

TrendMiner Live Training Session

From data points to decisions:
Advanced scatter plot analysis



Housekeeping



Listen Only
Mode



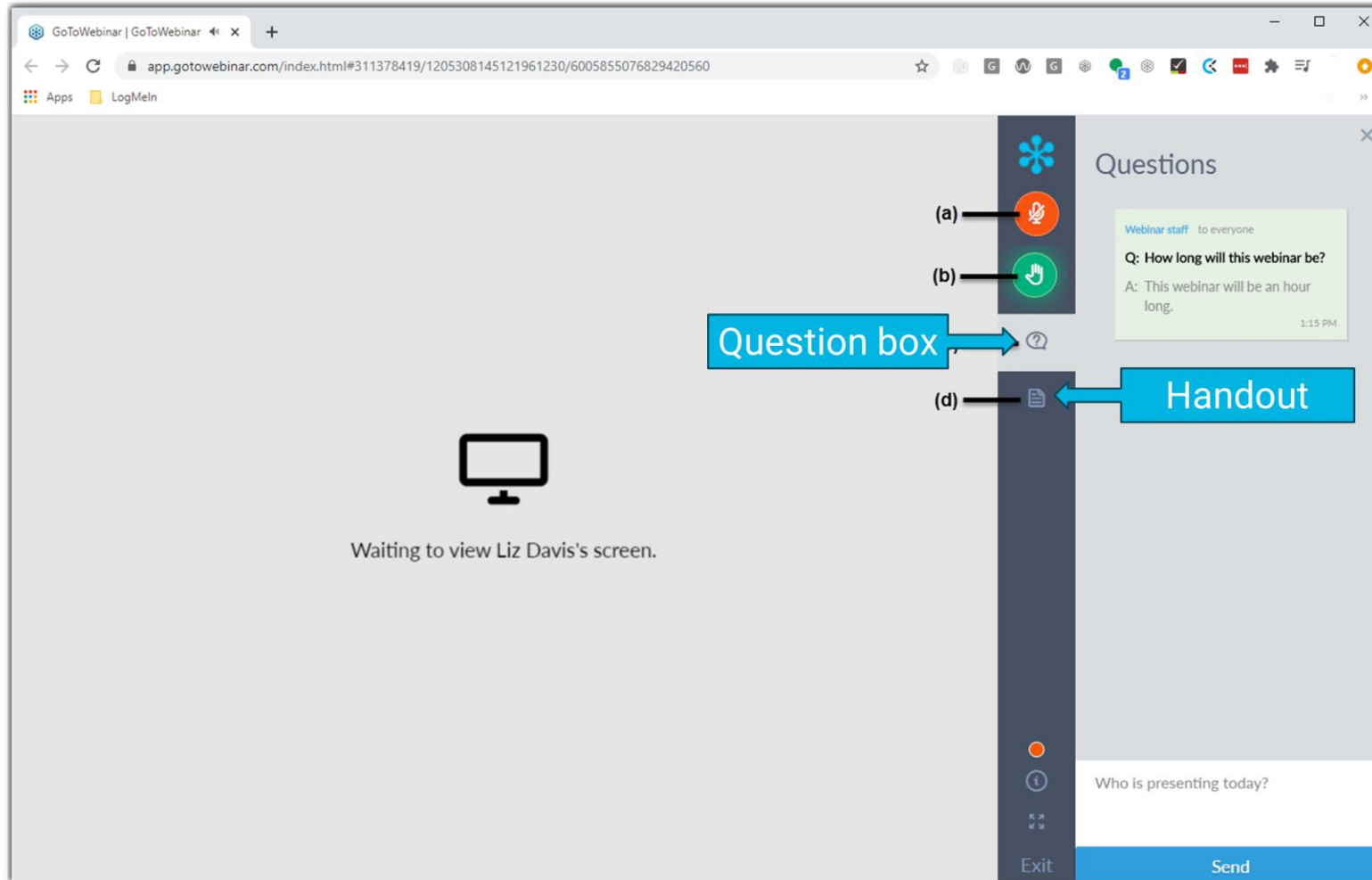
Use Question Box!



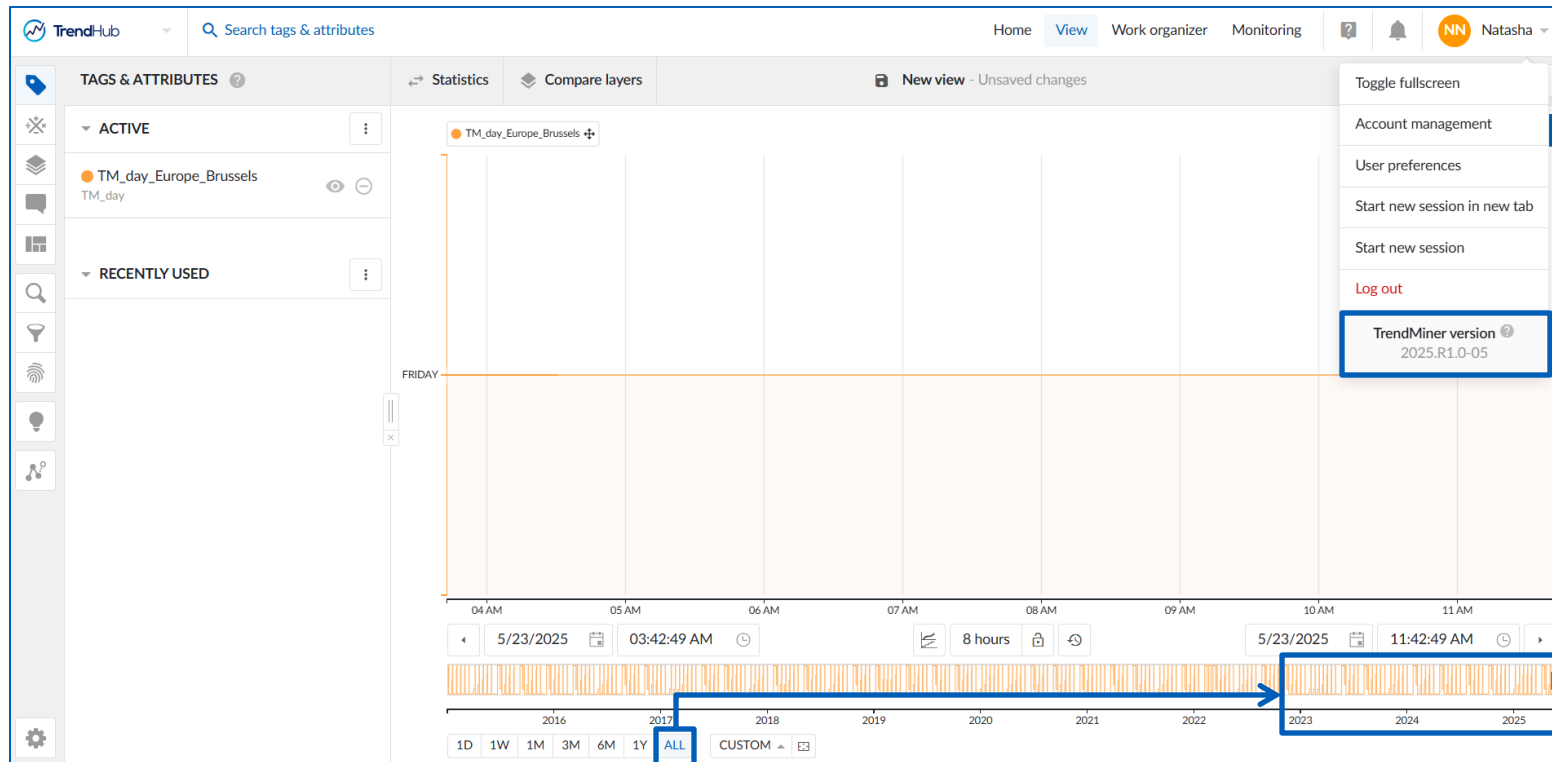
Recording and
Handout will be
provided!

Online training includes exercises.
You may log in to your own TrendMiner account using Firefox or Chrome if possible.

GoTo Webinar – Question box & handout



Do you need a training account?



2 After clicking on "ALL", your data will be available until at least 01.01.2024.

1 ✓ 2 ✓ You can complete this training with your own account.

1 Version 2025.R3 or newer

✗ If one of the requirements is not met, ask for an account in the question box.

Introduction & Today's goals

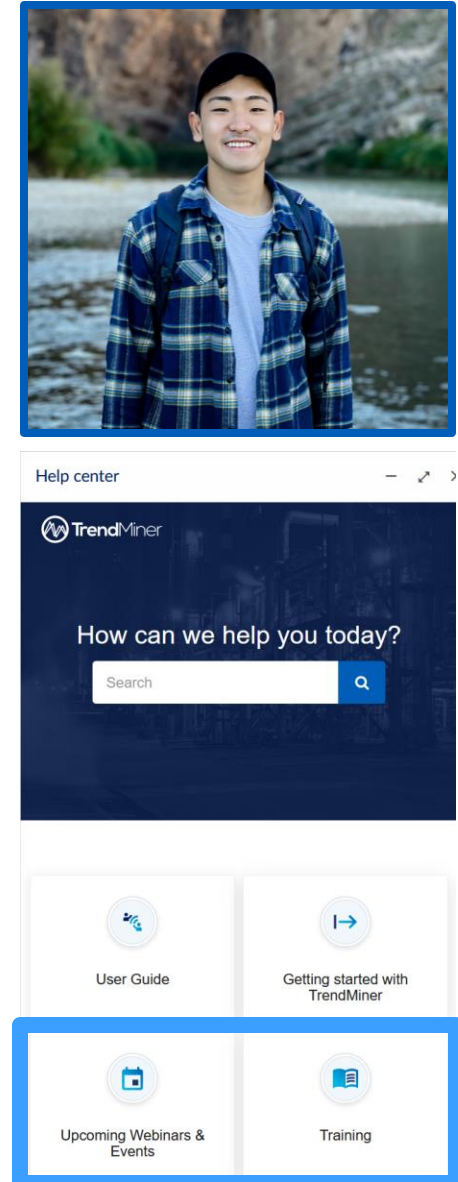


Kevin Li, Data Analytics Engineer

- Support customers reaching value with self-service analytics
- Tackling more advanced use cases
- Support users in their analytics journey

POLL about the users:

What is your current level of TrendMiner knowledge?



Today's goals

1. Scatter plots introduction

- Application Enhancements

2. Exercise 1 – Operating area analysis: Detecting heat exchanger fouling

- Identify operational areas with and without fouling using flow pump and differential pressure tags
- Search for time ranges outside the defined operating area and set up a monitor

3. Exercise 2 – Regression lines and limit curves for heat exchanger analysis

- Use two heat exchanger tags to create a scatter plot view
- Configure regression type and draw lower and upper limit curves

4. TrendMiner solution

- Take your analysis one step further – Automated operating area monitoring

Scatter plots introduction

Scatter plots

Application Enhancements

- 2025.R2: Upgrades in terms of data resolution, regression options and reference lines
- 2025.R3: Extended coloring options



Exercise 1 – Operating area analysis: Detecting heat exchanger fouling

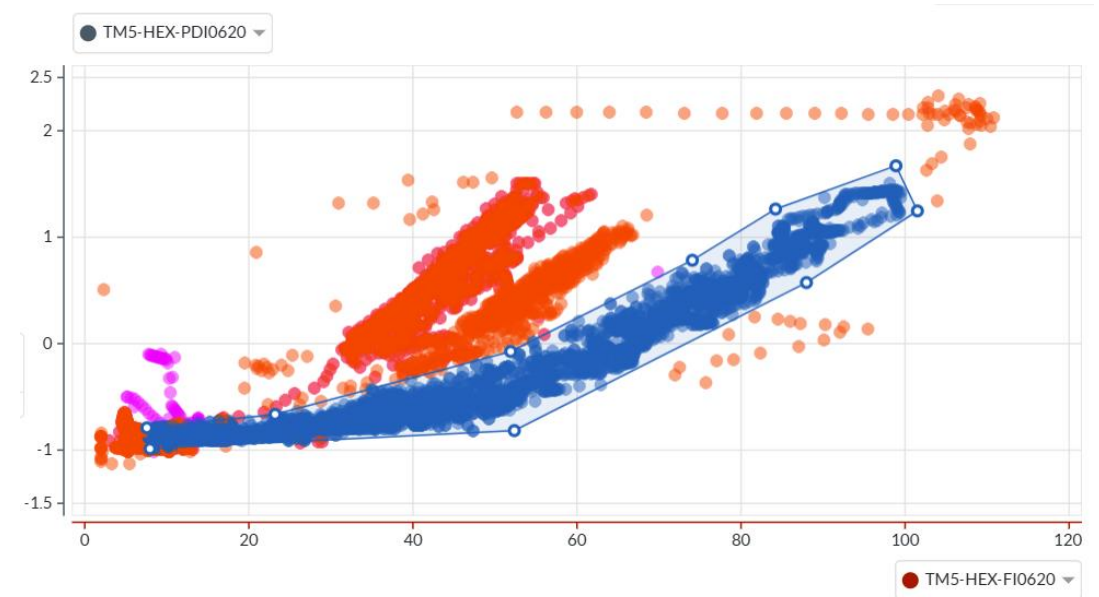
Operating area analysis: Detecting heat exchanger fouling

Background:

- Heat exchanger performance can degrade over time due to fouling, which causes measurable shifts in key process variables such as flow rate and differential pressure.
- By analyzing the relationship between these variables, distinct operational areas – before and after cleaning – become visible, enabling a data-driven approach to condition monitoring.

Goals:

- Define a normal operating area based on a clean reference period and search for time ranges that fall outside this boundary.
- Set up a saved search and monitor to automatically detect future deviations from the expected operating behavior.

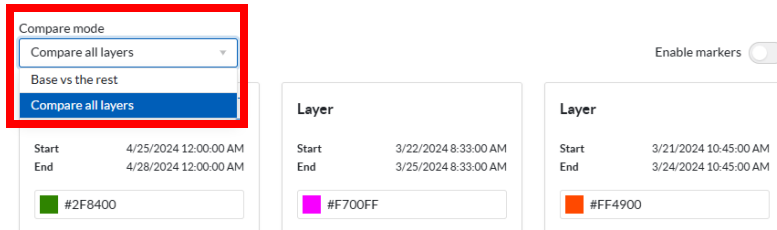
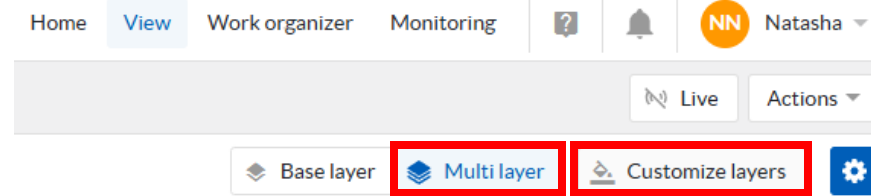


Operating area analysis: Detecting heat exchanger fouling

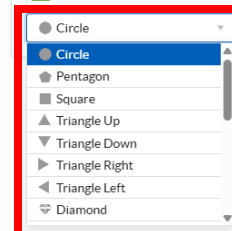
1.	Load tags	TM5-HEX-XI0620 TM5-HEX-FI0620 TM5-HEX-PDI0620	
2.	Set custom context chart	3/20/2024 12:00:00 AM – 6/19/2024 12:00:00 AM	
3.	Set focus chart	4/21/2024 12:00:00 AM – 4/28/2024 12:00:00 AM	
4.	Switch focus chart type	Select chart type: Scatter Select the scatter plot of flow and differential pressure → Notice the two operating zones that exist for the process.	
5.	Set focus chart	4/25/2024 12:00:00 AM – 4/28/2024 12:00:00 AM	
6.	Draw area	Draw area around operating area (single click to start, double click to stop drawing)	
7.	Perform an operating area search	Region	Outside the drawn area
		Minimum duration	12 hours (12h)
8.	Analyze search results	Add layers	
9.	Save the search	As “Heat exchanger fouling”	
10.	Enable a monitor	Monitor future non ideal operating conditions based on saved search	

Operating area analysis: Detecting heat exchanger fouling

You have the option to customize your layers



Cancel Apply changes



Cancel Apply changes

Exercise 2: Regression lines and limit curves for heat exchanger analysis

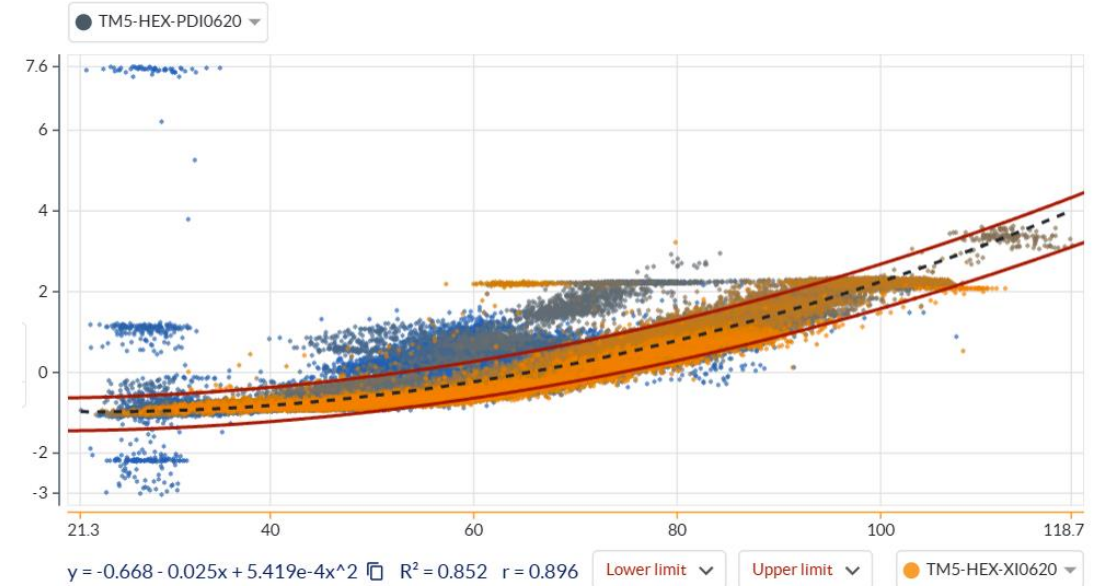
Regression lines and limit curves for heat exchanger analysis

Background:

- Heat exchangers involve multiple interdependent process variables (e.g., temperatures, flow rates, pressures) that are best understood in relation to each other rather than over time alone.
- TrendMiner's scatter plot view allows engineers to visualize correlations between two tags, making it easier to detect deviations from expected operating behavior.

Goals:

- Create a scatter plot view using heat exchanger tags and configure the regression type.
- Define normal operating boundaries by drawing lower and upper limit curves in the Scatter view.



Regression lines and limit curves for heat exchanger analysis

1.	Continue from exercise 1	Remove TM5-HEX-FI0620		
2.	Set focus chart	3/20/2024 12:00:00 AM – 6/19/2024 12:00:00 AM		
3.	Switch focus chart type	Select chart type: Scatter Make sure TM5-HEX-XI0620 is set as the x-axis		
4.	Change scatter regression type	Type	Polynomial	
		Degree	2	
5.	Draw curves	Formula: $-1.3 - 0.015x + 4.4e-4x^2$	Description: "Lower limit"	Color: Red
6.	Add regression lines	You can copy the formula and adjust the intercept (e.g., -0.5 instead of -1.3) or add a value (e.g., +1).		
7.	Save the view	As "Relational view heat exchanger variables"		

Regression lines and limit curves for heat exchanger analysis

Regression line types and coloring options

Pro tip



Multi layer Color by time ⚙️

Grid lines

Correlation

Histograms

Chart label Alias

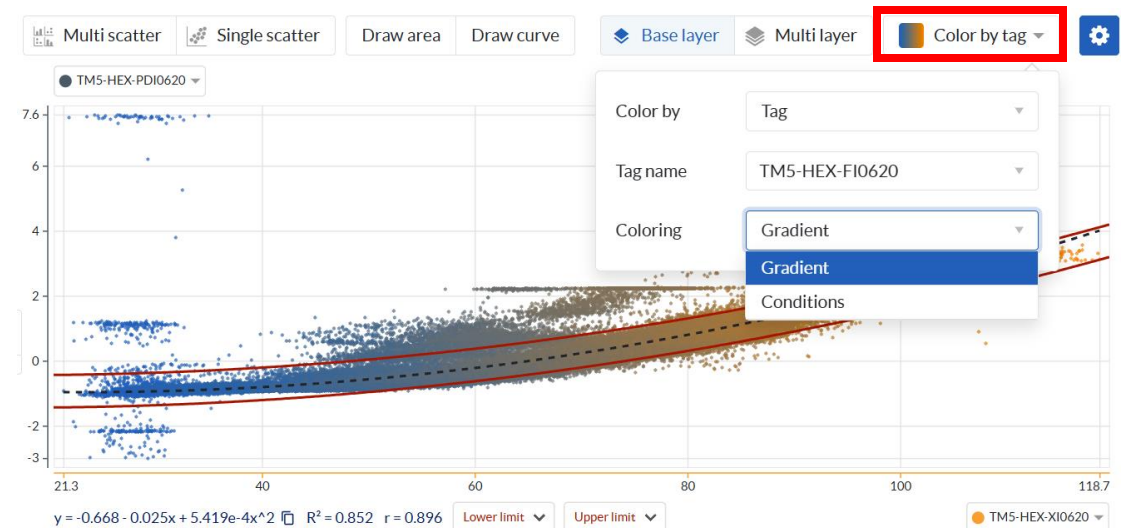
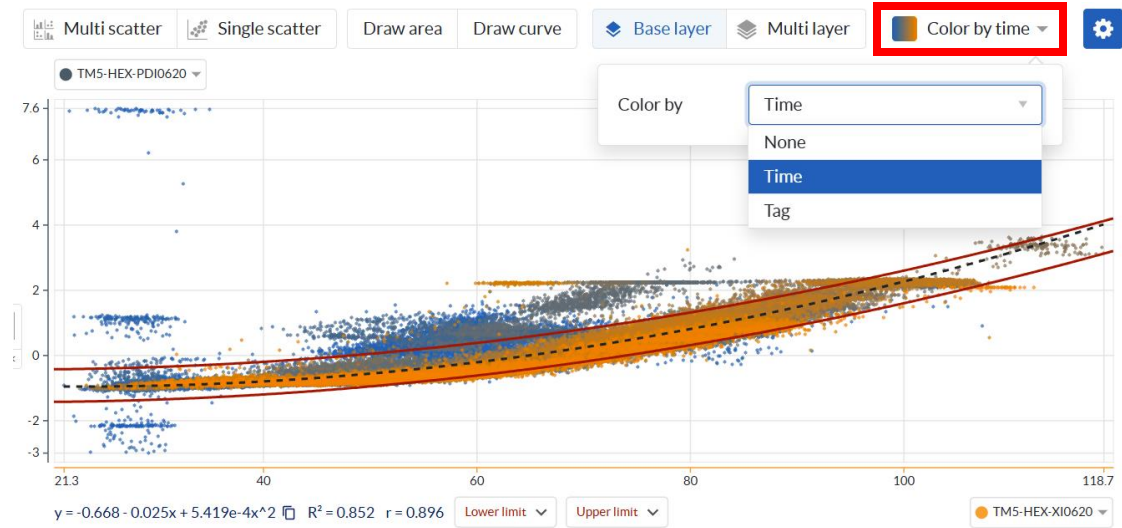
Single scatter regression

Type Polynomial

Degree

Set y-intercept to zero

- None
- Linear
- Logarithmic
- Polynomial**
- Power
- Exponential



TrendMiner solution

Automated operating area monitoring

Automate cross-asset rollout of operating zone detection

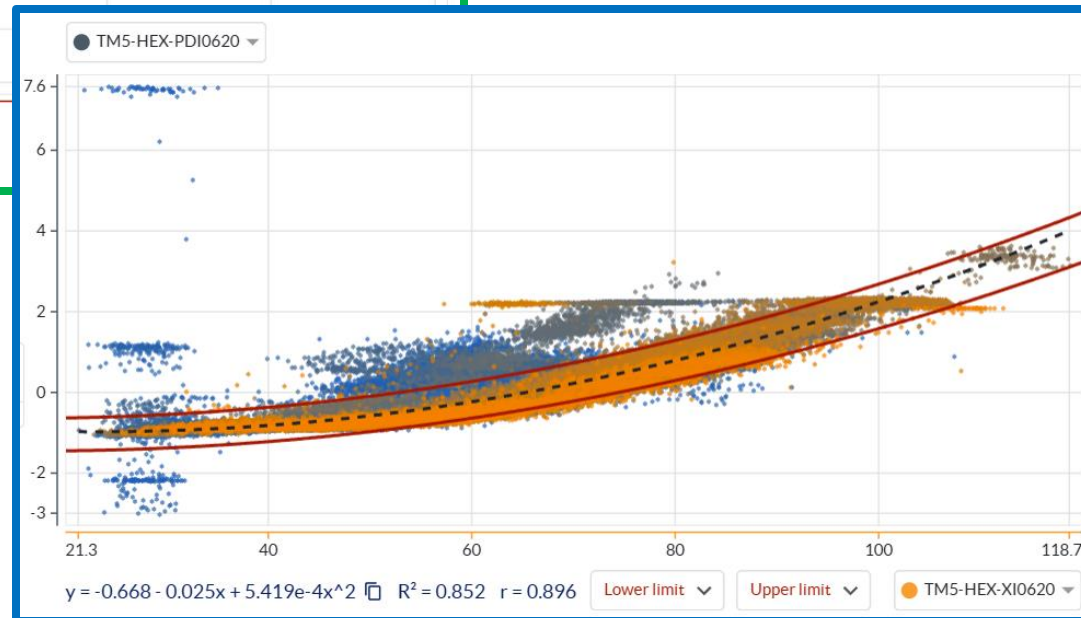
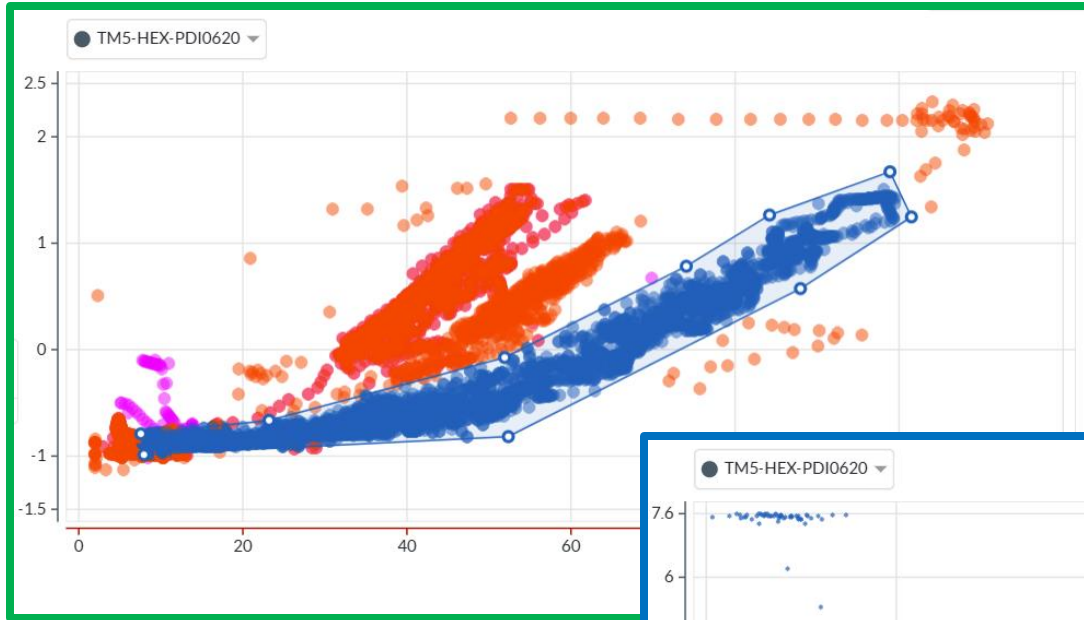
- Ideal operating zones
 - Energy efficiency
 - Pump curve specifications
- Condition-based maintenance
 - Energy efficiency
 - Failure prevention
- Drift detection
 - Sensor drift
 - Setpoint deviations

	SGC A	SGC B	SGC C	SGC D	SGC E	SGC F	SGC G	SGC H	SGC I	SGC J	SGC K
Temperature	✓	!	✓	✓	✓	✓	✓	✓	✓	✓	✓
Rotations	✓	!	✓	✓	✓	✓	✓	✓	✓	✓	✓
Energy	✓	✓	✓	!	✓	✓	✓	✓	✓	✓	!
Recycle										✓	✓



Wrap-up

Wrap-up



- Define normal operating areas and search for deviations
- Automate detection with a saved search and monitor

- Visualize tag correlations in a scatter plot
- Define expected behavior using regression lines and limit curves

TRENDLAB 2026



Europe
Eindhoven, NL



Americas
Houston, USA

Registration Link:

<https://community.trendminer.com/p/trendlab>


Do you want to learn more?

Intermediate Guides & Live Training Webinars

Here you can find the Intermediate Guides:

User Guide / Training / Intermediate Guides

Intermediate Guides




In this section

- Get your process statistics (Int)
- Detect, warn & contextualize anomalies and process events (Int)
- Create your actionable dashboard (Int)
- Trouble shooting (Int)
- Create your own KPIs and Variables (Int)

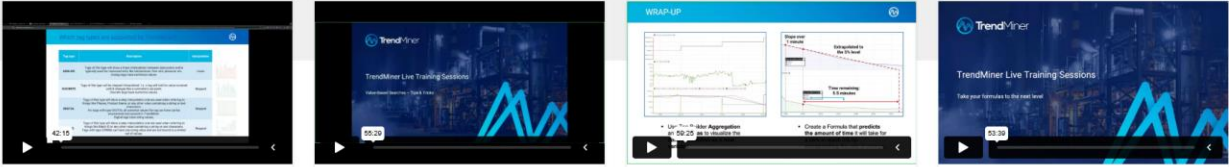
<https://userguide.trendminer.com/en/intermediate-guides.html>

Here you can find all Live Training Webinars from the past years:

Live trainings - English



1 - 12 of 40 Tollen



- Mastering Tag Types in TrendMi...
- Value Based Searches – Tips & ...
- Advanced Formulas
- Take Your Formulas To The Next ...

<https://vimeo.com/showcase/8476721>

Create your account now: <https://community.trendminer.com>

The screenshot shows the TrendMiner Community homepage. At the top, navigation links include TrendMiner, Community, Product Ideas, News, Events, Groups, and TrendLab. A search bar is prominently displayed in the center. Below the search bar are five main action buttons: Ask a Question, Share an Idea, Join Events, Provide Feedback, and Check Use Cases. A 'Content by Role' section on the right offers filters for TrendMiner User, Admin / IT, and Project Manager. A callout box on the left points to the search bar, and another on the right points to the login/sign up button. A third callout box at the bottom right points to the role selection buttons.

Share your Product Ideas or vote for other ideas

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Check Use Cases

Content by Role

TrendMiner User

Admin / IT

Project Manager

Shams92 Pioneer · Asked in Questions & Answers

Re-sync context items in bulk

Hello, we are working on a use case where we would like to do a re-sync of historic items for a longer period. To go via the interface for such a long time or performing a full historic sync don't...

4 hours ago



**Thank you for your
attention**