



WELCOME TO OUR WORLD OF AUTOMATION AND INDUSTRIAL IT SOLUTIONS

Au2mate
PROCESS AUTOMATION PARTNER

Au2mate provides well-documented and fully functional automation systems based on open standards and freely accessible automation platforms all over the world.



Agenda

Reduce resource consumptions in CIP and improve utilization of production facilities

1. Introduction
2. Why should you be interested in data
3. What is Data Analysis
4. How to get insight from CIP data
5. What a deep dive into data shows

Area of expertise: Process Automation & Industrial IT

Target industry: Food industry – Dairy 90 %

Founded: 2001

Locations: Offices in Denmark, UK, Dubai, Norway, Sweden, Germany, Portugal & Australia

Number of employees: 135

References: More than 2000 projects delivered worldwide

Examples of end users: Arla, Tine, Lactalis, Nestle, Kraft, Almarai, Novozymes

Design philosophy: Solutions based on open platforms & international standards



FLEMMING ROD JEPPESEN

Divisional manager, MES & Industrial IT

Experience: 23 years developing and implementing digital solutions

Employed at Au2mate since: 2021

Prior experience: Director of Digitalization – Large DK service company

Vice President – KMD (largest DK software company)

Global Project Executive - IBM



Why should you be interested in data

- Modern production facilities generate large amounts of data
 - It will only increase in the future
- Understanding data generate value
 - Equipment health
 - Site, line & unit performance
- Use data to continuous benchmarking
 - Identified cost reduction potential of 12-28% year 1*
- Challenge
 - Make big data usable

McKinsey
& Company

Consumer Packaged Goods Practice

Benchmarking in the dairy industry: Strengthening performance amidst double volatility












The dairy industry faces shifting demand and price pressure. Continuous benchmarking processes can help identify emerging areas of excellence and the possibility of higher-impact improvements.

This article was a collaborative effort by Dayan Jayasuriya, Alina Kasumova, Shruti Lal, Ludovic Melhac, and Andreas Seyfert of McKinsey's Retail Practice.

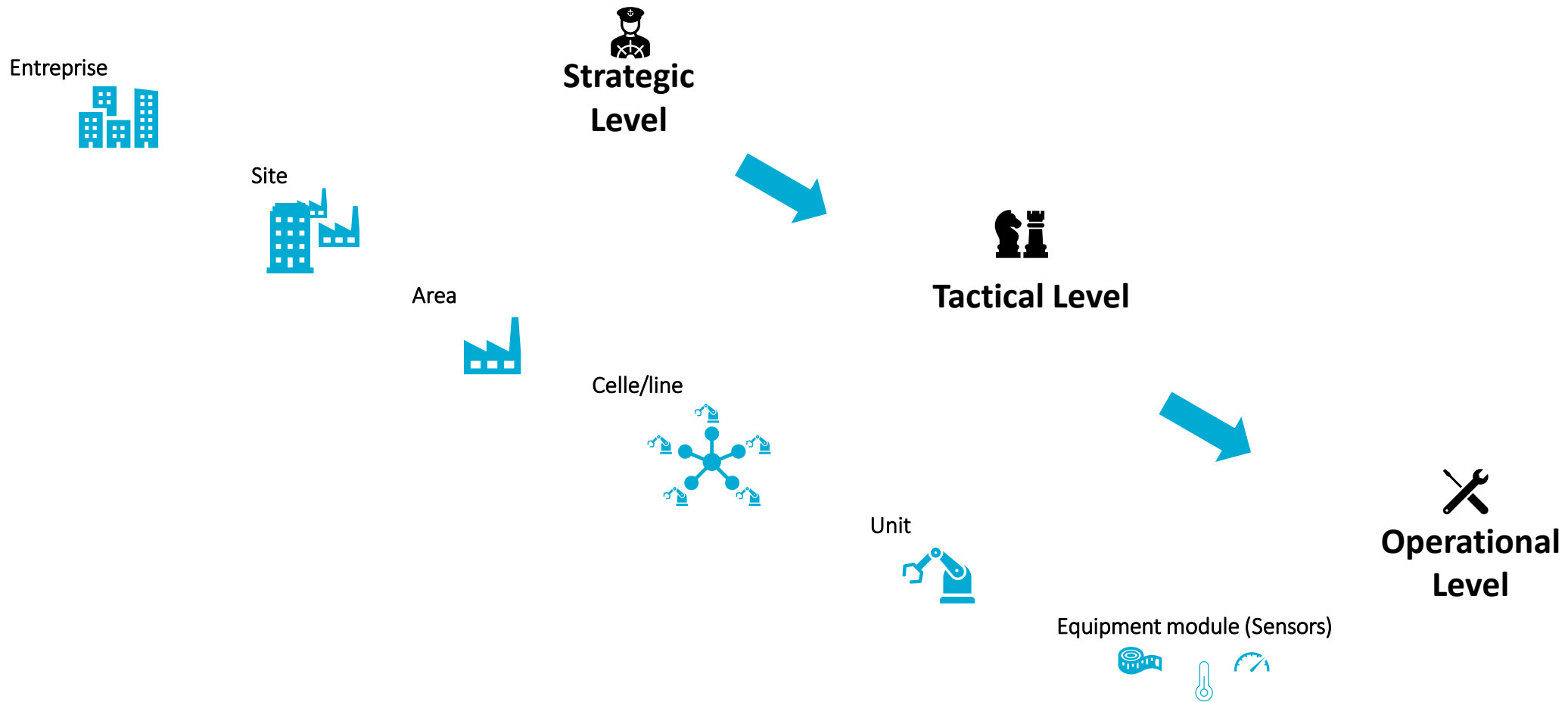


*Source: Benchmarking in the dairy industry: Strengthening performance amidst double volatility. McKinsey & Company (2021)

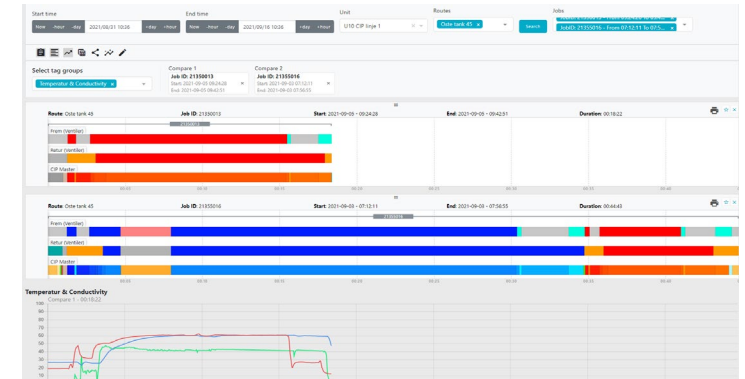


- Save time and money 
 - Define "The Golden Batch"
 - Optimize → Productivity, environment, quality and cost 
 - Internal benchmarking. Compare historical jobs with current jobs 
 - Define "points of interest" → React earlier when measurements approach thresholds 
 - Provide insight into the production environment 
 - Identify innovative initiatives → 

Analyze data at different levels



- Tool that analyses and visualizes production data grouped in batches
 - Time intervals (24 hours → |--- 6 hours ---|-----|-----|-----|)
- Show historical data
- Present graphical and quantitative insight into your production data
- A tool that can collect data from all types of tags (sensors):
 - Temperatur, Conductivity, Pressure, Flow speed etc.
- Web basered solution



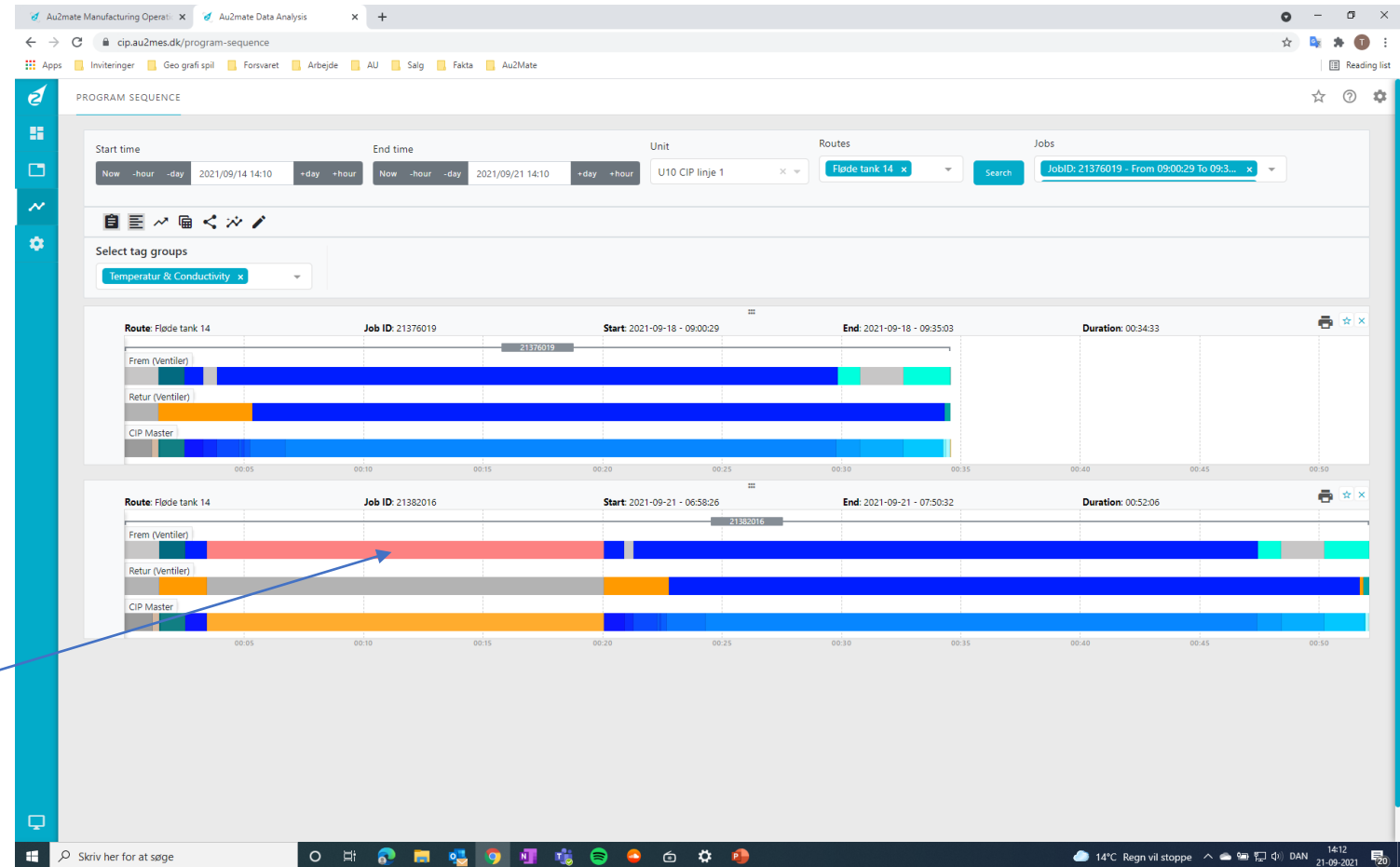
"Golden batch" as benchmark

- Define "Golden batch"
- Use "Golden batch" as benchmark
- Compare other batches to "Golden batch" to find deviations

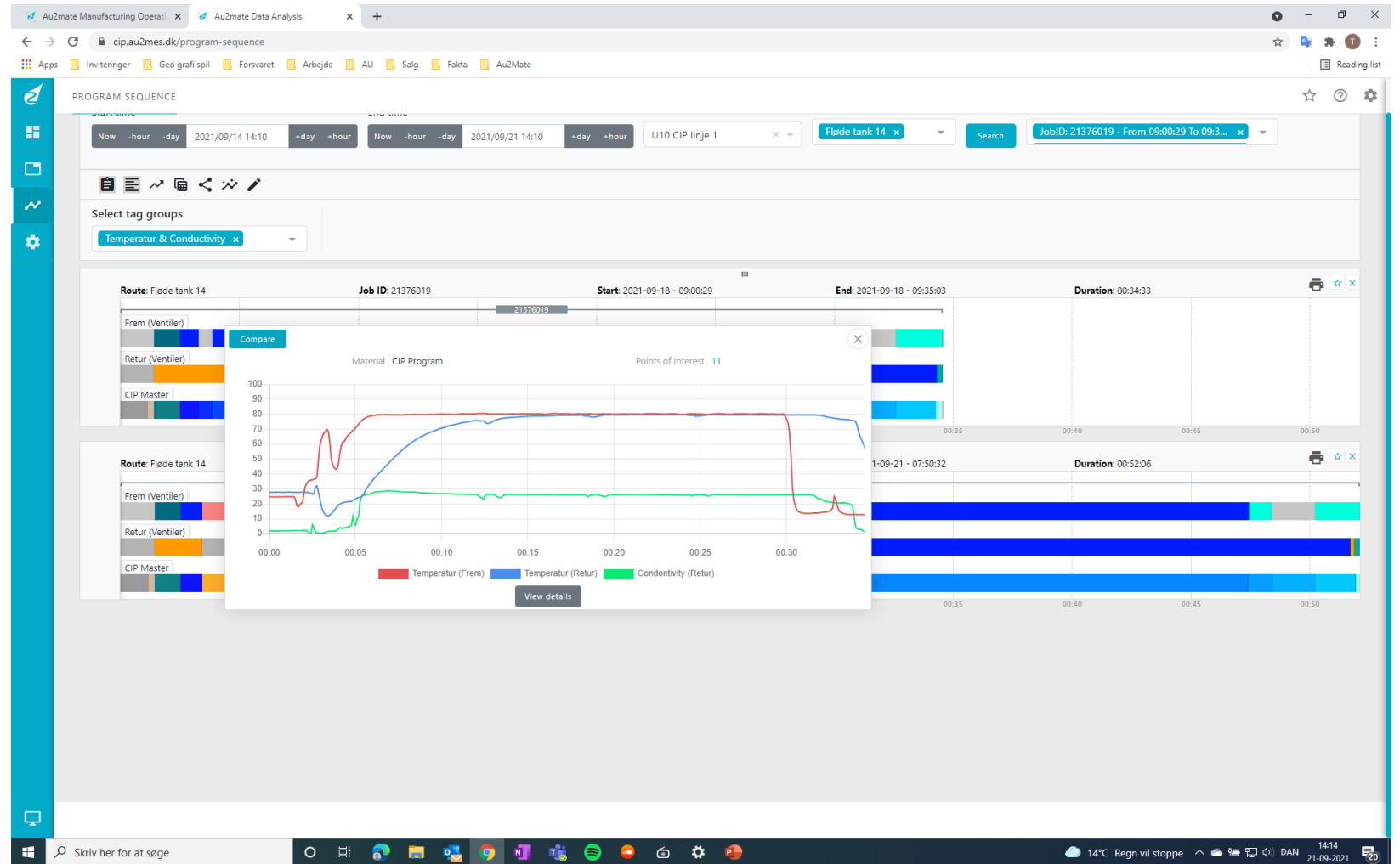
The screenshot shows the Au2mate Data Analysis interface. The table displays production data for three jobs. The 'Duration' column for the 'Golden batch' (Job 21382016) is circled in red.

Job	Route	Start	End	Duration	Trendview
> 21374018	Fløde tank 14	2021-09-16 - 06:34:14	2021-09-16 - 07:09:25	00:35:11	<input type="checkbox"/>
> 21376019	Fløde tank 14	2021-09-18 - 09:00:29	2021-09-18 - 09:35:03	00:34:33	<input type="checkbox"/>
> 21382016	Fløde tank 14	2021-09-21 - 06:58:26	2021-09-21 - 07:50:32	00:52:06	<input type="checkbox"/>

- Analyze details to find deviations
- Visual presentation makes overview of data easy
- - and identification of deviations in states simple

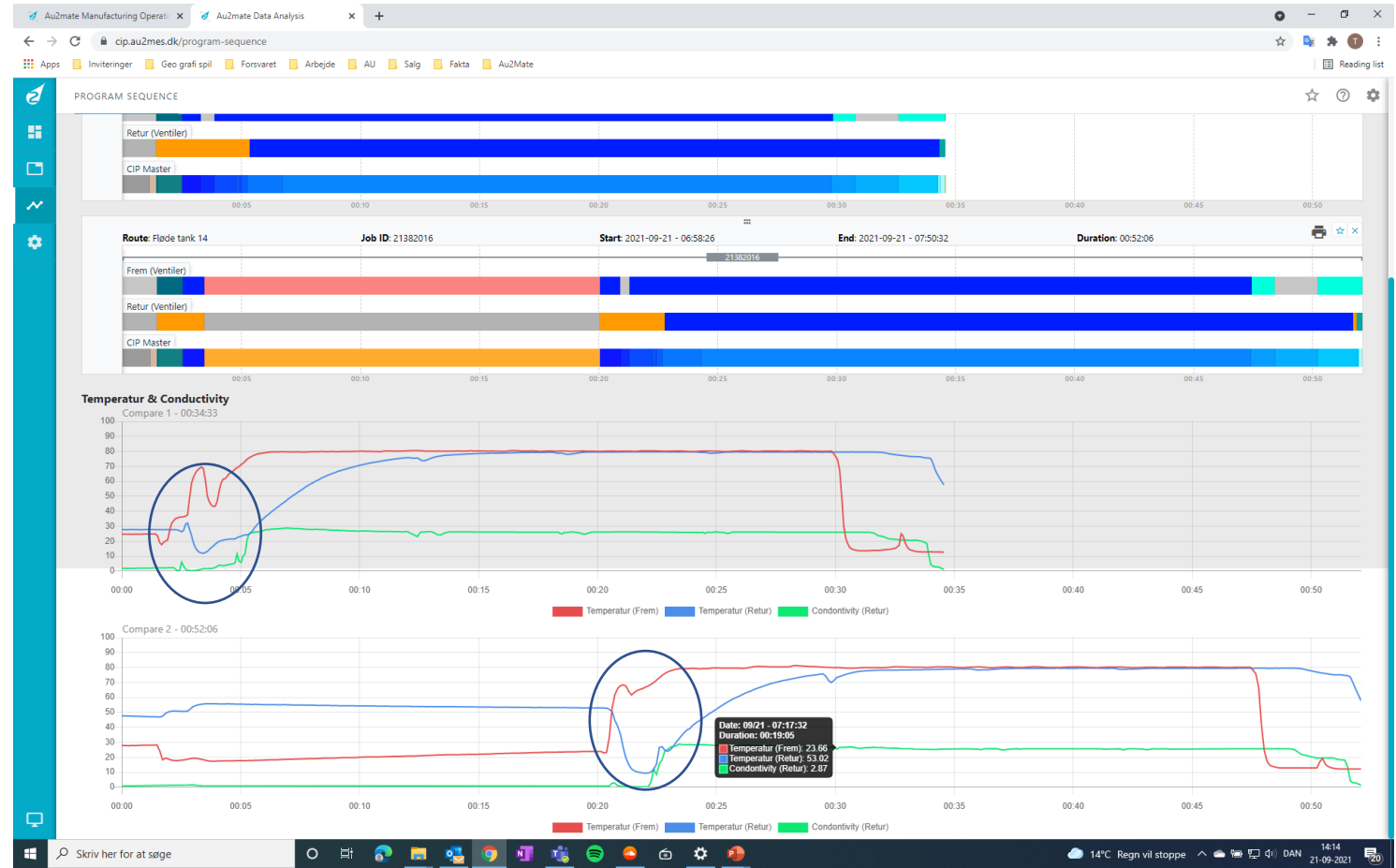


- Next step of analysis could be development in parameter values
- Does e.g. Temperatur & Conductivity perform as expected – and required?

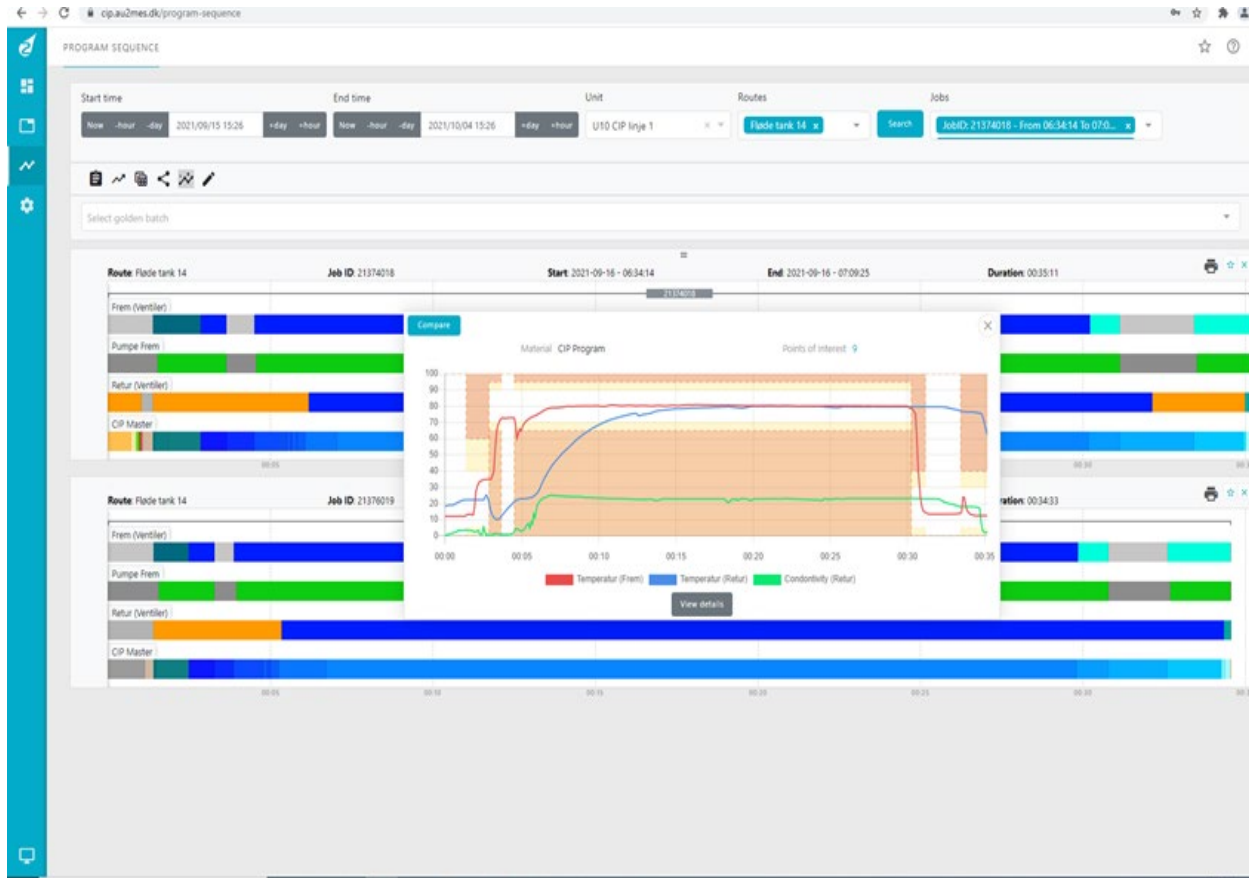


Optimize parameters against “Golden Batch”

- Compare parameter values to “Golden batch”
- Identify optimization potential

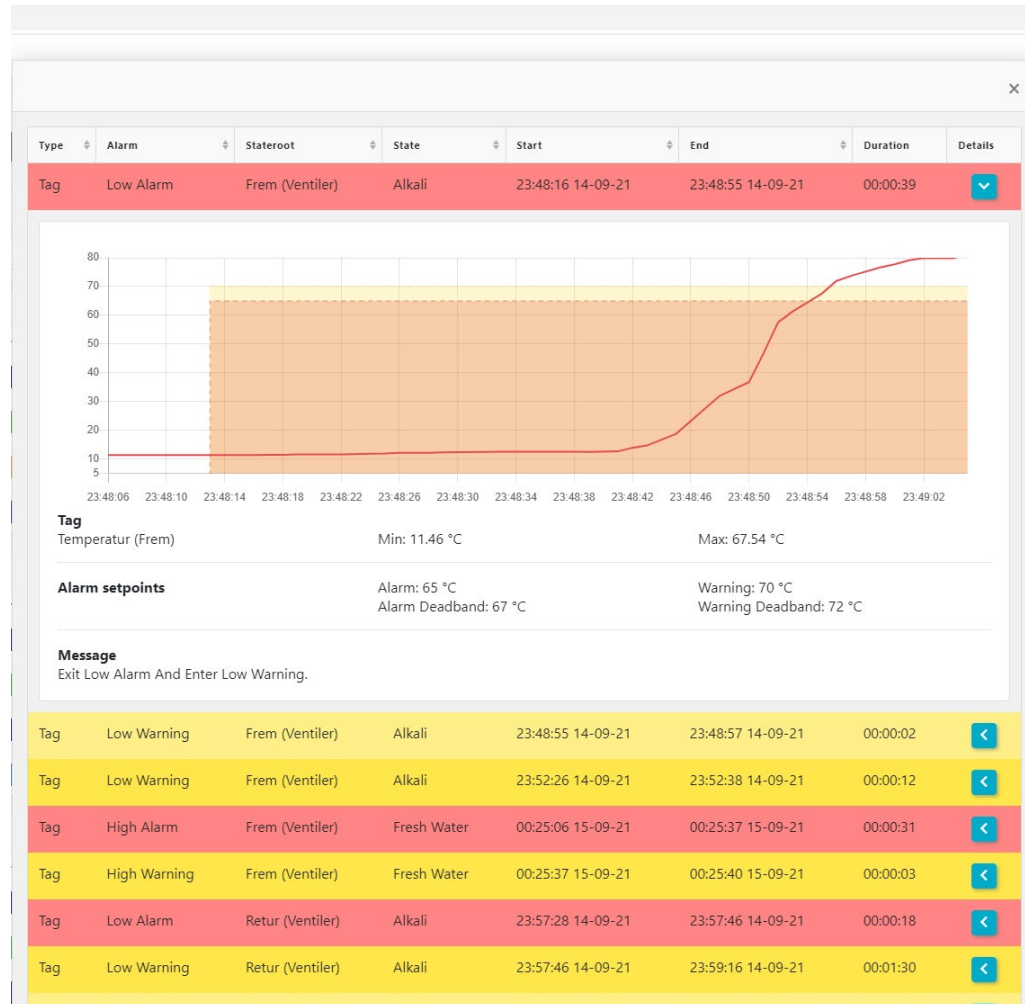


Use set-points to optimization



- Define set-points, deadbands, and Upper and Lower Control Limits
- Optimize limits to different stages in the process
- Monitor development in parameters values to identify need for early correction
- Monitor both X and Y-axis

Points of interest



- View the individual deviations from deadbands – points of interest
- Identify rootcauses
- Define actions and optimize

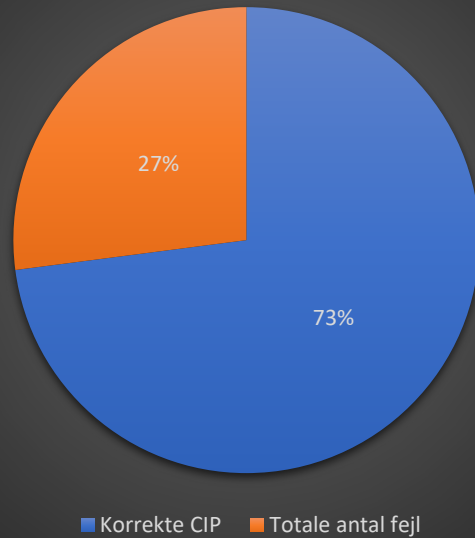
Optimize CIP – deep dive into potential

Our deep dive show that:

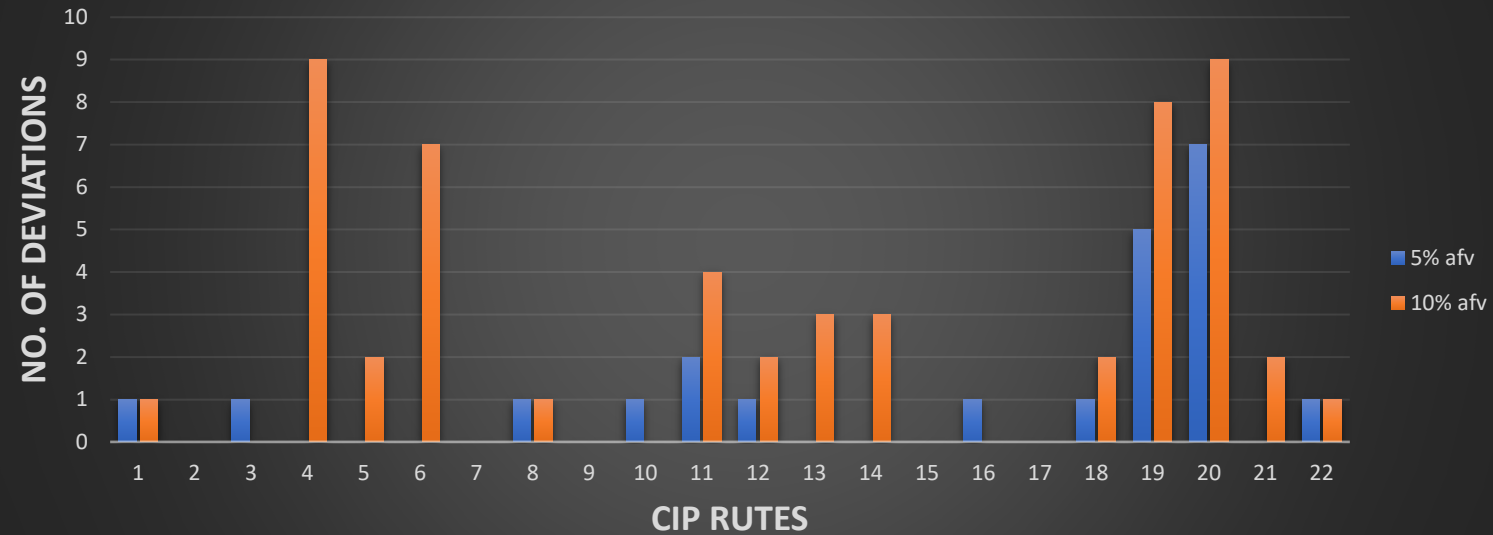
- In a 2-week period 27% of CIPs failed (76 of 281) in just one CIP line
- A failed CIP is defined as taking at least 5% longer than "Golden Batch" → lost production time, overuse of chemicals, water & energy
- Of the 76 → 22 CIPs was 5—10% too long
- And of the 76 → 54 CIPs was more than 10% too long



Failed CIP vs. Correct CIP



CIP line 1



Results for 1 CIP line

Estimated 38 hours of lost production time/month
&

Estimated 30.000 DKK/month in wasted resources (Water, Chemicals, Energy)

Why look into data on CIPs

1. Utilize data 
2. Create insight 
3. Save time & money 
4. Data based decisions  
5. Identify bottlenecks in the production 
6. Get a common view of performance from management to operational level 

- If you would like to hear more
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