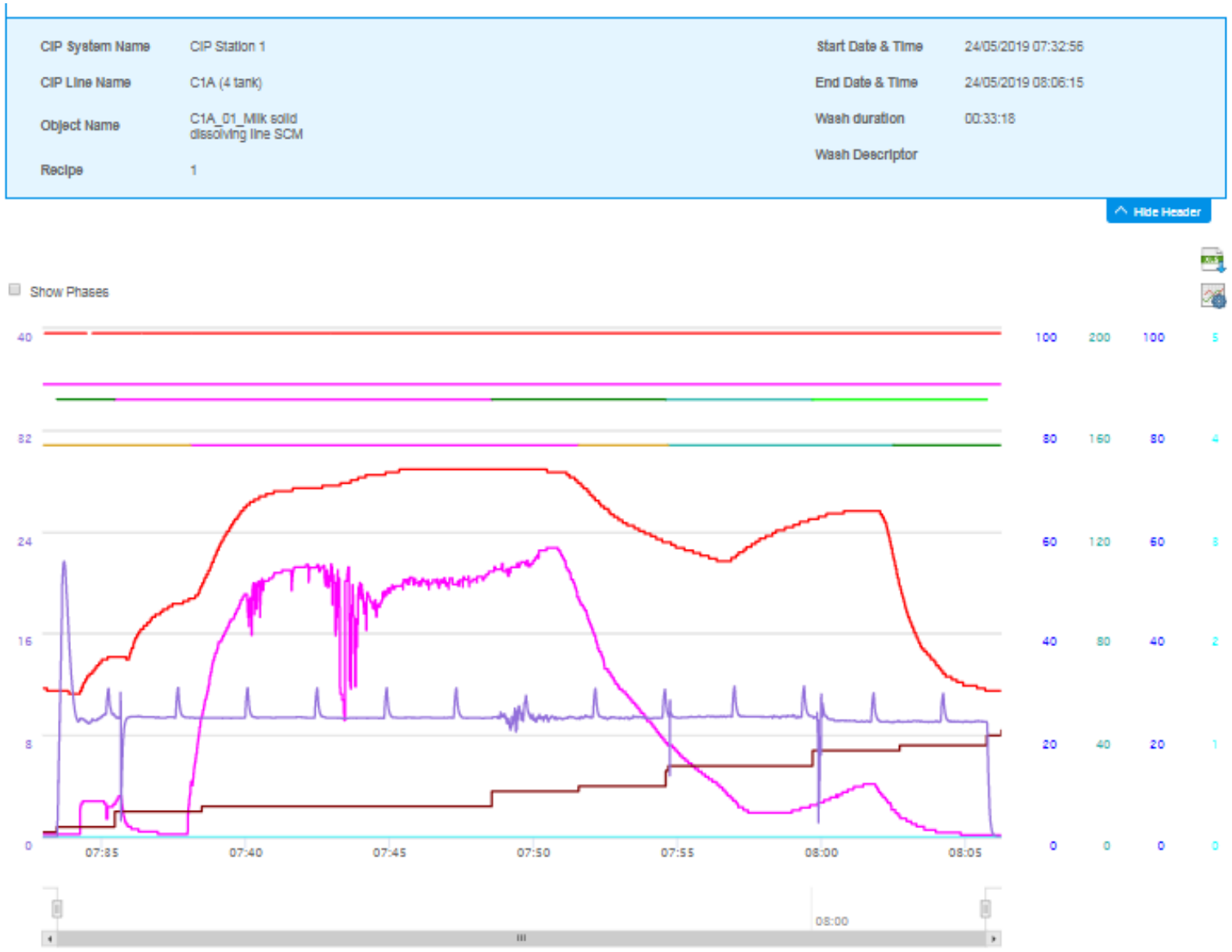
20/05/2019 22:00:13	00:06:02	CIP Station 1	C1A (4 tank)	C1A_08 LN-transfer STD to TA Flex UHT	0
20/05/2019 17:15:30	00:06:02	CIP Station 1	C1A (4 tank)	C1A_08 LN-transfer STD to TA Flex UHT	0
20/05/2019 09:00:50	00:37:44	CIP Station 1	C1A (4 tank)	C1A_08 LN-transfer STD to TA Flex UHT	1

Will it be good, at least, someone reporting this repeated CIP? Best if telling why and provoide solutions.

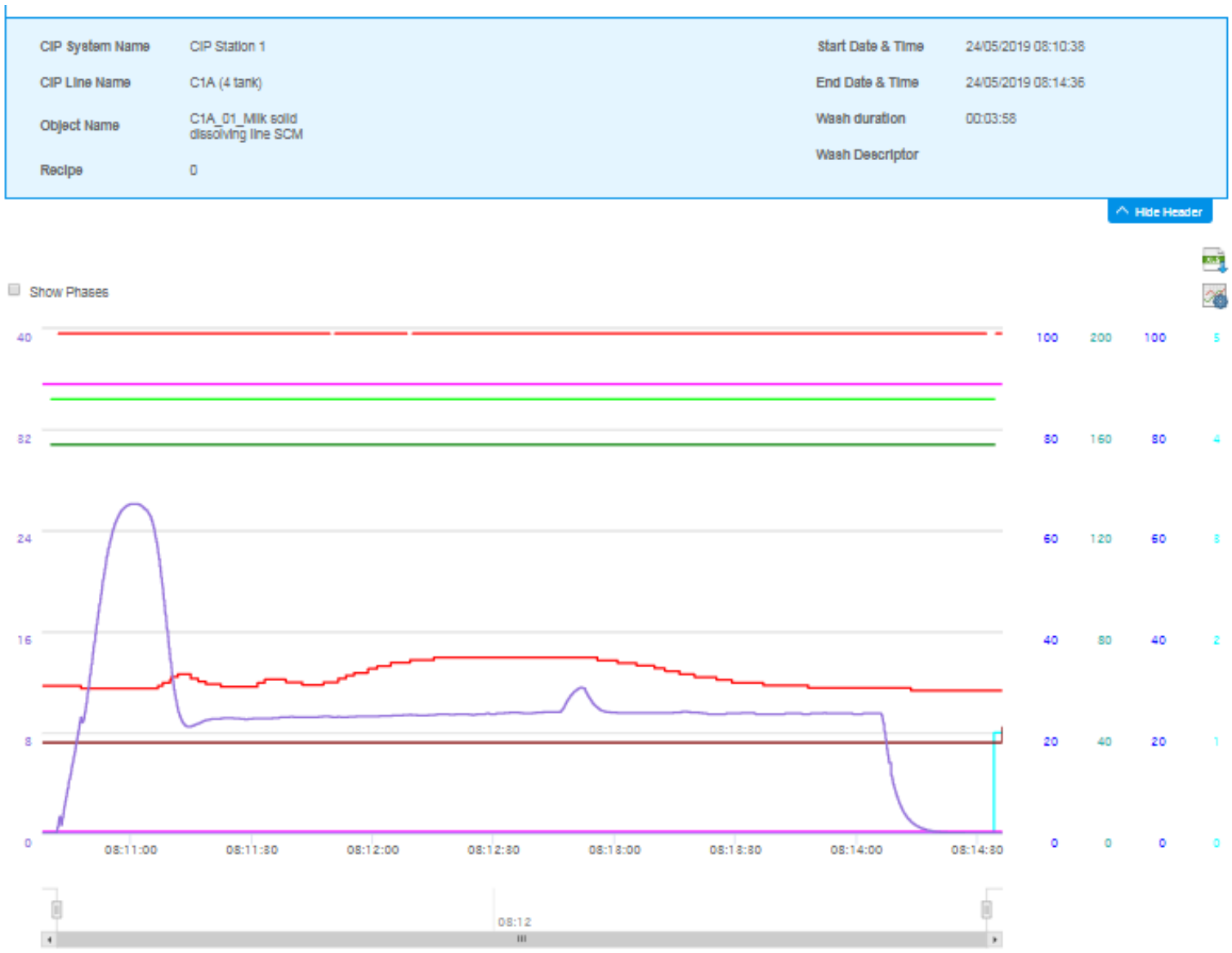
Deliverables and Examples: Optimization



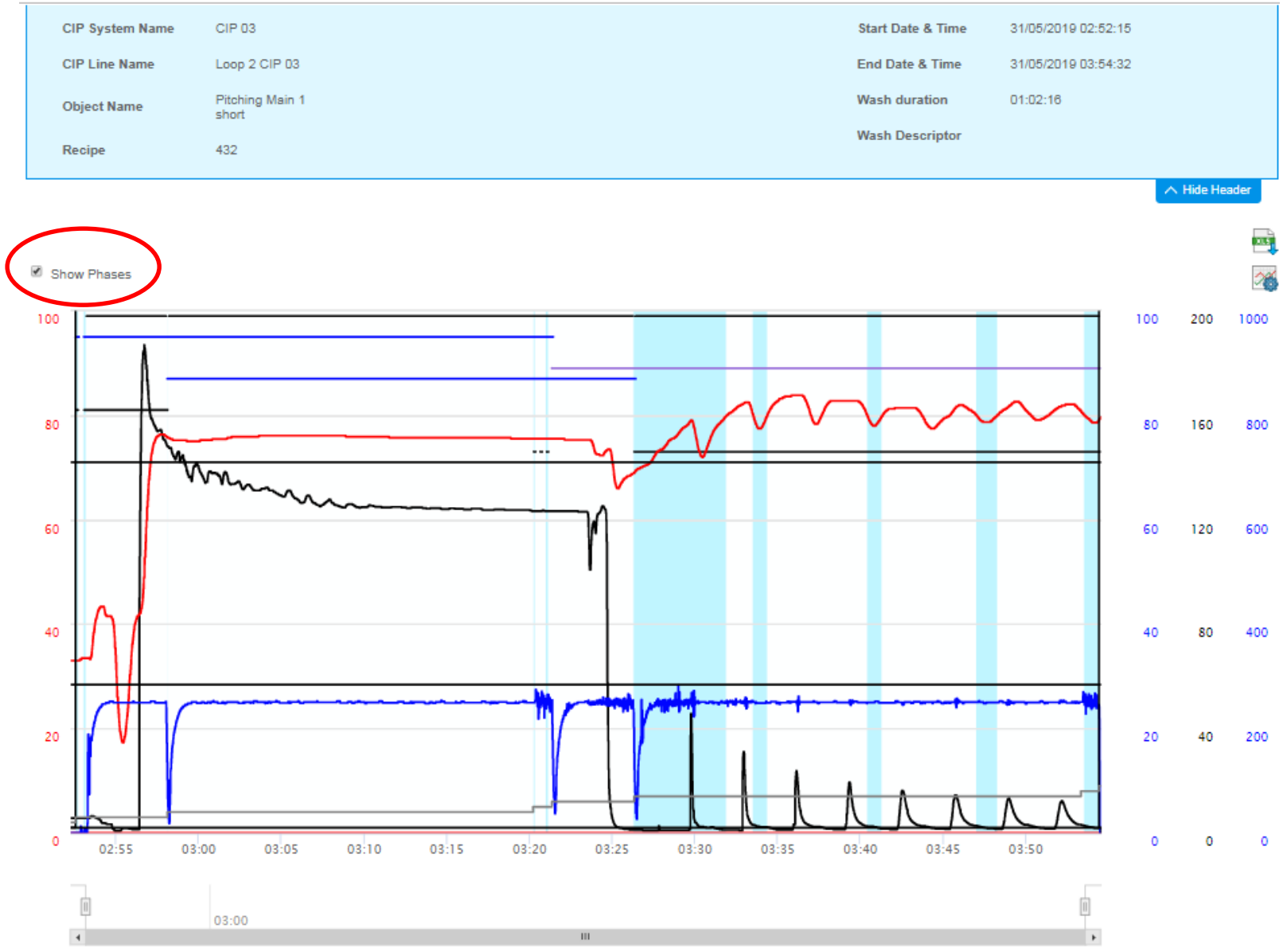
Deliverables and Examples: Optimization



Deliverables and Examples: Optimization



Deliverables and Examples: Visibility



Deliverables and Examples: Visibility

Phases Summary

Phase Name	Phase Start Time	Phase duration	Phase Detail - Consumption			
			Material Category	Material/Fact Name	Amount	UOM
Caustic forward	31/05/2019 02:52:32	00:00:12	Thermal Energy	Therm Energy	0.00	kWh
Drain return	31/05/2019 02:52:34	00:00:07				
Caustic forward	31/05/2019 02:53:03	00:28:22	Thermal Energy	Therm Energy	95.96	kWh
Drain return	31/05/2019 02:53:04	00:05:02				
Electrical consumption	31/05/2019 02:53:12	01:01:20	Electrical Energy	CIP03PMP20	15.22	kWh
Caustic return	31/05/2019 02:58:06	00:28:18				
Caustic circulation	31/05/2019 02:58:06	00:23:19				
Circulation return	31/05/2019 03:20:15	00:00:06				
Circulation return	31/05/2019 03:20:38	00:00:06				
Circulation return	31/05/2019 03:21:01	00:00:06				
Hot water forward	31/05/2019 03:21:20	00:04:59	Water	Hot water in	19.45	hL
			Thermal Energy	Therm Energy	4.08	kWh
Hot water forward with circulation heat up	31/05/2019 03:26:19	00:05:34	Thermal Energy	Therm Energy	17.54	kWh
Hot water forward with circulation at temperature	31/05/2019 03:31:53	00:22:35	Thermal Energy	Therm Energy	26.64	kWh
Hot water forward with circulation heat up	31/05/2019 03:33:31	00:00:51	Thermal Energy	Therm Energy	1.52	kWh
Hot water forward with circulation heat up	31/05/2019 03:36:59	00:00:41	Thermal Energy	Therm Energy	0.97	kWh
Hot water forward with circulation heat up	31/05/2019 03:40:25	00:00:54	Thermal Energy	Therm Energy	0.93	kWh
Hot water forward with circulation heat up	31/05/2019 03:43:41	00:01:44	Thermal Energy	Therm Energy	2.61	kWh
Hot water forward with circulation heat up	31/05/2019 03:47:01	00:01:14	Thermal Energy	Therm Energy	1.64	kWh
Hot water forward with circulation heat up	31/05/2019 03:50:18	00:01:06	Thermal Energy	Therm Energy	1.09	kWh
Hot water forward with circulation heat up	31/05/2019 03:53:33	00:00:56	Thermal Energy	Therm Energy	0.69	kWh

Wash Consumption & Cost Summary

Material Category	Material/Fact Name	Total consumption amount	UOM	Cost per unit (GBP)	Total Cost (GBP)
Water	Hot water in	19.45	hL	£ 0.10	£ 1.94
Thermal Energy	Therm Energy	153.67	kWh	£ 0.02	£ 3.39
Electrical Energy	CIP03PMP20	15.22	kWh	£ 0.08	£ 1.14

Material Cost of Wash Occurrence £ 6.47

Time Category	Material/Fact Name	Total consumption amount	UOM	Cost per unit (GBP)	Total Cost (GBP)

Deliverables and Examples: Visibility

Tank Level Monitoring

Start Date & Time 01/07/2015 - 00:00:00
End Date & Time 14/08/2015 - 00:00:00

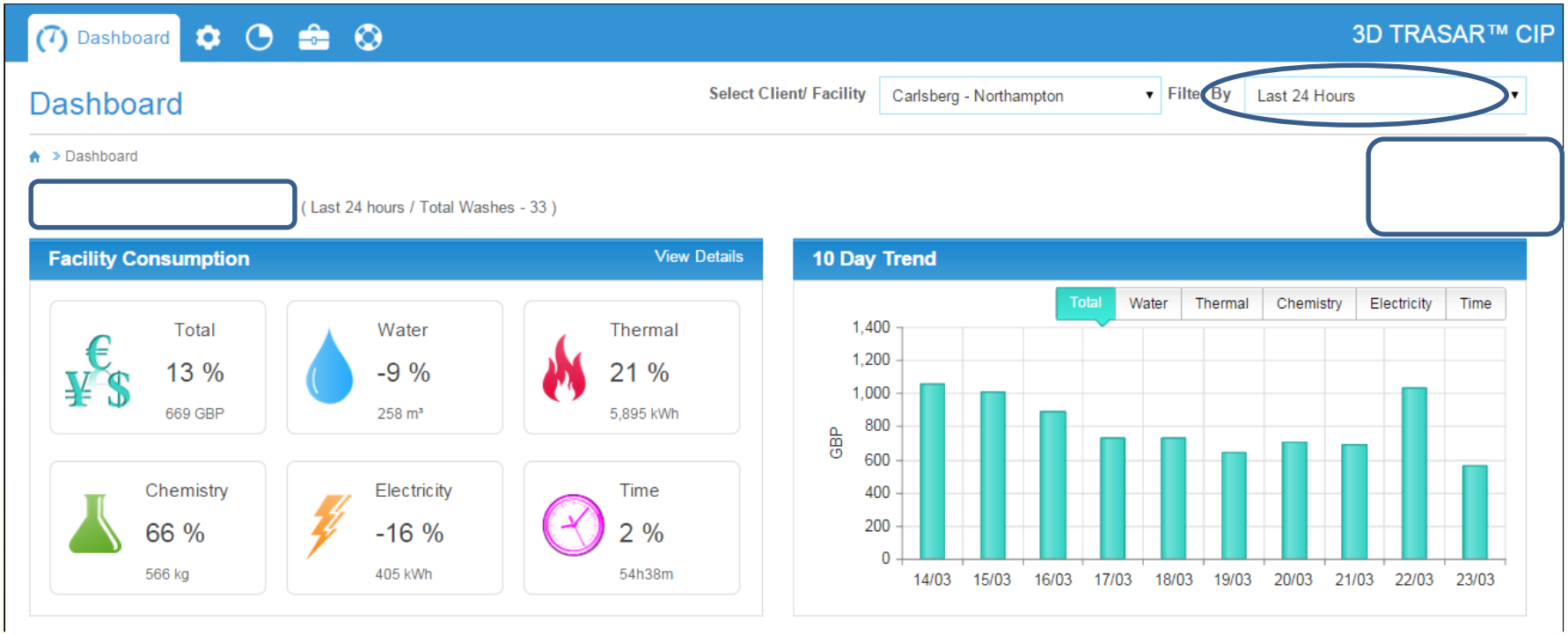
Hide Header

Exceptions

Exception ID	Exception Date & Time	Exception Name	Description	Notes	Message Sent
32	11/08/2015 - 14:05:27	Caustic Tank emptied	Caustic Tank solution was drained to empty!	Caustic Tank solution was drained to empty!	
32	08/08/2015 - 08:22:04	Caustic Tank emptied	Caustic Tank solution was drained to empty!	Caustic Tank solution was drained to empty!	
32	31/07/2015 - 18:43:21	Caustic Tank emptied	Caustic Tank solution was drained to empty!	Caustic Tank solution was drained to empty!	
32	07/07/2015 - 23:57:12	Caustic Tank emptied	Caustic Tank solution was drained to empty!	Caustic Tank solution was drained to empty!	

Deliverables and Examples: TCO

- **TCO Savings Opportunities**
  - The 3DT CIP dashboard enables you to see consumption rates comparing them to
    - Last 28 days compared to the previous 28 days
    - Last 7 days compared to the previous 7 days
    - Last 24 hours compared to the previous 24 hours



Deliverables and Examples: TCO

- **TCO Savings Opportunities**
  - We can see from the summary below which cleans have been the most expensive

Top Consuming Washes in the Facility (GBP)

Water	Thermal	Chemistry	Electricity	Total Wash
1 Beer Treat + Cent 3 Short CIP 05/03/2015 - 02:15:54 £ 63.99	1 Beer Treat + Cent 3 Short CIP 26/02/2015 - 23:19:46 £ 87.17	1 Makeup caustic CIP 2 L1 14/03/2015 - 08:11:06 £ 200.65	1 UT 107 full 01/03/2015 - 18:16:49 £ 4.76	1 Makeup caustic CIP 2 L1 14/03/2015 - 08:11:06 £ 202.88
2 YSV 02 Full CIP 10/03/2015 - 00:32:50 £ 58.88	2 Beer Treat + Cent 3 Full CIP 02/03/2015 - 09:13:54 £ 76.59	2 Makeup caustic CIP 2 L1 14/03/2015 - 10:33:30 £ 154.30	2 Beer Treat + Cent 3 Full CIP 02/03/2015 - 09:13:54 £ 3.99	2 Makeup caustic CIP 2 L1 14/03/2015 - 10:33:30 £ 163.36
3 UT 112 Full CIP 14/03/2015 - 20:36:05 £ 54.75	3 Beer Treat + Cent 3 Short CIP 05/03/2015 - 02:15:54 £ 73.17	3 Makeup acid and caustic CIP2 L1 26/02/2015 - 23:27:58 £ 109.92	3 Beer Treat + Cent 3 Short CIP 07/03/2015 - 15:58:54 £ 3.87	3 Beer Treat + Cent 3 Short CIP 05/03/2015 - 02:15:54 £ 139.15
4 Beer Treat + Cent 3 Full CIP 02/03/2015 - 09:13:54 £ 50.09	4 Beer Treat + Cent 3 Short CIP 07/03/2015 - 15:58:54 £ 70.67	4 Makeup caustic CIP 2 L2 13/03/2015 - 02:19:15 £ 108.73	4 Cropping Main 1 Full CIP 09/03/2015 - 20:16:12 £ 3.79	4 Beer Treat + Cent 3 Full CIP 02/03/2015 - 09:13:54 £ 130.67

Deliverables and Examples: TCO

KPI Showing Daily Utility Usages

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Trend Summary

Aggregation level	Day	Wash count	602
Start date	11/03/2015	No of exceptions	743
End date	25/03/2015	No of washes with exceptions	269

Material Category	Material Name	Total		
		Amount	UOM	Cost (GBP)
Water	Hot water to drain	5,661	hL	£849
	Cold water to drain	18,498	hL	£1,128
	Prerinse water	4,681	hL	£843
	Cold water to drain during prerinse	4,489	hL	£857
	Hot water in	12,711	hL	£1,271
	Cold water in	664	hL	£7
Chemical	Horolith FL	386	l	£362
	Caustic + additiv	10,901	l	£4,197
Electrical	Electricity	6,967	kWh	£523
Thermal	Therm Energy	84,972	kWh	£1,869
	Total Cost			**£11,906**

Time Category	Time Name	Total		
		Amount	UOM	Cost (GBP)
Aggregate Duration	Timer	921:32	HH:MM	£0
	Total Cost			**£0**

The above report is emailed daily to Key Personnel, a weekly report can also be generated. Daily consumption figures for CIP 2 & 3 are in the region of £12 k to £13 k

Deliverables and Examples: TCO

- **TCO Savings Opportunities**
  - We can then see from the summary below of last 20 cleans performed which cleans have created exceptions

Most Recent 20 Washes — View Details

Start Date/ Time (HH:MM: SS)	Duration (HH:MM: SS)	CIP System	CIP Line	Object	Recipe	Total Material Cost (GBP)	Exceptions Triggered
24/03/2015 - 10:37:31	00:28:03	CIP 03	Loop 3 CIP 03	Makeup Acid CIP 3 L3	0	£ 34.51	
24/03/2015 - 10:36:57	00:26:15	CIP 03	Loop 1 CIP 03	Makeup caustic CIP 3 L1	0	£ 32.63	
24/03/2015 - 10:28:43	02:13:11	CIP 02	Loop 3 CIP 02	TT 86 Full CIP	0	£ 0.00	☑
24/03/2015 - 10:25:28	00:02:08	CIP 02	Loop 3 CIP 02	TT 86-94 Drain	0	£ 0.00	
24/03/2015 - 10:01:54	00:17:31	CIP 02	Loop 1 CIP 02	Makeup caustic CIP 2 L1	0	£ 29.00	
24/03/2015 - 09:06:46	01:58:12	CIP 03	Loop 2 CIP 03	Cropping Main 1 short	439	£ 35.11	☑
24/03/2015 - 07:55:27	00:53:51	CIP 02	Loop 1 CIP 02	UT 114 Full CIP	0	£ 0.00	☑
24/03/2015 - 07:41:05	00:17:34	CIP 03	Loop 3 CIP 03	Makeup Caustic CIP 3 L3	0	£ 17.61	
24/03/2015 - 06:41:12	00:39:12	CIP 03	Loop 2 CIP 03	Pitching Main 1 sterilize	434	£ 4.96	☑
24/03/2015 - 06:39:24	00:00:24	CIP 03	Loop 2 CIP 03	Pitching Main 2 sterilize	435	£ 0.00	☑
24/03/2015 - 04:30:08	03:18:28	CIP 03	Loop 1 CIP 03	Filter Line 2 and Centrifuge 2 Full CIP	427	£ 61.10	☑
24/03/2015 - 04:29:45	01:50:57	CIP 03	Loop 2 CIP 03	Cent Cropping 2 Full CIP	264	£ 14.30	☑
24/03/2015 - 03:47:13	00:40:00	CIP 03	Loop 2 CIP 03	Pitching Main 1 sterilize	434	£ 6.41	☑
24/03/2015 - 03:24:53	00:12:23	CIP 03	Loop 3 CIP 03	Makeup Caustic CIP 3 L3	0	£ 5.05	
24/03/2015 - 02:59:42	00:08:44	CIP 02	Loop 2 CIP 02	Makeup Acid CIP 2 L2	0	£ 3.89	
24/03/2015 - 02:00:13	01:50:23	CIP 03	Loop 1 CIP 03	Transfer Line 2 Full CIP	423	£ 30.77	☑
24/03/2015 - 01:32:12	07:37:27	CIP 02	Loop 3 CIP 02	UT 95 full	0	£ 39.46	☑
24/03/2015 - 00:28:12	02:30:00	CIP 02	Loop 2 CIP 02	Acid Descale Wortcooler	0	£ 14.08	
24/03/2015 - 00:16:34	01:10:08	CIP 03	Loop 3 CIP 03	Prop Line Full CIP	0	£ 3.78	☑
23/03/2015 - 23:46:36	00:18:39	CIP 03	Loop 1 CIP 03	Makeup caustic CIP 3 L1	0	£ 20.00	

Items per page

Deliverables and Examples: Visibility report

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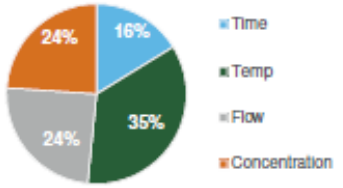
Ecolab CIP Visibility Report: 16th May, 2019 - 31st May, 2019

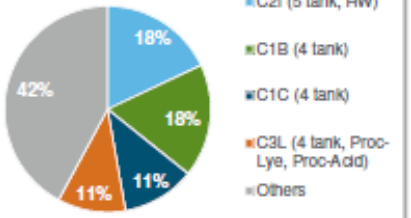
Wash Conformance

Total Washes	1279
Conformant Washes	868
Wash Quality Conformance	68%

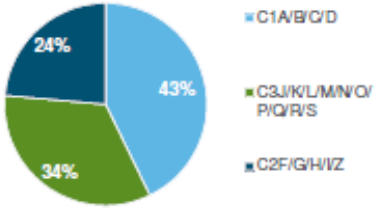
Exception by Type



Washes with Exception by CIP Line



Washes with Exception by Area



5 Objects with the Most Exceptions

CIP Line	Object	# of Washes	Time	Temp	Flow	Conc	Conf%
C3L (4 tank, Proc-L)	C3L_01 Scanima MS SM#2	40	20	80	4	76	50%
C3M (4 tank, Proc-L	C3M_09 LN TA-Flex to Storage TK1-6 SM	15	18	27	81	0	40%
C1C (4 tank)	C1C_07 Hydration TK1 UHT1	17	30	20	37	16	6%
C1C (4 tank)	C1C_07 Hydration TK2 UHT1	17	32	15	34	20	6%
C3M (4 tank, Proc-L	C3M_08 LN buffer TK to TA-Flex SM#2	15	4	27	54	0	40%

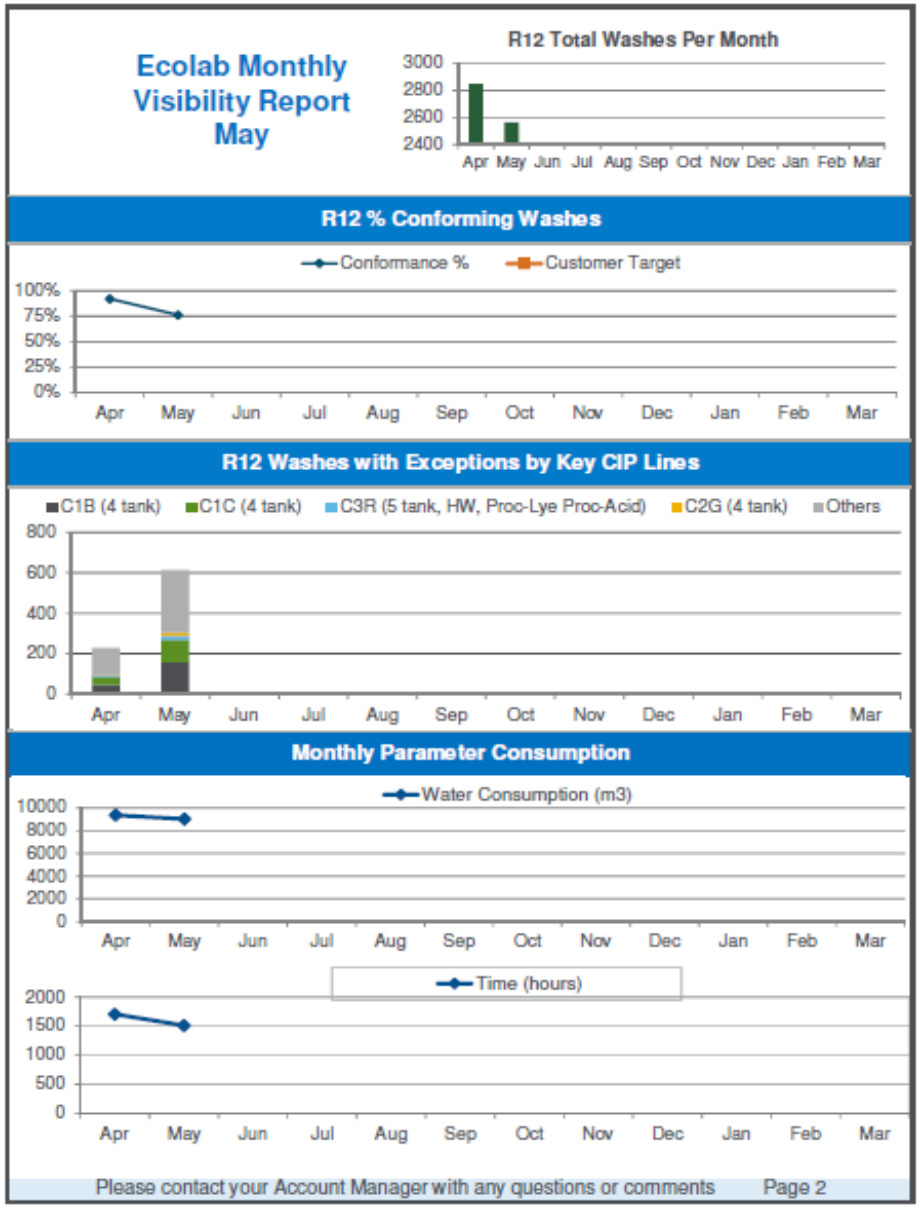
Exceptions for Selected Objects

Objects	# of Washes with Exception	Total # of Washes	Conformance %
C1C_07 Hydration TK1 UHT1	16	17	6%
C1C_07 Hydration TK2 UHT1	16	17	6%
C1D_07 Pre-heater UHT#1 + PHE	8	8	0%
C1C_07 Hydration TK3 UHT1	9	9	0%
C1D_06 Dissolving lanco mixer UHT#1	6	8	25%

Please contact your Account Manager with any questions or comments

Key Actions Taken this Month	Key Actions Taken this Month
Fill in your comments	Fill in your comments

Deliverables and Examples: visibility report



Deliverables and Examples: visibility report

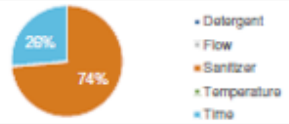
Our analysis can quickly improve your product quality confidence

Labbat, Edmonton
Ecolab CIP Visibility Report: December 8 - December 14, 2016

Wash Conformance

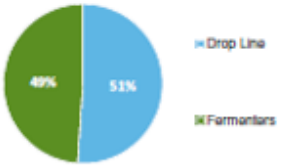
Total Washes	274
Conformant Washes	94
Conformance	34%

Exception by Type

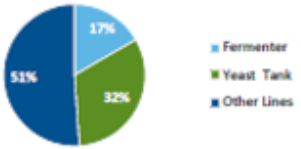


Answers "Did you wash" and "Did you Wash correctly"?
Shows most common exception type

Exception by CIP



Exception by Area



Which area and CIP had the most exceptions

5 Objects with the Most Exceptions

CIP	Object	Recipe	Time	Temp	Flow	Conc
Drop Line	Injection Line	256	8	24	0	0
Fermenters	Yeast Tank #2	32	8	19	0	0
Drop Line	Total Dropping Line	64	6	10	0	0
Fermenters	Yeast Tank #3	32	4	11	0	0
Drop Line	Injection Line	0	1	10	0	0

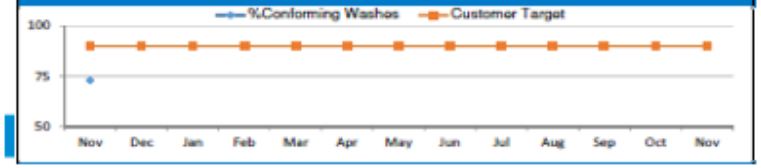
Which object had the most exceptions, and which type

5 Recipes with the Most Exceptions

Recipe	# of Washes by Recipe	# of Washes with Exceptions	Conformance
1 Step Hot Water Cleaning	20	20	0%
1 Step Cold Water Cleaning	44	30	32%
3 Step Hot Caustic/Acid Cleaning	3	3	0%
5 Step Caustic & Acid Cleaning	57	25	56%
UHT 5 Step Wash- Hot	0	0	NA

Which CIP recipe type had the most exceptions

R12 % Conforming Washes



Is the plant's CIP conformance rate improving over time?

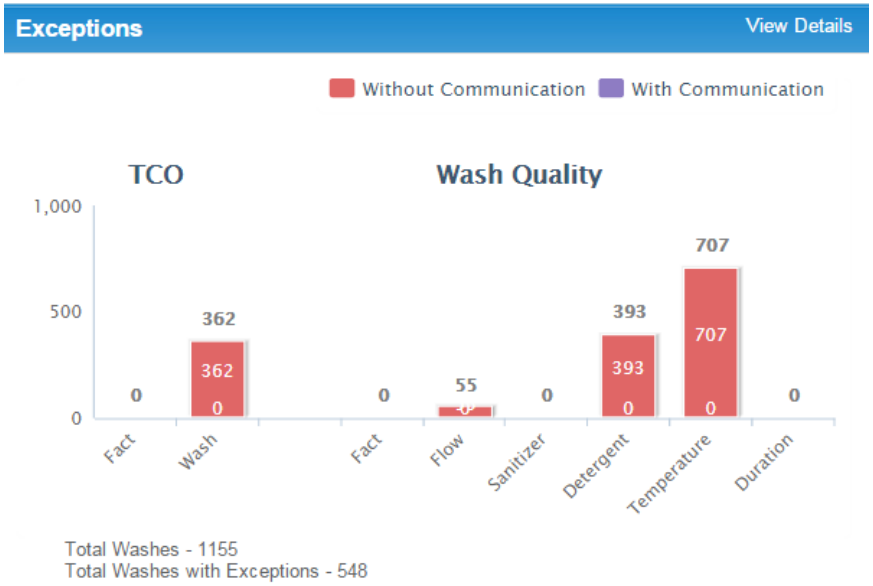
Deliverables and Examples: Quality

Quality

Areas for improvement

- **Temperature**
- Conductivity
- Flow Rates
- Pressures

Tracked through the Exception reports



Deliverables and Examples: Quality

Case Study : Temperature for CIP 3

3DT is showing that the temperatures across the board are on the high side for both caustic and sterilisation cycles.

Caustic Cycle Set points

The recipe shows a feed temp of 85°C with a return temp of **75°C**

Sterilisation Cycle Set points

The recipe shows a feed temp of 92°C with a return temp of **79.2°C**

Both caustic and sterilisation cycles exceed the stated set points.

Estimated annual saving of

transfer line mains £2.40 per clean : £346 per annum

cropping mains £2.80 per clean : £2,184 per annum

pitching mains £2.80 per clean : £660 per annum

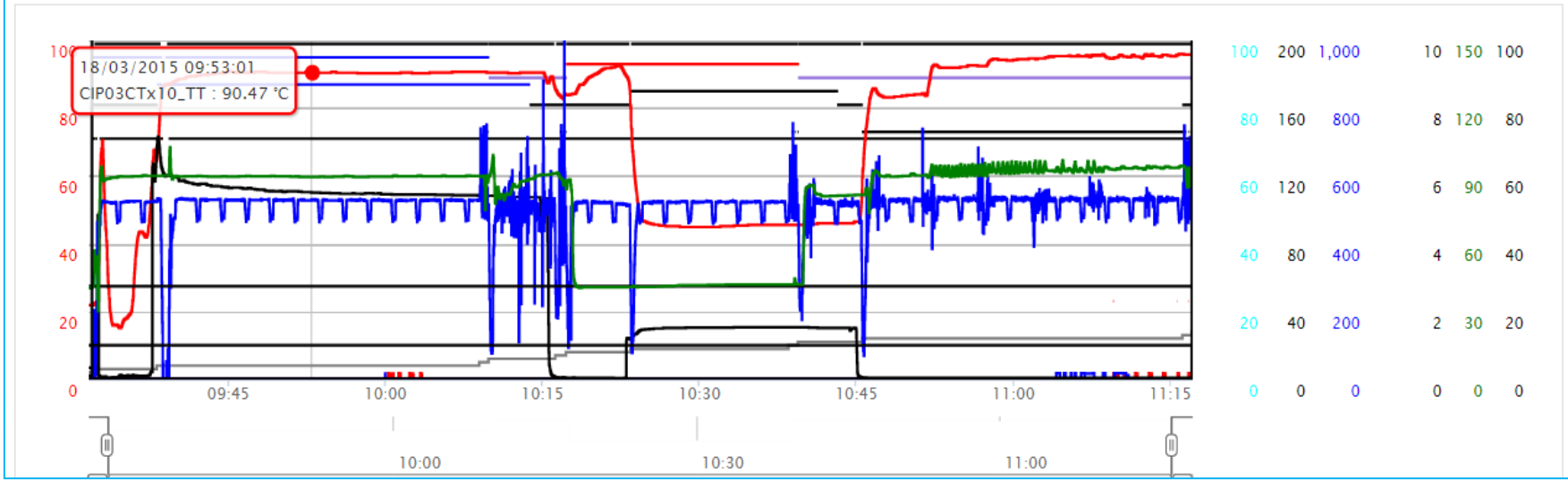
Assuming initial heating from an ambient temperature

Deliverables and Examples: Quality

CIP System Name	CIP 03	Start Date & Time	18/03/2015 - 09:31:38
CIP Line Name	Loop 1 CIP 03	End Date & Time	18/03/2015 - 11:17:07
Object Name	Transfer Line 1 Full CIP	Wash Duration	01:45:29
Recipe	422	Wash Descriptor	

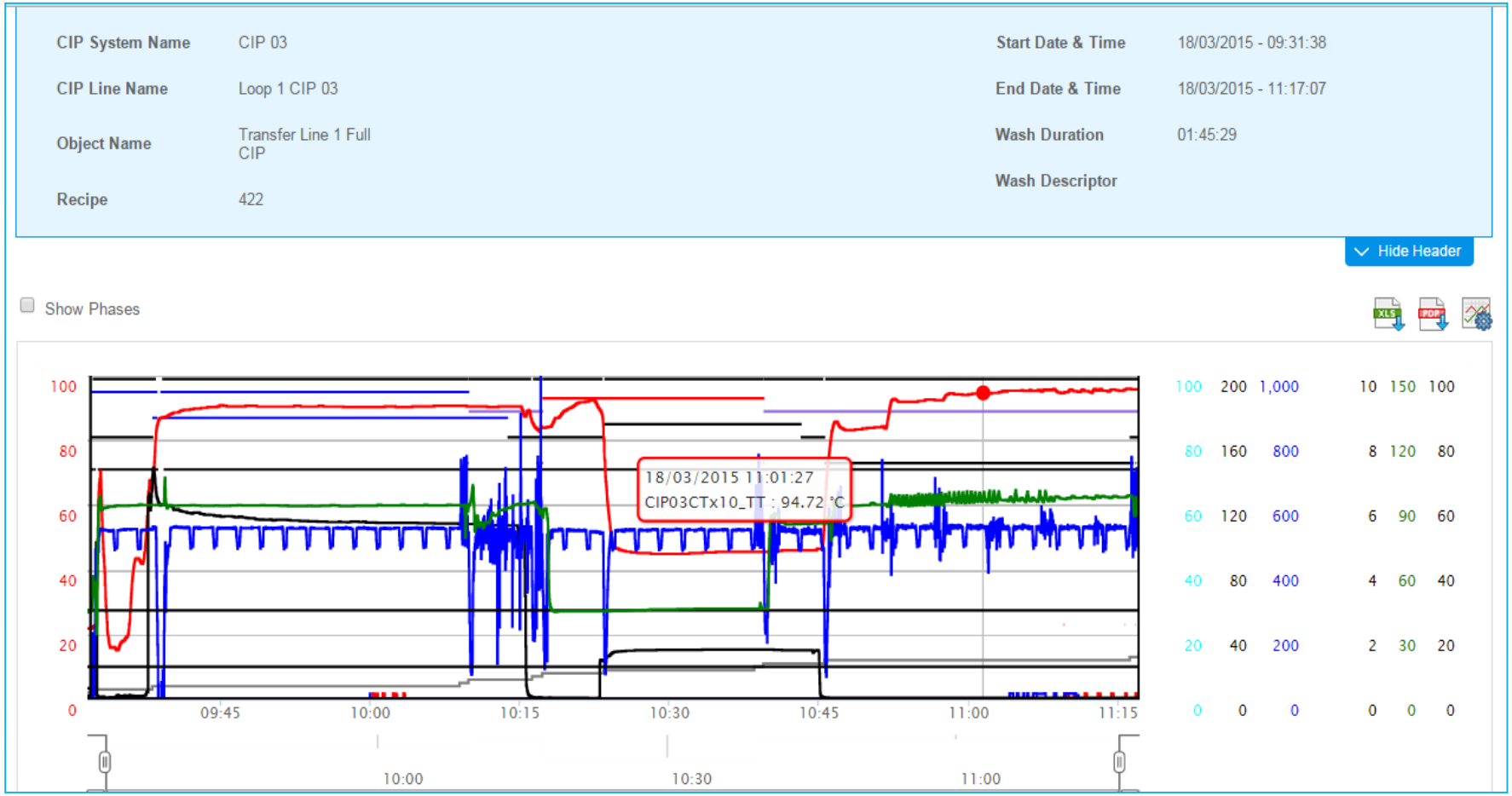
Hide Header

Show Phases



Caustic cycle showing a return temperature of **90.7^{0}C** should be no more than 75^{0}C

Deliverables and Examples: Quality



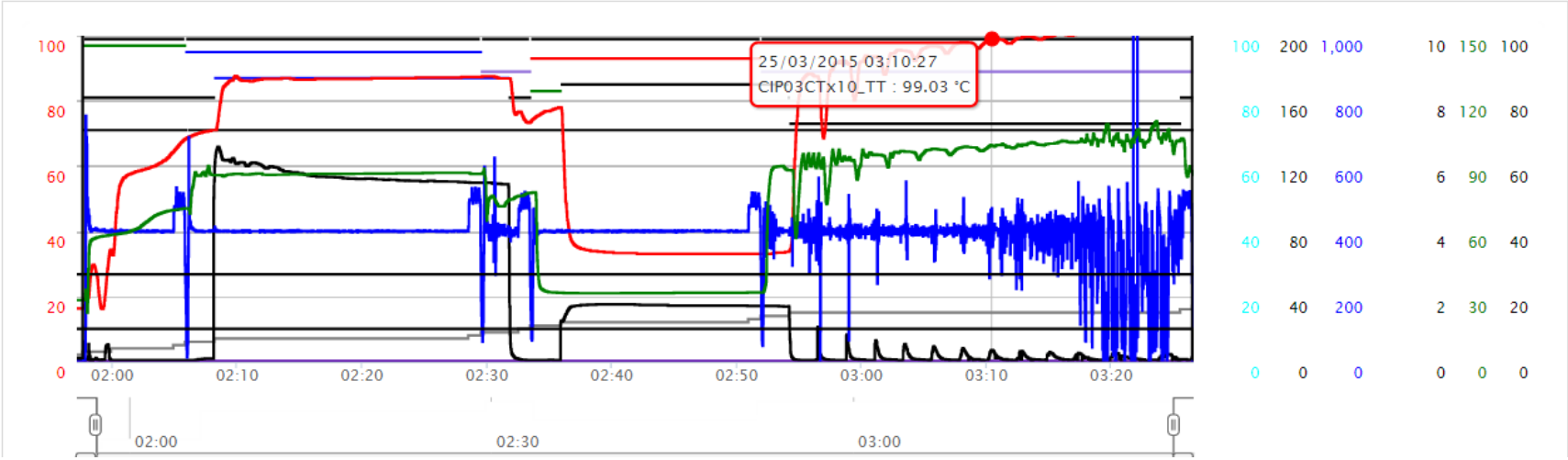
Sterilisation cycle showing a return temperature of **94.7^{0}C** should be no more than 80^{0}C

Deliverables and Examples: Quality

CIP System Name	CIP 03	Start Date & Time	25/03/2015 - 01:57:09
CIP Line Name	Loop 1 CIP 03	End Date & Time	25/03/2015 - 03:26:35
Object Name	Yeast collection line 1 Full CIP	Wash Duration	01:29:26
Recipe	418	Wash Descriptor	

Hide Header

Show Phases



Another example of high return temperatures during the sterilisation cycle. Temperature shown **99.03c** which is causing the **flow to fluctuate** due to steam being pushed into the feed line

Deliverables and Examples: Quality

Case Study: Conductivity CIP 2

All the cleans associated with CIP 2 are mainly Fermentation vessels with the exception of the Wort Cooler so there is the potential for high levels of CO_2 being left in the vessel resulting in carbonation of the caustic which makes the caustic solution ineffective for cleaning

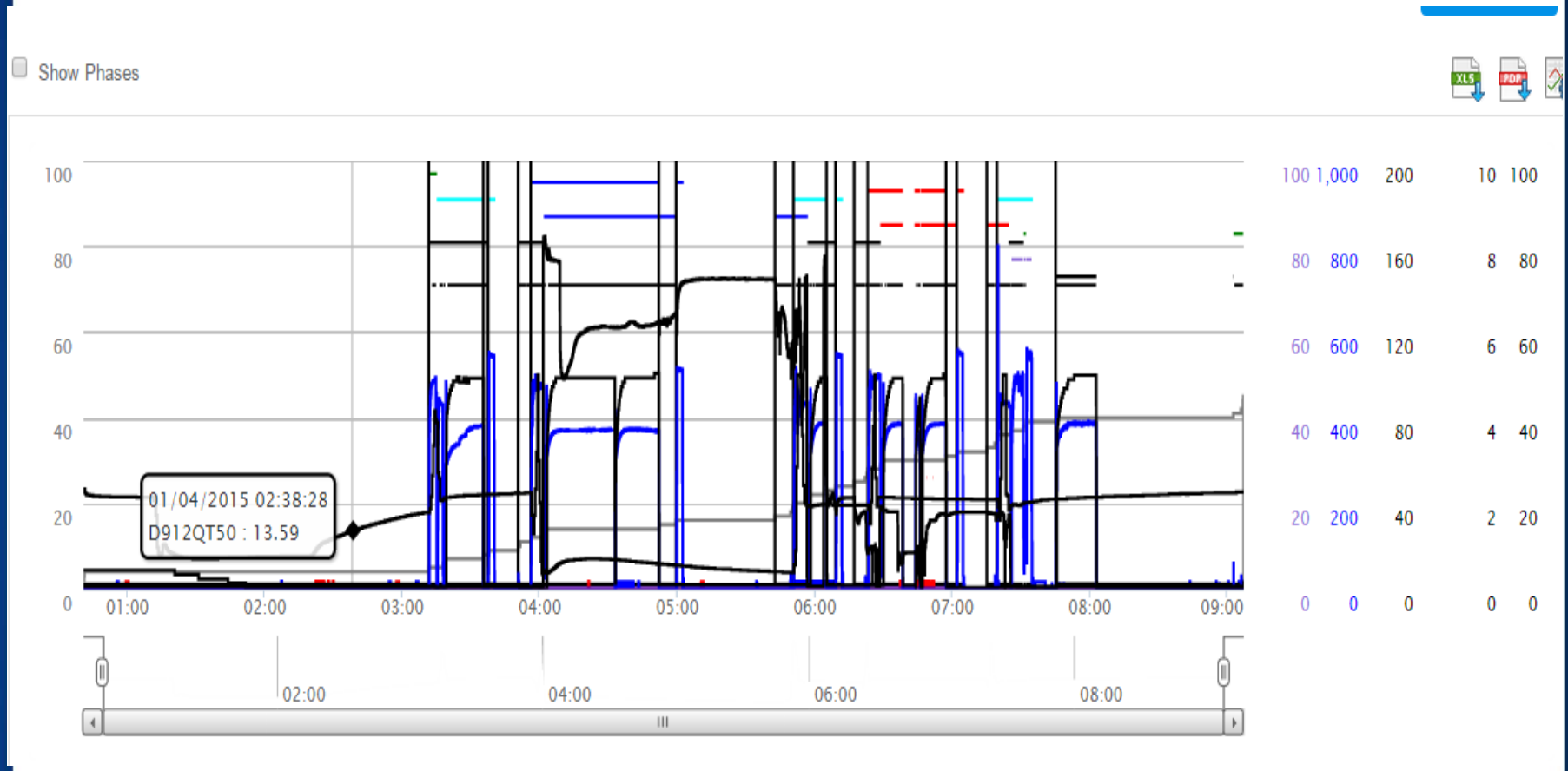
To try and combat this the CIP set is run at a conductivity of 175mS (3.3% w/w) even with such a high conductivity reading the carbonate level can drop down to below the required minimum level of 85mS.

By evacuating all the CO_2 from the vessels this would result in the vessels being cleaned with a lower conductivity thus reducing caustic usage per clean and the CIP set would not need to be dumped so frequently saving money

We are using 3DT to monitor oxygen meter readings and pressure reading (pressure on the spray device inside the tank)

We are using 3DT to track and create exception reports on the high and low caustic values.

Tracking of Oxygen in the tanks

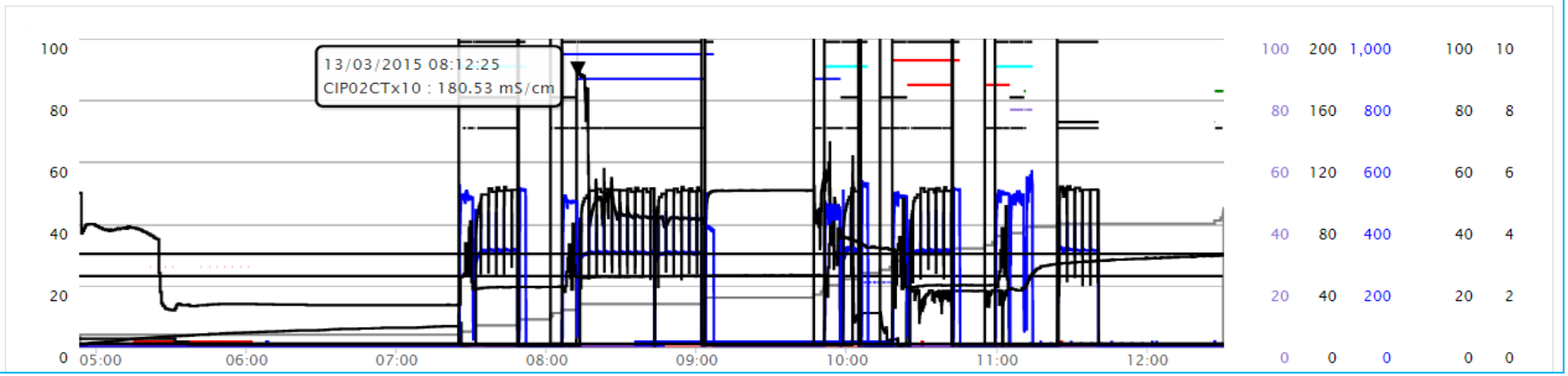


Deliverables and Examples: Quality

CIP System Name	CIP 02	**Start Date & Time**	13/03/2015 - 04:52:59
CIP Line Name	Loop 1 CIP 02	**End Date & Time**	13/03/2015 - 12:30:43
Object Name	UT 117 Full CIP	**Wash Duration**	07:37:44
Recipe	0	**Wash Descriptor**	

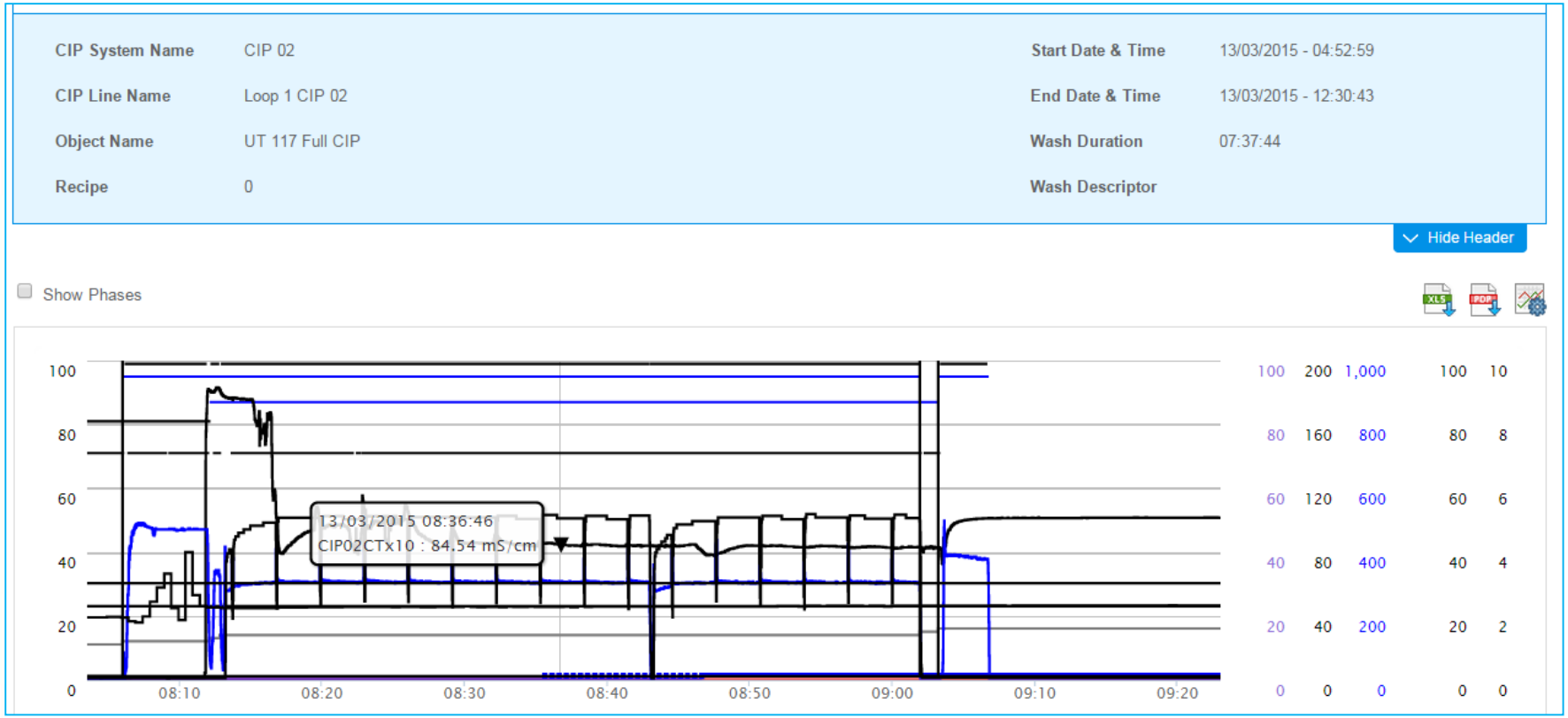
Hide Header

Show Phases



Conductivity level at the start of the caustic cycle showing a reading of 180.51mS/cm

Deliverables and Examples: Quality



An enlarged view of the caustic cycle showing the conductivity dropping down to below 85mS/cm

Deliverables and Examples: Quality

- **Case study: Conductivity CIP 2**

- Due to the high carbonate levels associated with CIP 2 it is necessary to drop the CIP set regularly on average after 5 cleans
- During the make up of CIP 2 once the return probe saw a conductivity of 175 mS the make up would stop.
- Although the return probe was seeing 175 mS this was not necessarily the conductivity in the caustic tank, as there could be some layering of the caustic solution.
- Solution : the CIP set is circulated for longer to make sure that the correct conductivity is achieved in the tank as well AND the conductivity is reduced to 150 mS (as make up is better controlled)
- We regularly see the CIP Makes Ups as the most expensive activity on a daily basis
  - The example on the left shows the same CIP set recharge costs 140 minutes apart….

Deliverables and Examples: Compliance

- 3DT offers the facility to monitor the performance of each CIP carried out in near real time.
- Exceptions can be set up to email key personnel of any non compliance relating to Time, Temperature, & Conductivity, which will allow site to investigate immediately any problems relating to the cleans.

No emails means there are no CIP issues and thus demonstrates 100% compliance

3DTCIP BENEFITS

CREATING VALUE BEYOND CIP

Food Safety & Quality

- ✓ Validate the CIP process
- ✓ Verify CIP performance
- ✓ Improve shelf life
- ✓ Drive food safety /quality enhancements
- ✓ Protect your brand and consumer engagement
- ✓ Compliance documentation
- ✓ Peace of mind

Operational Efficiency

- ✓ Turn information into action
- ✓ Enhance throughput/reduce loss
- ✓ Optimize the total cost of operation
- ✓ Enhance the asset useful life
- ✓ Capability to support new product introductions
- ✓ Expert support
- ✓ Preventative Maintenance

Sustainability

- ✓ Contribute to corporate sustainability goals with proof
- ✓ Lower the operational costs through water, energy and waste efforts
- ✓ Support elevating brand image

Employee Safety

- ✓ Easy to operate and minimize the risks
- ✓ Better training

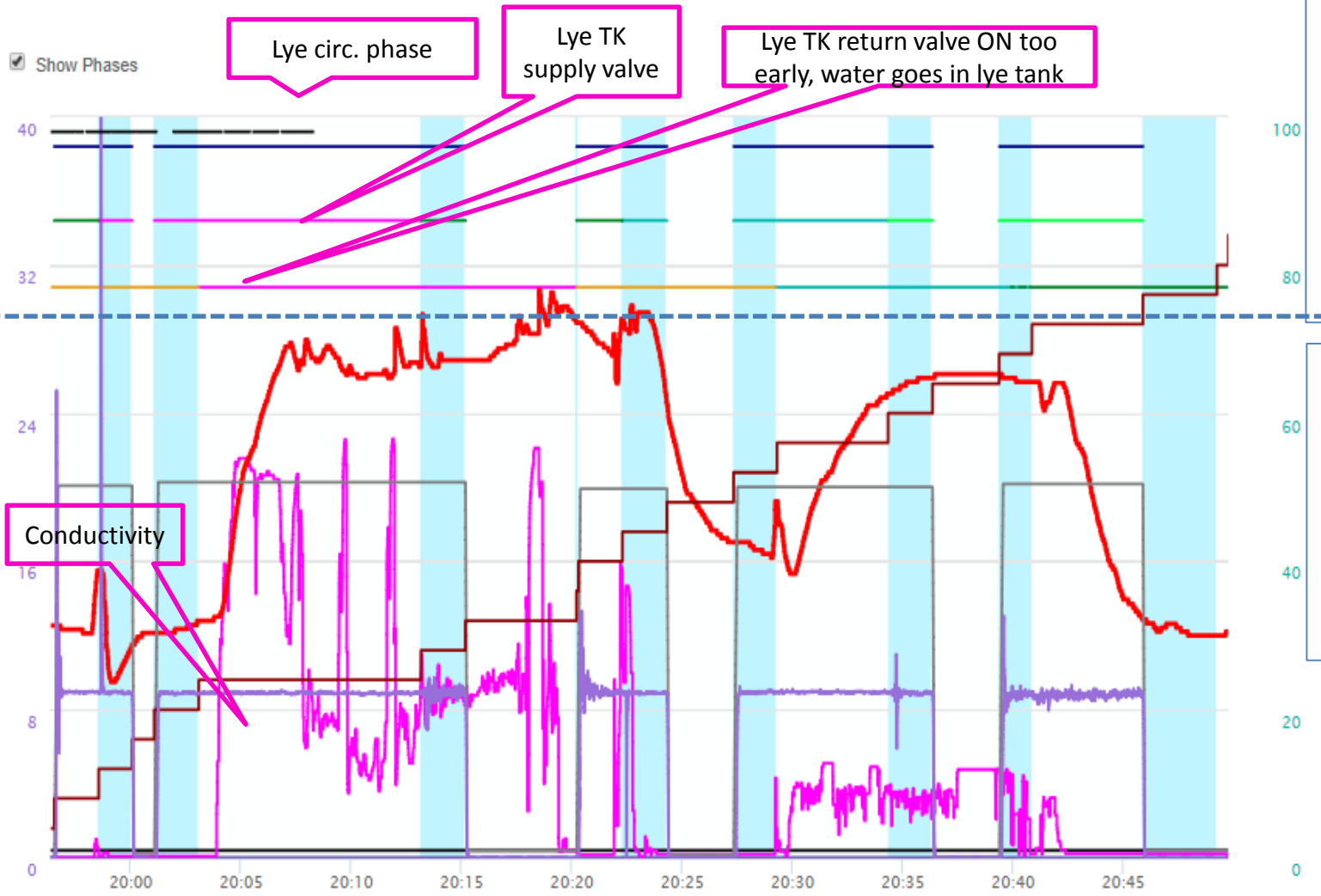
ECOLAB

ENABLING DIGITAL SOLUTIONS

ECOLAB

Enabler

Enabler



Digital signal
(can be >20 signal depend customer instrument):

- CIP tank valve
- CIP supply pump
- CIP return pump
- Flow switch
- Drain valve
- Steam valve

Analog signal:

- Temperature
- Conductivity
- Flow rate
- Program step
- VFD %

Enabler

3D TRASAR™
DETECT DETERMINE DELIVER

Hardware Investment :- Smart Box

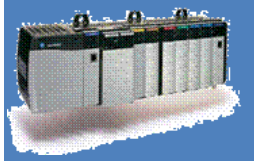
reads PLC information and sends the data to a secure server where the data is translated into actionable information by our proprietary monitoring system. Customers and Ecolab personnel then have access to the dashboard.

Plant

Instruments & Sensors

Ecolab Chemistry

Customer's PLC

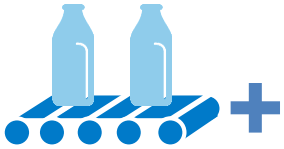


Ecolab Smart Box (read only)

Ecolab Server

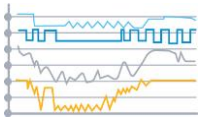
Secure Portal Reports Dashboard

Enabler



10 lines per plant

+



15 washes per line

+

10,000 data points per wash

=

1M+ CIP data points per plant per day

Brings order to your CIP data and easily answers the 3 critical questions:

Wash?

Correctly?

Optimally?

Customer's commitment

- CIP Champion
- CI Team

+

=

Results

- Quality/Consistency
- Productivity
- Safety/ TCO
- Sustainability

Ecolab's Support

- Account Manager
- CIP Analyst
- Installation Engineer
- System Assurance Center
- Next phase – in development

Digital can transform...

FROM	TO
Manual	Automated
Static	Dynamic
Limited Visibility	Data Driven Optimization
Periodic	Continuous
Reactive	Proactive
Variable	Consistent
Individual Knowledge	Dependable Outcomes

The Next Level of CIP technology

Partnership on the leading Edge

3D TRASAR™
Clean-in-Place

A new integrated service offering that combines Expert Analysis and specialized software to transform raw CIP data into savings and increased operational efficiency for your facility.

Detect by Data Transformation

24/7 CIP monitoring to transform disparate CIP data into integrated, actionable information you can use to measure plant performance

Determine through Expert Analysis

Ecolab CIP experts will uncover hidden savings and identify opportunities to improve your plants

Deliver with Recommendations for Action

Prioritized expert recommendations, diagnostic reporting, and the ongoing support of Ecolab's World Class Service

ECOLAB


thank you
merci
danke
謝謝
gracias
teşekkür ederim
go raibh maith agat
obrigado
dziękuję
bedankt
sukriya
kop khun krap
terima kasih
dakujem
arigatô
grazie
mochchakkeram
tapadh leat
ngiyabonga
спасибо
рахмат
Баярлалаа
dank je
misaotra
matondo
paldies
grazzi
mahalo
хвала
asante
manana
obrigada
tenki
chokrane
murakoze
mamnun
дякую
djiere dieuf
tau
akun
dankon
acìù
chnorakaloutioun
gratias ago
gràcies
sulpáy
taiku
takk
trugarez
мерси
shukriya
dhanyavadagalu
diolch
rahmet
tanemirt
ありがとう
najis tuke
kam sah hamnida
rahmat
didi madloba
sagolun
mèsi
sobodi
dèkuji
enkosi
bayarlalaa
grâçie
köszönöm
mauruuru
hvala
dhanyavad
nanni
nandri
kiitos
dankie
faafetai lava
vinaka
спасибі
blagodaram
kia ora
barka
welalin
tack
mersi
spas
ευχαριστώ
xièxie
감사합니다
তোমাকে ধন্যবাদ