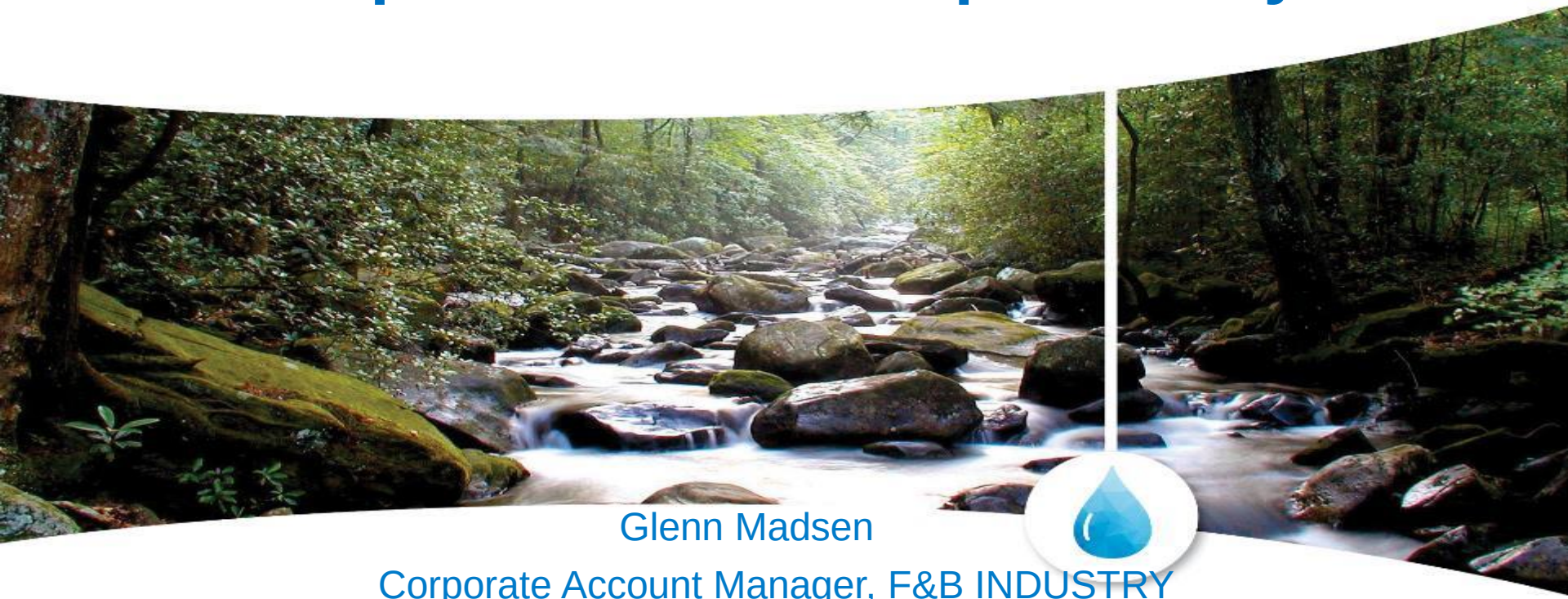
CSR
Corporate Social Responsibility



Glenn Madsen

Corporate Account Manager, F&B INDUSTRY

25 Januar 2018

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Agenda

- Ecolab og CSR
- Hvad er en TPA?
- TPA processen
- Hvordan kan en TPA hjælpe kunden?
- Hvad har vi opnået?

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Ecolab og CSR

ECOLAB | NALCO Water | NALCO Champion | English | Investo

ECOLAB | Products & Services | Sustainability | Expertise & Innova

Home › Ecolab Reaches Second in Latest Newsweek Green Rankings

Ecolab Reaches Second in Latest Newsweek Green Rankings

2017 marks the fourth consecutive year on the top 10 list of U.S. companies

December 18, 2017

ST. PAUL, Minn.--(BUSINESS WIRE)-- For the fourth consecutive year, Ecolab has been recognized for its commitment to sustainable business practices by Newsweek, which ranked the company second on its 2017 list of the greenest companies in the U.S.

"It is an honor to again be recognized by Newsweek's annual Green Rankings," said Emilio Tenuta, Ecolab vice president of Corporate Sustainability. "Our commitment to operating responsibly and sustainably is core to our culture, and demonstrated both within our own operations and at the more than one million customer locations we serve throughout the world."

Ecolab's Green Score ranked second on the 2017 U.S. 500 Green Rankings list. In 2016, Ecolab placed sixth on the U.S. 500 and 13th on Global 500 Green Rankings lists.

Newsweek's Green Rankings is an assessment of the sustainability performance of the 500 largest publicly traded companies in the U.S. and the 500 largest publicly traded companies globally by revenue. Newsweek partnered with Corporate Knights and HIP Investor to measure companies using eight key environmental performance indicators, including energy consumption, greenhouse gas emission, water use and waste.

For more information on the 2017 Newsweek Green Rankings, visit Newsweek.com.

About Ecolab

Awards and Recognition

We are proud to be recognized by many organizations for our innovation, service and commitment to operating responsibly and sustainably while meeting the needs of our customers.

FORTUNE WORLD'S MOST ADMIRED COMPANIES

Newsweek GREEN RANKINGS

Forbes AMERICA'S BEST EMPLOYERS

CR's 100 Best 2016

中国绿公司百强

BEST PLACES TO WORK 2016 for LGBT Equality

FTSE4Good

MEMBER OF Dow Jones Sustainability Indices In Collaboration with RobecoSAM

50 BEST COMPANIES TO SELL FOR 2016

2016

GLOBAL100

2016 WORLD'S MOST ETHICAL COMPANIES

maplecroft Climate Innovation Indexes

ECOLAB

Ecolab og CSR

In 2016, we helped customers:

CONSERVE	ELIMINATE	SAVE
161 BILLION GALLONS OF WATER	52 MILLION POUNDS OF WASTE	11 TRILLION BTUs OF ENERGY

Download our current Sustainability Report and learn more.

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Vi hjælper mejerier med at møde deres bæredygtigheds og operationelle mål med Ecolab`s **TPA**
(Total Plant Assessments)

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Hvad fortæller vores samarbejdspartner os?

- ”Vi er bekymrede, og vi vil minimere indvirkningen på naturressourcerne. Vi har opsat mål. ”
- "Vi har brug for hjælp til at optimere vores produktion til at løse bæredygtighed og operationelle effektivitetsmål.”
- "Måden vi bruger vores ressourcer på, giver os ikke kun mulighed for at være mere rentable, men kan faktisk bruges til at differentiere os og gøre det muligt for os at blive mere konkurrencedygtige."

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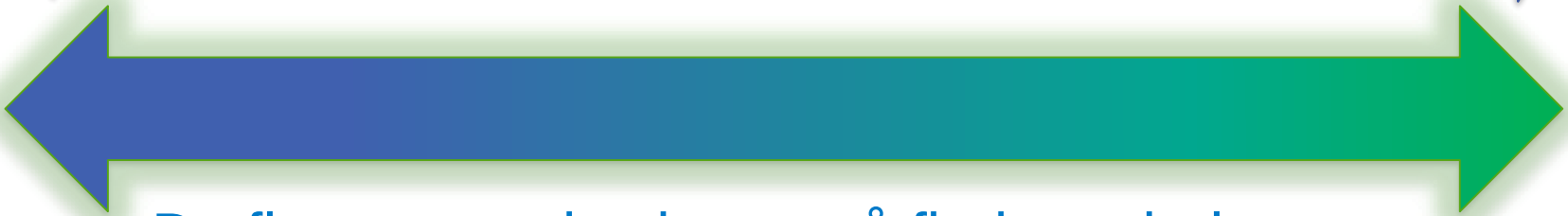
Hvor ser du din organation?

Vi reducerer kun ressourcer, hvis det reducerer vore omkostninger.

?

Vi reducerer vores ressourcer fordi det er det rigtige at gøre.



De fleste organisationer må finde en balance

"Vi opfylder de gældende krav"

"Vi vil være ledende inden for vores område"

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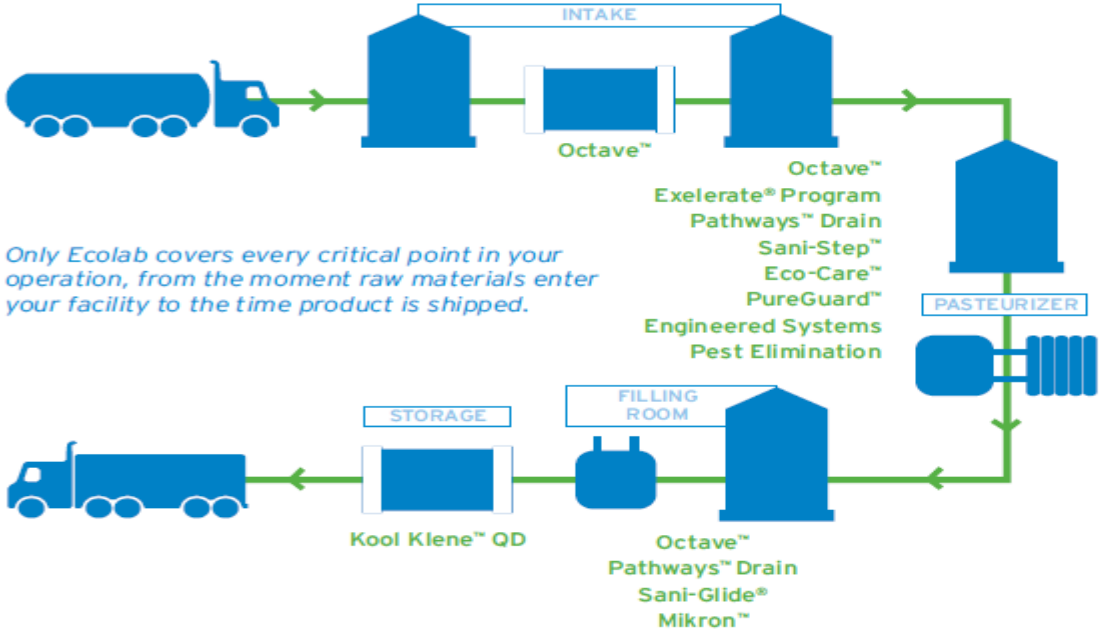
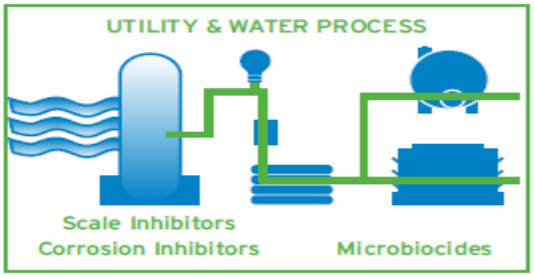
Kigger vi på et helt mejeri, så kan Ecolab have indvirkning på næsten 100% af vand-forbruget



Only Ecolab covers every critical point in your operation, from the moment raw materials enter your facility to the time product is shipped.



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Hvad er en TPA?

- En robust proces som kigger på hele kundens vand- og energi-forbrug og kortlægger dette.
- Forøgelse af driftstid og reduktion af spild er også en del af opgaven.
- Vi gør det ud fra princippet: ”reduce, reuse, recircle”

TPA Processen

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TPA Processen

For-møde

- Planlægge TPA
- Identificere team
- gennemgå pre-assessment checklist og indsamle data

Virksomheds-gennemgang

- Gennemføre TPA
- Lave Benchmarking
- Identificere muligheder

Opfølgning

- Analyser data
- Færdig gøre rapport
- Presentere rapport

implementere

4 to 6 weeks

1 week

1 to 2 weeks

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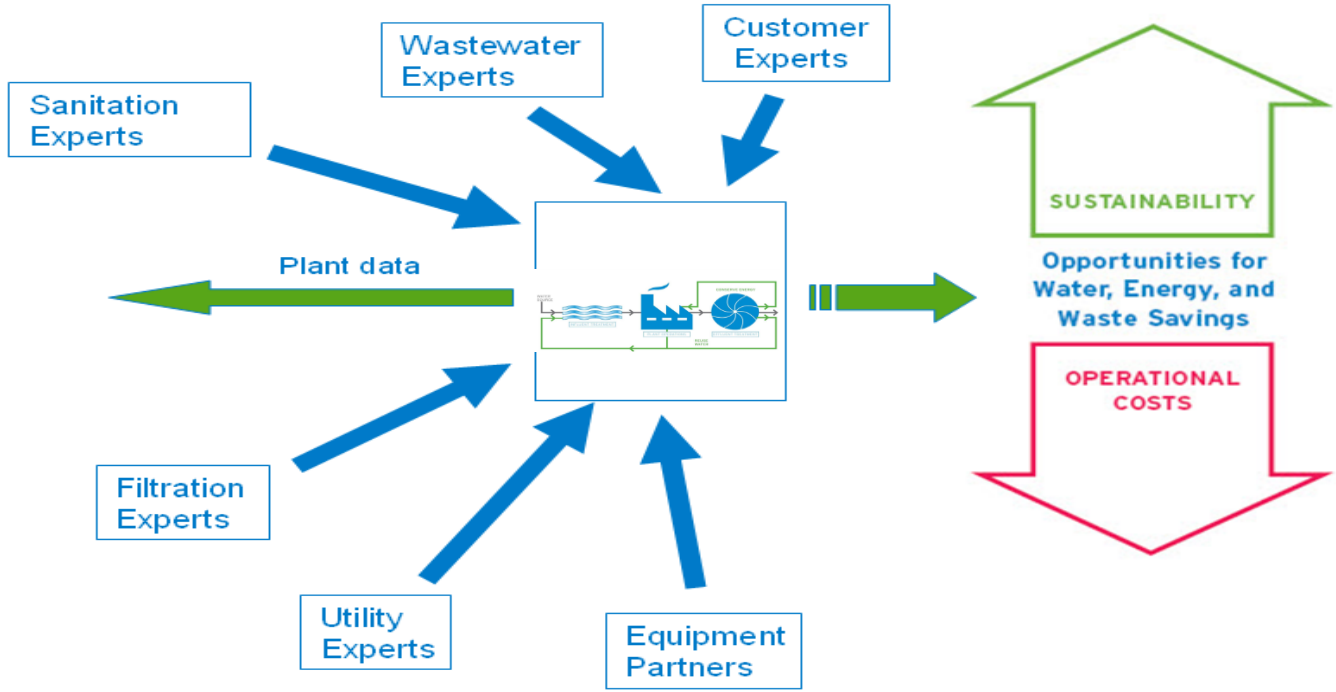
Sætte det rigtige hold af eksperter

Teamet er sammensat ud fra det enkelte site's situation

The assessment TEAM achieved synergy by combining over 200 years of knowledge, expertise, and dairy experience.



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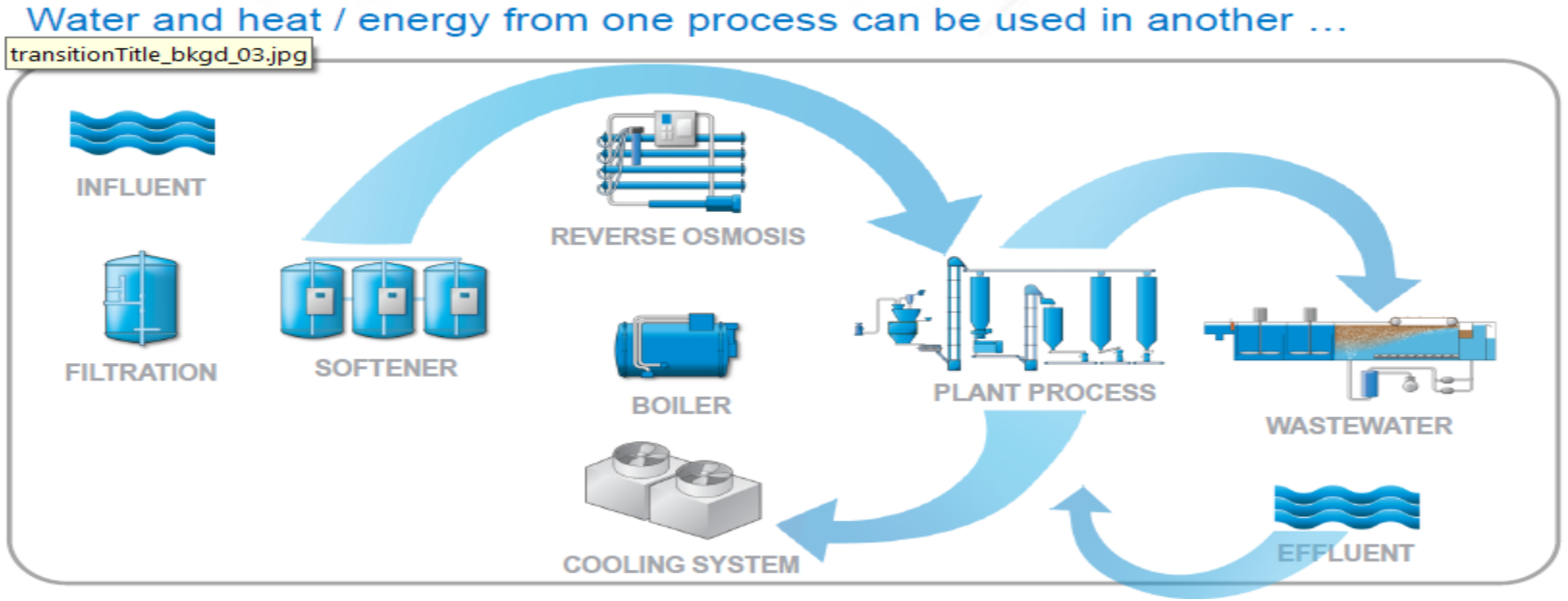
Holistic approach, ud fra princippet: Reduce, Reuce and recircle



Vi bruger ”Best Practices” inden for industrien

Best Practices					Opportunity Impact						
Air compressor		Compliance			1						
		Yes	No	N/A							
Good	Air cooled compressor and dryers.					X				X	
Good	Once-through cooling is not being used or is being recovered elsewhere					X	X				
Good	PSI set point within 10 psi of max PSI required						X		X		X
Better	VFD drive on one compressor to maintain set point within 5 PSI of max required						X		X		X
Better	Accumulator to take up swings in plant air pressure						X		X		X
Best	Heat recovery of water cooled system to preheat hot water of boost total plant water flow						X				
Best	Replace all items not designed to be on plant air with blowers						X		X		X
Bottle Rinsers (Empty)		Compliance			3						
		Yes	No	N/A							
Good	Water is off when line is not running					X				X	
Good	Flow rate appropriate for line speed					X				X	
Good	Nozzles correctly positioned					X					X
Good	Sanitizer is used (if appropriate)										X
Good	Water meter on water supply					X					X
Better	Water flow controlled by photo-eye, swicth or similar control method					X				X	
Better	If sanitizer is used is it feed using sensor control (if available)									X	X
Best	Water recovered from rinsers to be used in other applications (if appropriate)					X					
Best	Incomming water quality is monitored and appropriate for use (micro-bio)										X
Best	If sanitizer is used is it feed based on flow									X	X
Bottle Rinsers (Full)		Compliance			3						
		Yes	No	N/A							
Good	Water is off when line is not running					X				X	
Good	Flow rate appropriate for adequate rinsing					X				X	
Good	Nozzles correctly positioned for adequate rinsing					X					

- Indeholder årtier’s tekniske erfaringer og branche-kendskab
- Udviklet fra mere end 200 TPA’er og Task Force’s i løbet af de sidste år

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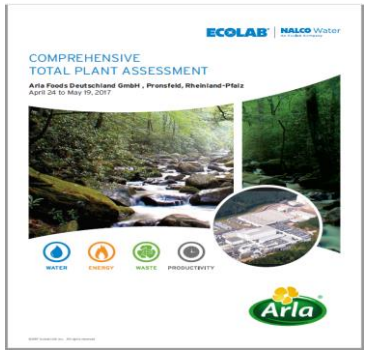
TPA outcome

TPA raportings-system, unik værktøj, specielt udviklet til formålet

- Sikrer skalerbarhed, konsistens, repeterbarhed og robusthed i TPA-processen og de endelige rapporter !!!



- TPA Checklist:
  - ✓90-trins proces som følges og ejes af TPA projektleder
  - ✓Vejleder hele TPA-processen fra start til slut!
  - ✓Udviklet og forbedret fra over 200 TPA'er.
  - ✓"Best practice"
  - ✓Udviklet til næsten alle mejerisystemer
  - ✓Samler læringen fra årtier af erfaring, samt fra foregående TPA'er

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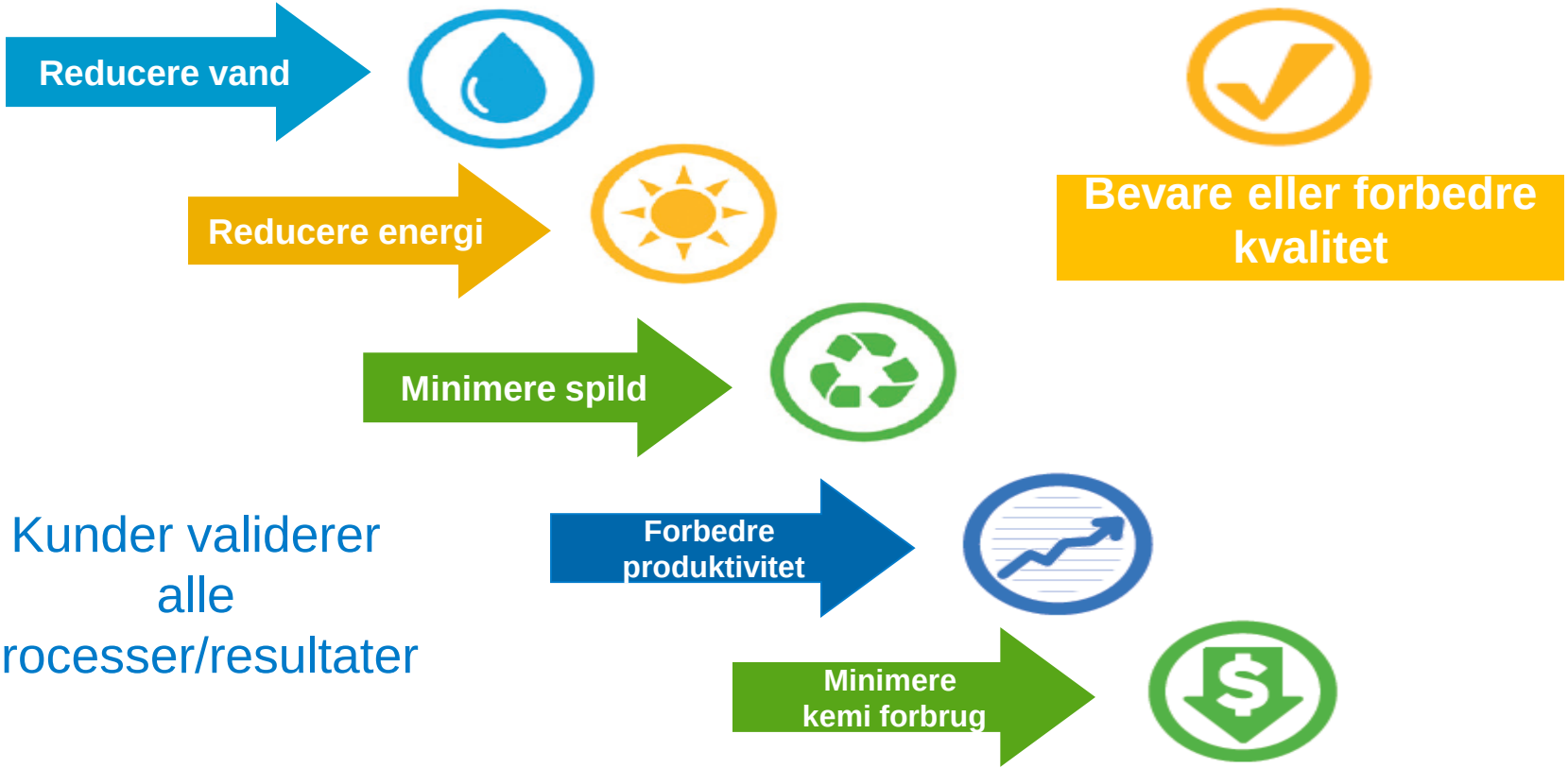
Assessment Areas of Impact (total)



Kunder validerer alle processer/resultater

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En holistisk tilgang

Total Plant Assessment outcome

- Eksklusivt sammendrag
- Resultat sammendrag
- Vand- og energi-balancer
- Mejeriets omkostninger pr. produceret kg
- Mulighedsoversigt og prioritering
- Detaljeret beskrivelse af muligheder/projekter
- Investerings-omkostninger med ROI til hvert projekt

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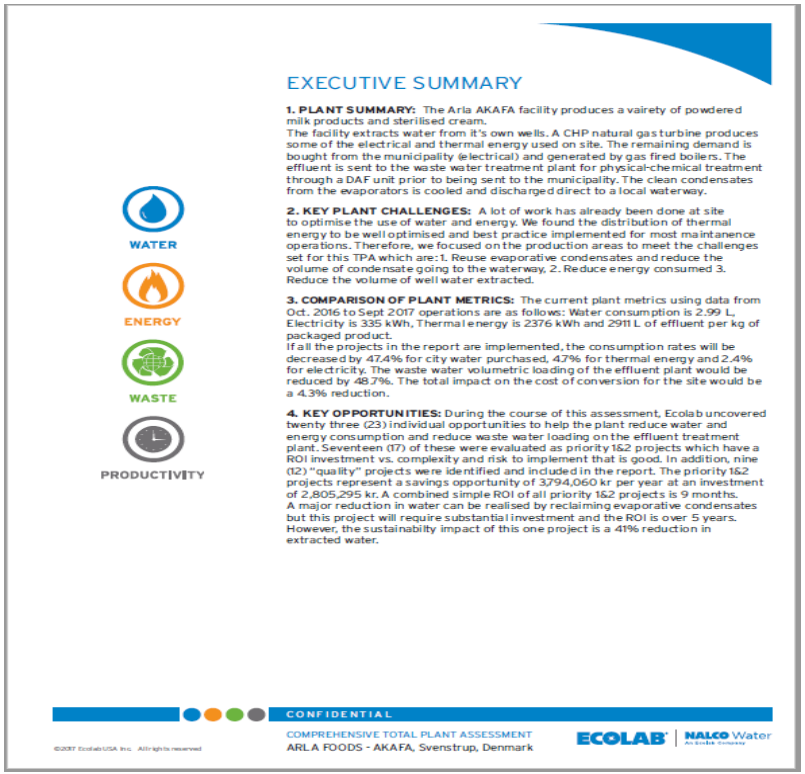
Executive Summary

- Gennemgå generel virksomheds information
- Fremhæver vigtige parametre, som ønskes afdækkes på TPA
- Giver et overblik over de vigtigste muligheder, der er identificeret på TPA'en



WATER

ENERGY

WASTE

PRODUCTIVITY

EXECUTIVE SUMMARY

1. PLANT SUMMARY: The Arla AKAFA facility produces a vairety of powdered milk products and sterilised cream.
The facility extracts water from it's own wells. A CHP natural gas turbine produces some of the electrical and thermal energy used on site. The remaining demand is bought from the municipality (electrical) and generated by gas fired boilers. The effluent is sent to the waste water treatment plant for physical-chemical treatment through a DAF unit prior to being sent to the municipality. The clean condensates from the evaporators is cooled and discharged direct to a local waterway.

2. KEY PLANT CHALLENGES: A lot of work has already been done at site to optimise the use of water and energy. We found the distribution of thermal energy to be well optimised and best practice implemented for most maintanence operations. Therefore, we focused on the production areas to meet the challenges set for this TPA which are: 1. Reuse evaporative condensates and reduce the volume of condensate going to the waterway, 2. Reduce energy consumed 3. Reduce the volume of well water extracted.

3. COMPARISON OF PLANT METRICS: The current plant metrics using data from Oct. 2016 to Sept 2017 operations are as follows: Water consumption is 2.99 L, Electricity is 335 kWh, Thermal energy is 2376 kWh and 2911 L of effluent per kg of packaged product.
If all the projects in the report are implemented, the consumption rates will be decreased by 47.4% for city water purchased, 4.7% for thermal energy and 2.4% for electricity. The waste water volumetric loading of the effluent plant would be reduced by 48.7%. The total impact on the cost of conversion for the site would be a 4.3% reduction.

4. KEY OPPORTUNITIES: During the course of this assessment, Ecolab uncovered twenty three (23) individual opportunities to help the plant reduce water and energy consumption and reduce waste water loading on the effluent treatment plant. Seventeen (17) of these were evaluated as priority 1&2 projects which have a ROI investment vs. complexity and risk to implement that is good. In addition, nine (12) "quality" projects were identified and included in the report. The priority 1&2 projects represent a savings opportunity of 3,794,060 kr per year at an investment of 2,805,295 kr. A combined simple ROI of all priority 1&2 projects is 9 months.
A major reduction in water can be realised by reclaiming evaporative condensates but this project will require substantial investment and the ROI is over 5 years. However, the sustainabilty impact of this one project is a 41% reduction in extracted water.

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COMPREHENSIVE TOTAL PLANT ASSESSMENT
ARLA FOODS - AKAFA, Svenstrup, Denmark

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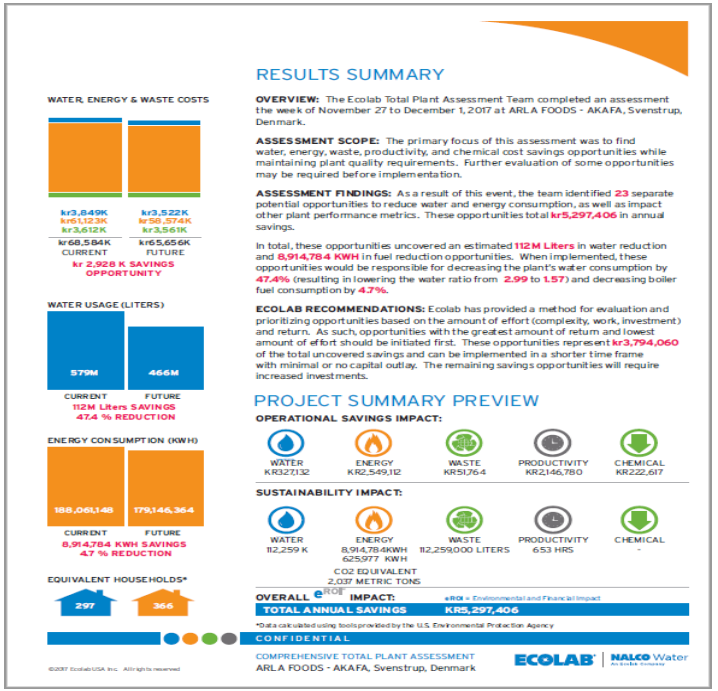
Sammendrag af resultater

- Tydligt og simpelt vises forbedringer
- Tillader nem sammenligning mellem forskellige anlæg
- Samme format brugt i alle rapporter



WATER, ENERGY & WASTE COSTS

kr3,849K
kr61,123K
kr3,612K
kr68,584K
CURRENT

kr3,522K
kr58,574K
kr3,569K
kr65,656K
FUTURE

kr 2,928 K SAVINGS OPPORTUNITY

WATER USAGE (LITERS)

579M
CURRENT
466M
FUTURE

112M Liters SAVINGS
47.4 % REDUCTION

ENERGY CONSUMPTION (KWH)

188,061,148
CURRENT
179,146,364
FUTURE

8,914,784 KWH SAVINGS
4.7 % REDUCTION

EQUIVALENT HOUSEHOLDS*

297
366

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RESULTS SUMMARY

OVERVIEW: The Ecolab Total Plant Assessment Team completed an assessment the week of November 27 to December 1, 2017 at ARLA FOODS - AKAFA, Svenstrup, Denmark.

ASSESSMENT SCOPE: The primary focus of this assessment was to find water, energy, waste, productivity, and chemical cost savings opportunities while maintaining plant quality requirements. Further evaluation of some opportunities may be required before implementation.

ASSESSMENT FINDINGS: As a result of this event, the team identified 23 separate potential opportunities to reduce water and energy consumption, as well as impact other plant performance metrics. These opportunities total kr5,297,406 in annual savings.

In total, these opportunities uncovered an estimated 112M Liters in water reduction and 8,914,784 KWH in fuel reduction opportunities. When implemented, these opportunities would be responsible for decreasing the plant's water consumption by 47.4% (resulting in lowering the water ratio from 2.99 to 1.57) and decreasing boiler fuel consumption by 4.7%.

ECOLAB RECOMMENDATIONS: Ecolab has provided a method for evaluation and prioritizing opportunities based on the amount of effort (complexity, work, investment) and return. As such, opportunities with the greatest amount of return and lowest amount of effort should be initiated first. These opportunities represent kr3,794,060 of the total uncovered savings and can be implemented in a shorter time frame with minimal or no capital outlay. The remaining savings opportunities will require increased investments.

PROJECT SUMMARY PREVIEW

OPERATIONAL SAVINGS IMPACT:

WATER	ENERGY	WASTE	PRODUCTIVITY	CHEMICAL
KR327,132	KR2,549,112	KR51,764	KR2,146,780	KR222,617

SUSTAINABILITY IMPACT:

WATER	ENERGY	WASTE	PRODUCTIVITY	CHEMICAL
112,259 K	8,914,784 KWH 625,977 KWH	112,259,000 LITERS	653 HRS	-

CO2 EQUIVALENT
2,037 METRIC TONS

OVERALL eROI IMPACT: eROI = Environmental and Financial Impact

TOTAL ANNUAL SAVINGS KR5,297,406

*Data calculated using tools provided by the U.S. Environmental Protection Agency

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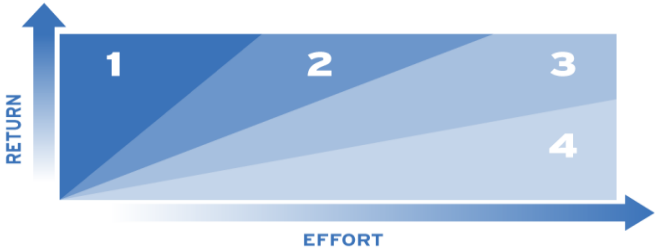
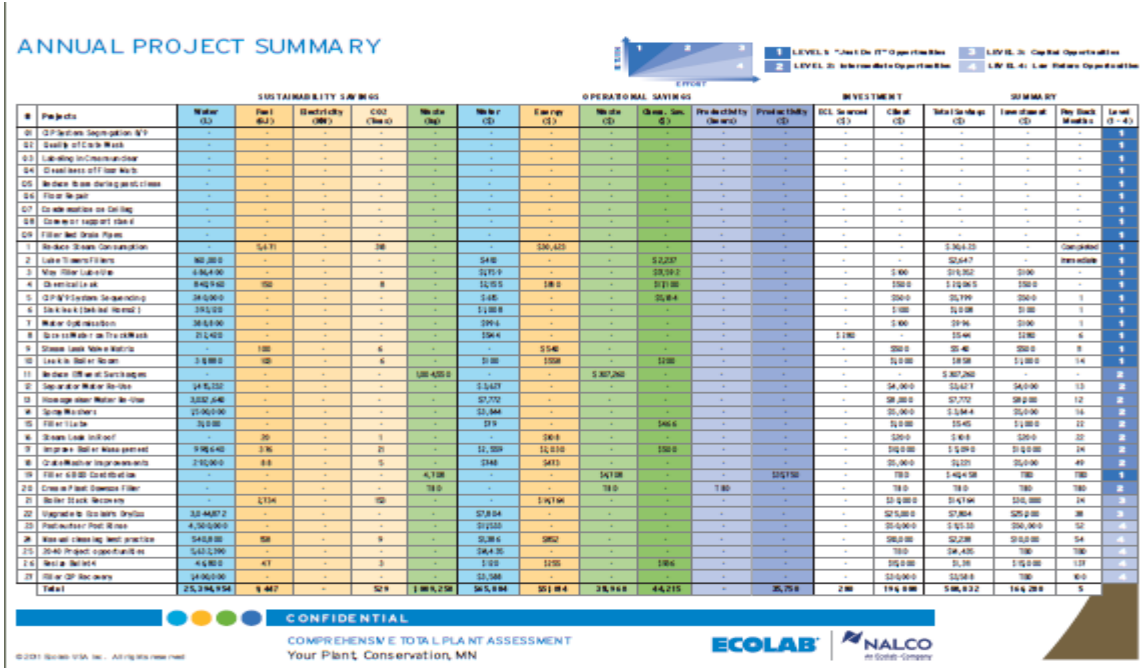
COMPREHENSIVE TOTAL PLANT ASSESSMENT
ARLA FOODS - AKAFA, Svenstrup, Denmark

ECOLAB | NALCO Water

Oversigt over samtlige projekter, samt prioritering

1. **LEVEL 1: "Just Do IT" Opportunities**
2. **LEVEL 2: Intermediate Opportunities**
3. **LEVEL 3: Capital Opportunities**
4. **LEVEL 4: Low Return Opportunities**





ANNUAL PROJECT SUMMARY

SUSTAINABILITY SAVINGS | OPERATIONAL SAVINGS | INVESTMENT | SUMMARY

#	Projects	Water (L)	Fuel (GJ)	Electricity (MW)	CO2 (Tons)	Waste (kg)	Water ($)	Energy ($)	Waste ($)	Chem. Sav. ($)	Productivity (Gallons)	Productivity ($)	SCL Sponsor ($)	Capital ($)	Total Savings ($)	Investment ($)	Pay Back Months	Level (1 - 4)
01	CIP Sections Separation 3/9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
02	Quality of Cycle Wash	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
03	Looking to Conservation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
04	Consistency of Use Wash	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
05	Reduce Steam during periods close	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
06	Floor Repair	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
07	Consideration on Ceiling	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
08	Conveyor support steel	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
09	Filler Bed Drain Pipes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
1	Reduce Steam Consumption	-	54.71	-	38	-	-	$30,423	-	-	-	-	-	-	$ 304.23	-	Completed	1
2	Lube Towers Fillers	162,280	-	-	-	-	$48	-	-	$ 2,237	-	-	-	-	$2,647	-	Immediate	1
3	New Filler Lubrifier	6,864,00	-	-	-	-	$1,959	-	-	$9,592	-	-	-	$ 000	$11,352	$100	-	1
4	Chemical Leak	$40,960	150	-	8	-	$1,155	180	-	$ 1,188	-	-	-	$50	$ 3,083	$50	-	1
5	CIP #1 System Sequencing	24,000	-	-	-	-	$ 48	-	-	$1,824	-	-	-	$50	$1,799	$50	1	1
6	Sink Inlet (Sanitizer Rinse)	394,000	-	-	-	-	$ 1,188	-	-	-	-	-	-	$ 100	$ 1,188	$ 100	1	1
7	Water Optimization	38,000	-	-	-	-	$ 394	-	-	-	-	-	-	$ 000	$ 394	$ 100	1	1
8	Conveyor on Trackback	21,420	-	-	-	-	$ 564	-	-	-	-	-	$ 180	-	$ 744	$ 180	6	1
9	Steam Leak Valve Matrix	-	100	-	6	-	-	$ 540	-	-	-	-	-	$50	$ 540	$50	8	1
10	Leaks Boiler Room	$ 6,000	100	-	6	-	$ 100	$ 500	-	$ 200	-	-	-	$ 000	$ 800	$ 100	14	1
11	Reduce Offline Switchgear	-	-	-	-	$ 00,400	-	-	$ 307,260	-	-	-	-	-	$ 307,260	-	-	2
12	Separator Water Re-Use	$ 45,120	-	-	-	-	$ 1,427	-	-	-	-	-	-	$ 000	$1,427	$ 000	13	2
13	Hookup steer Water Re-Use	3,032,640	-	-	-	-	$ 7,772	-	-	-	-	-	-	$ 000	$ 7,772	$ 000	12	2
14	Spray Nozzles	$1,000,000	-	-	-	-	$ 3,344	-	-	-	-	-	-	$ 000	$ 3,344	$ 000	16	2
15	Filler Valve	$ 000	-	-	-	-	$ 9	-	-	$ 46	-	-	-	$ 000	$ 55	$ 100	22	2
16	Steam Leak in Roof	-	20	-	1	-	-	$ 00	-	-	-	-	-	$ 000	$ 00	$ 000	22	2
17	Improve Boiler Water percent	$ 96,640	3.76	-	21	-	$ 2,359	$ 1,000	-	$ 500	-	-	-	$ 000	$ 3,859	$ 000	24	2
18	Cook Washer Improvements	2,100,000	8.8	-	5	-	$ 348	$ 433	-	-	-	-	-	$ 000	$ 1,101	$ 000	49	2
19	Filler 6,000 Conversion	-	-	-	-	4,108	-	-	$ 4,108	-	-	$ 10,750	-	$ 00	$ 14,858	$ 00	$ 00	2
20	Cross Plant Steamer Filler	-	-	-	-	$ 0	-	-	$ 0	-	$ 80	-	-	$ 0	$ 0	$ 00	$ 00	2
21	Boiler Stack Recovery	-	1,134	-	150	-	-	$ 4,194	-	-	-	-	-	$ 000	$ 4,194	$ 00, 000	24	3
22	Upgrade to Goulds Grafos	3,8 4,487 2	-	-	-	-	$ 7,804	-	-	-	-	-	-	$ 5,000	$ 7,804	$ 25,000	38	3
23	Pasteurizer Post Rinse	4,50 ,000	-	-	-	-	$ 1,000	-	-	-	-	-	-	$ 000	$ 1,0 1.10	$ 00, 000	52	4
24	New soil cleaning best practice	540,000	158	-	9	-	$ 1,386	$ 852	-	-	-	-	-	$ 000	$ 2,238	$ 0,000	54	4
25	20-40 Project opportunities	5,62 ,200	-	-	-	-	$ 4,435	-	-	-	-	-	-	$ 0	$ 4,435	$ 00	$ 00	4
26	Recycle Retort	4 ,960	47	-	3	-	$ 0	$ 1,000	-	$ 196	-	-	-	$ 000	$ 1,196	$ 0,000	1,0	4
27	Filter CIP Recovery	$ 00,000	-	-	-	-	$ 1,588	-	-	-	-	-	-	$ 0,000	$ 1,588	$ 00	80	4
	Total	25,394,954	1,447	-	529	1 00,258	$65,884	$5 ,884	$8,968	44,215	-	35,750	280	19 ,000	$ 88,832	16 ,280	5	

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COMPREHENSIVE TOTAL PLANT ASSESSMENT
Your Plant, Conservation, MN

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Baseline vs. evt. optimering

- Identificerer baseline ved hjælp af R-12 Data, Sammenlignet med baseline efter evt. optimering.
- Tillader hurtig sammenligning og konsekvensanalyse
- Nem visualisering for at "se" forbedring i driftsomkostningerne

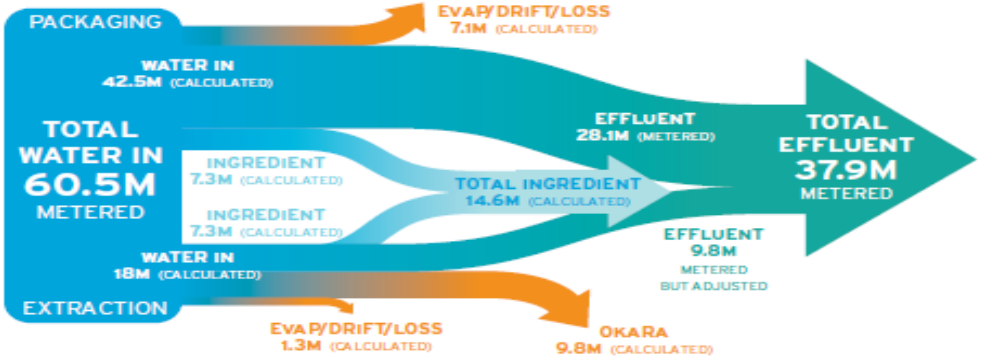
SUSTAINABILITY:

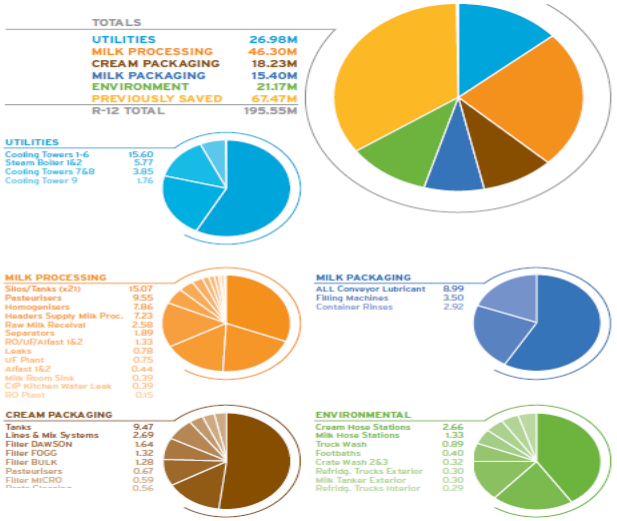
PLANT METRIC	DEFINITION	CURRENT VALUE	AFTER PROJECTS	% REDUCTION
Water Efficiency Ratio	L Water / KG 1000 Kg Produced	1864.49	555.26	70.2%
Electric Consumption Ratio	KWH / 1000 KG Produced	345.96	341.19	1.4%
Fuel Consumption Ratio	KWH / 1000 KG Produced	1312.63	862.39	34.3%
Waste Loading Ratio	KG Waste in Effluent / 1000 KG Produced	3.23	1.81	44.1%

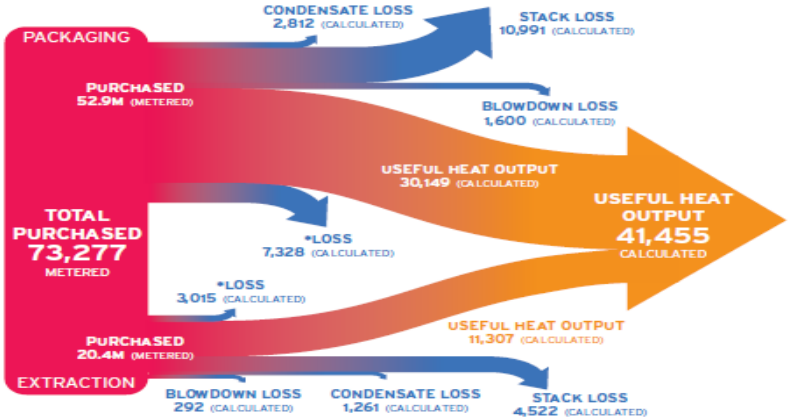
OPERATION COSTS:

PLANT METRIC	DEFINITION	CURRENT VALUE	AFTER PROJECTS	% REDUCTION
Water Cost Contribution	£ Water / 1000 KG Produced	£9.64	£7.5	22.2%
Electric Contribution	£ Electric / 1000 KG Produced	£29.2	£28.79	1.4%
Fuel Cost Contribution	£ Fuel / 1000 KG Produced	£27.82	£18.27	34.3%
Waste Cost Contribution	£ Effluent Treatment / 1000 KG Produced	£5.72	£4.47	21.9%
Total Cost Contribution	£ Total Spend / 1000 KG Produced	£72.38	£59.04	18.4%

Vand-/Energi-balance







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Detaljeret beskrivelse af projekter

Opportunity Level

Supporting Photos

Households Impacted

- ✓ Implications
- ✓ Assumptions
- ✓ Corrective actions

Quantify Impact

Project #32

BLOWDOWN HEAT RECOVERY

2

DESCRIPTION: Actual continuous blow down heat recovery system is only recovering 50% of blow down energy through flash steam line returning to hotwell. The energy contained in the liquid side is lost, as steam trap and the heat exchanger are damaged. Additionally, the existing plate heat exchanger seems small for such an installed total boiler capacity.

ECOLAB RECOMMENDATION: To replace the existing trap and to install a new plate heat exchanger dully sized to efficiently reclaim the maximum heat from the liquid blow down stream.

OPERATIONAL SAVINGS IMPACT:

WATER (£)	ELECTRICITY (£)	ENERGY (£)	WASTE (£)	PROD. (£)	CHEMICAL (£)
-	-	11,407	-	-	-

SUSTAINABILITY TOTALS:

WATER (M3)	ELECTRICITY (KWH)	ENERGY (KWH)	WASTE (KG)	PROD. (HOURS)	CHEMICAL
-	-	538,311	-	-	-

HOUSEHOLDS: - 22

OVERALL eROI IMPACT:

TOTAL ANNUAL SAVINGS	£11,407
ONE-TIME INVESTMENT	£7,000
SIMPLE PAYBACK	7.36 MONTHS

CONFIDENTIAL

COMPREHENSIVE TOTAL PLANT ASSESSMENT

Arla Foods, Westbury, Wiltshire

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TPA Findings

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Typiske resultater på mejerier

- baseret på mere end 50 sites.

- Resultaterne varierer grundet forskellige faktorer
  - Forskellige omkostninger til vand og energi
  - Størrelse og alder på mejeriet
  - Kompleksitet og mix af produkter
  - Graden af automation
  - Fokus på bæredygtighed
- Typiske vandbesparelser identificeret:
  - Fra 5 til 50%
  - Gennemsnit 24%
- Typiske energibesparelser identificeret:
  - Fra 5 til 40%
  - Gennemsnit 20%
- Typiske omkostnings besparelser identificeret:
  - Fra $80,000 til $1M pr. drift sted
  - Gennemsnit $540,000

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TPA resultater for Arla
(baseret på 7 sites, næste 7 er planlagt)

	Findings	Water (m3)	Fuel (KWH)	Energi (KWH)	Waste (kg)	investment	*ROI year*
Site 1	€ **941.649,73**	179.800	16.460.331	- 2.204.770	393.814	€ 1.758.014,40	*1,87*
Site 2	€ **1.721.451,69**	130.923	45.023.668	477.449	142.743	€ 2.217.337,98	*1,29*
Site 3	€ **1.430.714,00**	143.182	5.848.105	1.143.947	451.000	€ 1.037.670,00	*0,73*
Site 4	€ **2.081.061,60**	598.589	13.999.334	1.032.130	1.529.289	€ 3.529.595,33	*1,70*
Site 5	€ **818.270,00**	24.916	22.183.172	1.433.841	48.200	€ 924.407,00	*1,13*
Site 6 (small)	€ **194.003,25**	31.449	1.334.421	298.789	-	€ 345.496,11	*1,78*
Site 7	€ **706.320,80**	112.259	8.914.784	625.977		€ 1.199.039,33	*1,70*
Total	€ **7.893.471,07**	**1.221.118**	**113.763.815**	**2.807.363**	**2.565.046**	**€ 11.011.560,15**	*1,40*

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Eksempel site 2

SUSTAINABILITY:

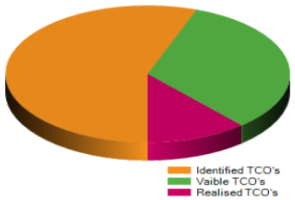
PLANT METRIC	DEFINITION	CURRENT VALUE	AFTER PROJECTS	% REDUCTION
Water Efficiency Ratio	L Water / KG 1000 Kg Produced	1864.49	555.26	70.2%
Electric Consumption Ratio	KWH / 1000 KG Produced	345.96	341.19	1.4%
Fuel Consumption Ratio	KWH / 1000 KG Produced	1312.63	862.39	34.3%
Waste Loading Ratio	KG Waste in Effluent / 1000 KG Produced	3.23	1.81	44.1%

OPERATION COSTS:

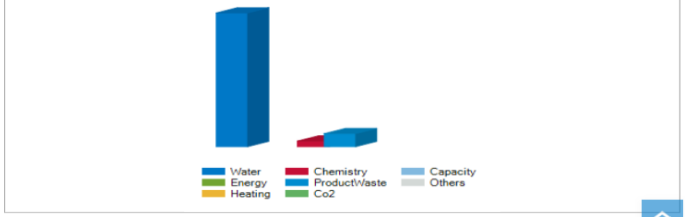
PLANT METRIC	DEFINITION	CURRENT VALUE	AFTER PROJECTS	% REDUCTION
Water Cost Contribution	£ Water / 1000 KG Produced	£9.64	£7.5	22.2%
Electric Contribution	£ Electric / 1000 KG Produced	£29.2	£28.79	1.4%
Fuel Cost Contribution	£ Fuel / 1000 KG Produced	£27.82	£18.27	34.3%
Waste Cost Contribution	£ Effluent Treatment / 1000 KG Produced	£5.72	£4.47	21.9%
Total Cost Contribution	**£ Total Spend / 1000 KG Produced**	**£72.38**	**£59.04**	**18.4%**

Status

TCO break down	No	Value
Identified TCO's	14	1,045,025.00
Viable TCO's	14	619,752.80
Realised TCO's	5	215,222.00
Total TCO's	33	1,879,999.80
Unapproved TCO's	1	15,500.00
TCO's contract value	5	215,222.00



Category	No	Volume	Value
Water	4	20,218.20 M3	188,901.00
Energy	0	0 Kwh	0
Heating	0	0 Kwh	0
Chemistry	1	12,000.00 Kg	7,934.00
Product waste	1	35,018.00 Kg	18,387.00
Co2 reduction	0	0 Ton	0
Capacity	1	0.00 Kg product	0
Others	0	0 Euro	0



Key Learnings:

- Der findes muligheder på selv de mest veldrevne site`s!
- Ofte en del projekter med intet eller kun et lille behov for investering.
- Det er nødvendigt med opbakning fra øverste ledelse for at sikre optimale resultater og efterfølgende implementering.
- Processen er også skabt til at hjælpe med at skabe fokus og sætte nye prioriteter.
- Det er en on-going proces, ikke kun en et-uges event.
- At bruge “Total Plant” approach har meget større værdi end ”blot” at kigge på hver individuel proces for sig selv.
- Man skal ikke være bange for at stille spørgsmål til, hvorfor tingene ikke kan gøres anderledes.
- Man behøver dedikerede resurser til at implementere projekterne efterfølgende

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QUESTIONS?

THANK YOU!

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