

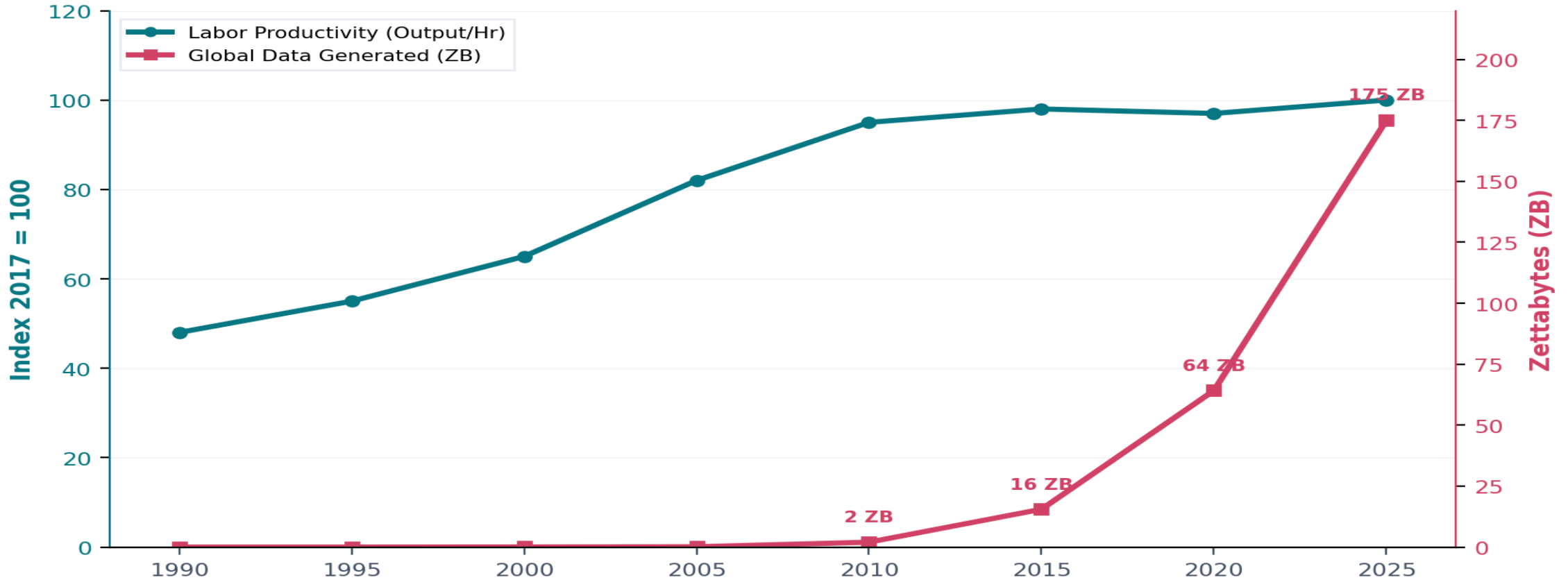


**ODEN**  
**TECHNOLOGIES**  
Operational AI for Manufacturing



# Labor Productivity is Flat & Data Has Exploded

Manufacturing Labor Productivity (Output/Hr) vs. Global Data Generated (ZB)



Sources: U.S. Bureau of Labor Statistics (FRED), IDC Global DataSphere, Statista, Hilbert & López (2011)



# Front-Line Challenges



1 CAD? 9H: =LO=F =PH=JAF; =<  
GH=J9LGJK9F< F=O @A=Kخ



- HLA RAF? DF=KH=< 9F< => AAF; Q  
J=DAKGF ?MLAFKLF; Lخ



&ALGJA,9DCFGOD<?= AKIOKLO@=F  
KCAD< GH=J9LGJKD9N=خ



&A@a>JGFLD=; @MF =I MDX; GFKL9FL  
GF: G9J<AF? 9F< LJ9AAF?خ



# Humans Alone Don't Have the Capacity to Leverage Massive, Dirty Manufacturing Data



Disorganized



Siloed

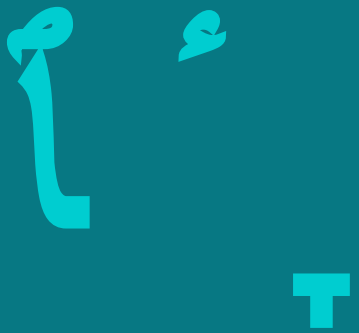


Inaccurate



Stuck in  
the past





of manufacturers are **maintaining or increasing investment** in industrial transformation (IX)



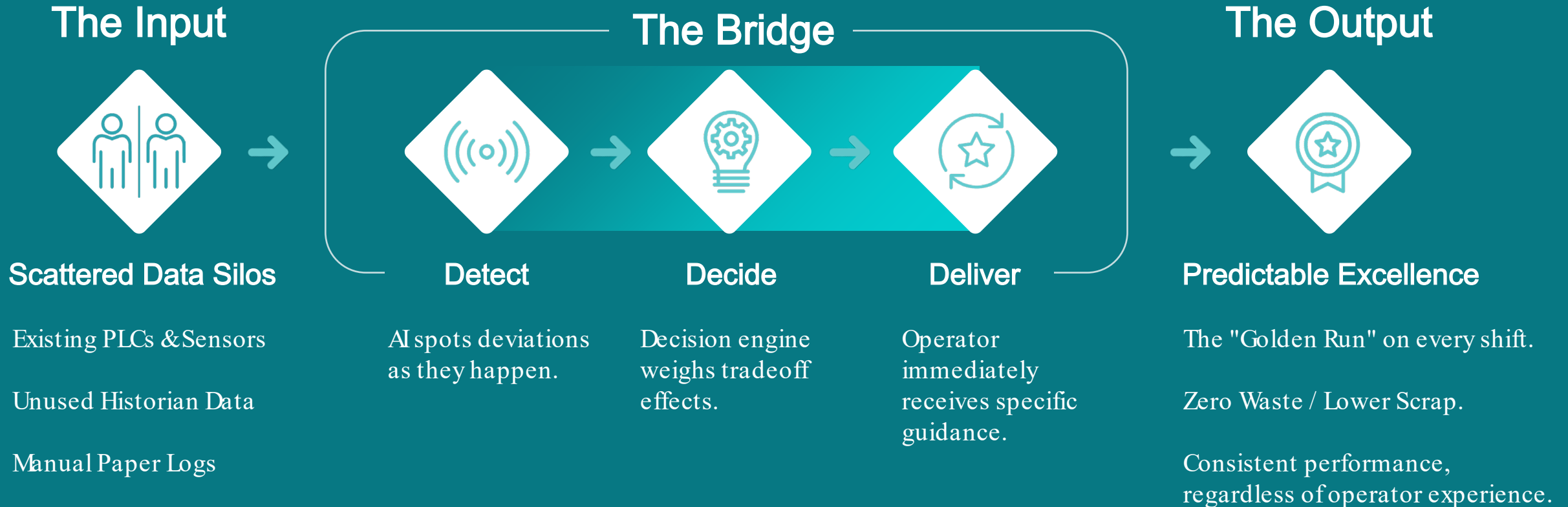
of IX leaders are **investing in AI/ML**

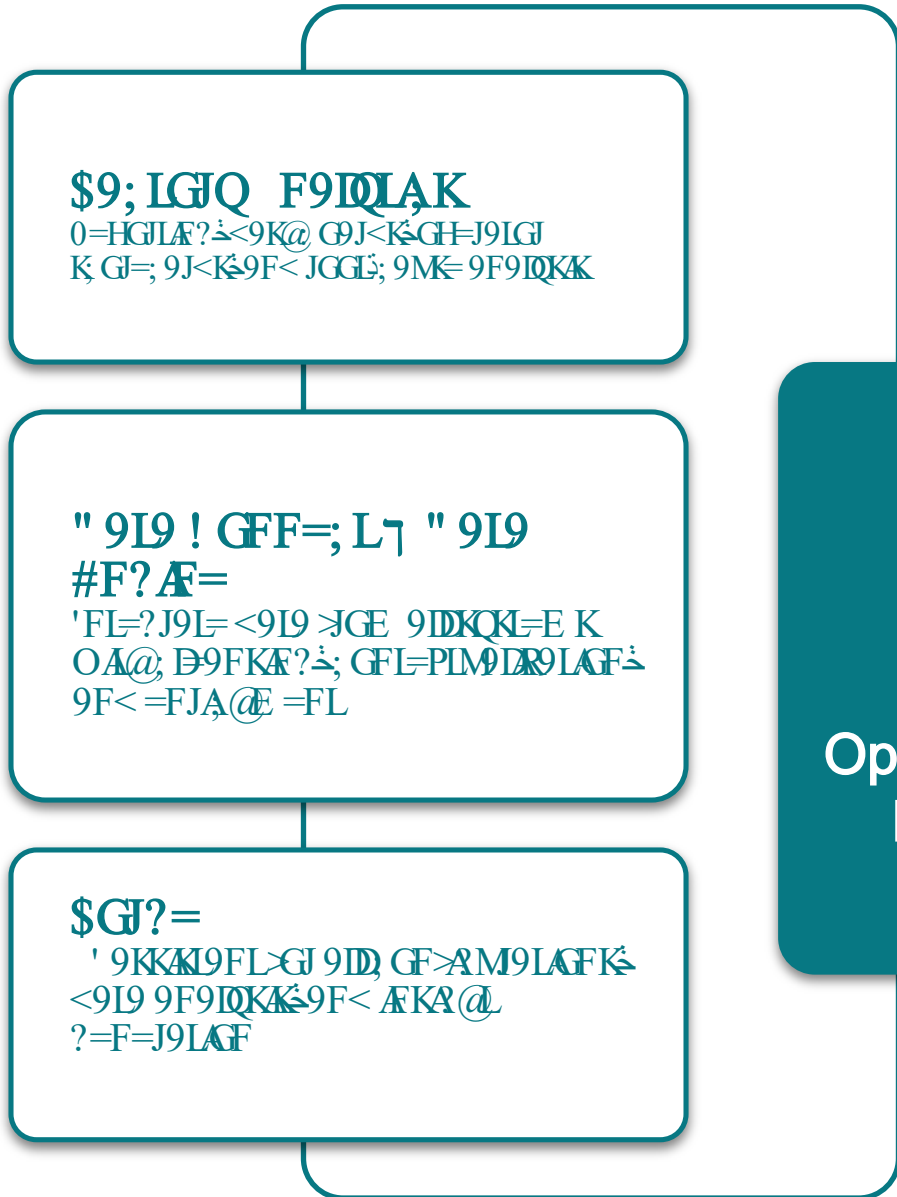


how much more likely industry leaders are to be **investing in real-time data for the front line** vs. laggards




# Introducing Oden.io






## Composable Capability Layers


. 9IL=JF " =L=; LAF

 **FGE 9IQ" =L=; LAF**  
 . 9IL=JF>; 9K<< <=L=; LAF G>9: FGJE 9D  
 HIG; =KK: =@NGJ


. JG; =KK- HLA A9LAF

 **. JG; =KK '**  
 0=9DLA =HIG; =KKJ=; GE E =F<9LAFK>GJ  
 GH=J9IGJK

5 GIC'FKJMLAFK

 **) FGOB<?= '**  
 'FL=DR=FLOGICAKJMLAFK>GJ GH=J9IGJK

MGE 9LAF 7 - J; @KJ9LAF

 **5 GIC>DOK**  
 ! GG<AF9L=9F< 9MGE 9L=9; LAFK9; JGKK  
 H=GH> 9F< KQK=E K



\$JGFL\* A= \$G, MK

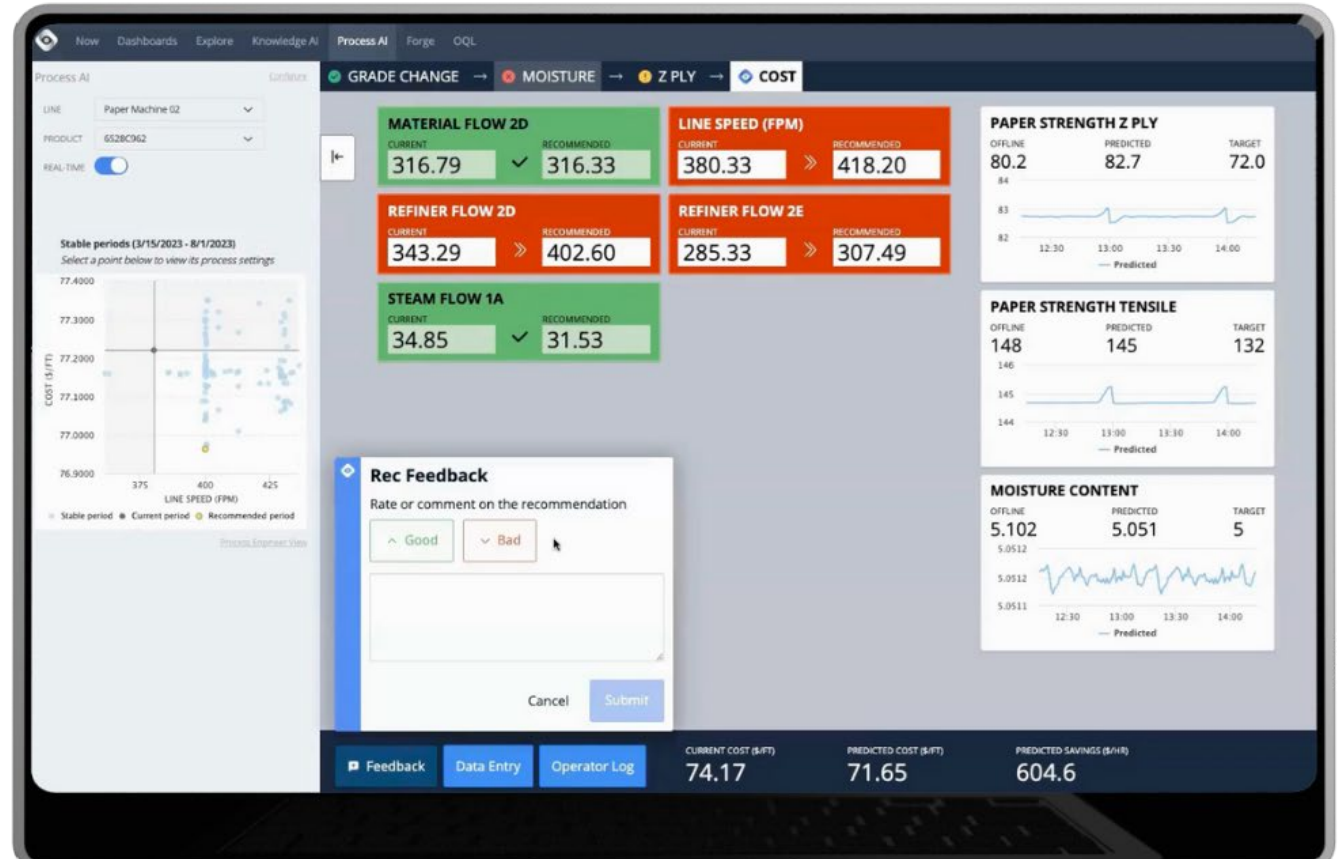
Live  
Visibility



Dynamic  
Guidance



Predicted  
Outcomes



# Process AI: Real-Time & Predictive Optimization



. 9JLAD 1A= NK1H=<

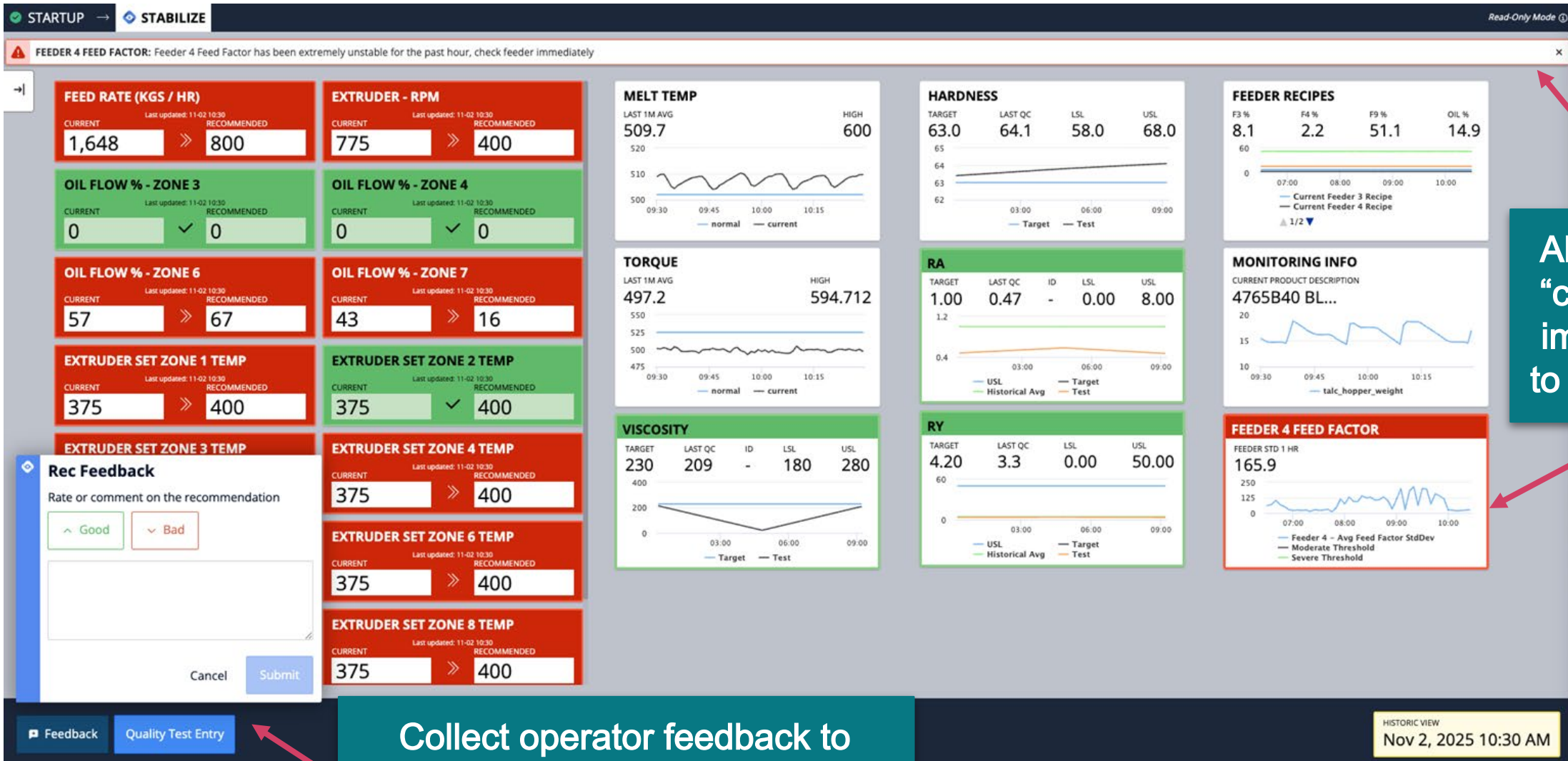
0=; GE E =F<9LAGFK9J= ; GF>AM=< IG A; J=9K= KH=< 7 J=<M= H9JLAD KR= O@D E 9A19A A? I MDAQ KH=;

. J=<AIA= I MDAQ ADF= I MDAQE GFAGJA? <JAF? KI9: D H=JAG<K7 J=; GE E =F<9LAGFK

09L= A; J=9K= ; 9HIM=< A J=9DLA =



# Anomaly Detection + Process Recommendations



Alert message  
"check feeder  
immediately"  
to direct action

Collect operator feedback to  
validate alert/rec & confirm  
action



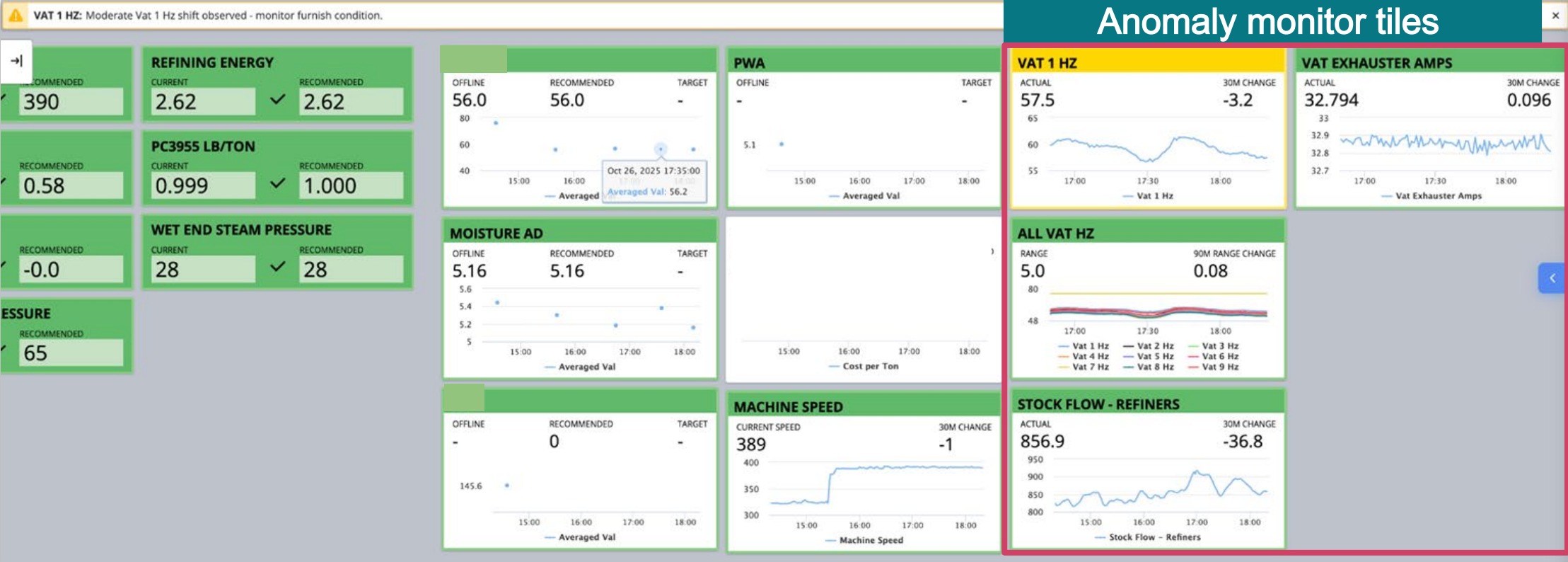
# Anomaly Detection + Process Recommendations

Alert message "Monitor Furnish Conditions" to direct action

**ALERT** Vat Hz Alarm

**Email alerts**

Line	Message
#1 PM	Significant Vat 1 Hz shift observed - verify furnish condition and continue to monitor.



# AI-Driven Work Instructions

Deliver dynamic how-to instructions to operators, empowering anyone to have the domain knowledge of a 30-year veteran.

Task list organizes steps and connects them to time goals

Time Benchmarks and Stages provide goals

The screenshot shows a software interface for 'Line 6 - Extrusion'. At the top, there are navigation tabs: 'Now', 'Dashboards', 'Explore', 'Discover', 'Knowledge AI', and 'Labels'. Below the navigation, there are buttons for 'Unsubscribe' and 'Changeover Work Instructions'. The main content area is divided into four columns representing different stages and their time benchmarks:

FCM ORIFICE OPEN	SINGLE SCREW CLEANOUT	FCM CLEANOUT	TOTAL
4m 41s	15m 15s	59m 39s	1h 19m

Below this is a 'TASKS' list with ten items, each with a right-pointing arrow:

- Open the FCM
- Clean single screw
- Change status
- Clean the star valve
- Call bagging
- Clean the sifter
- Drain gala tank
- Drain pellet feed line
- Detach die head
- Clean the extruder

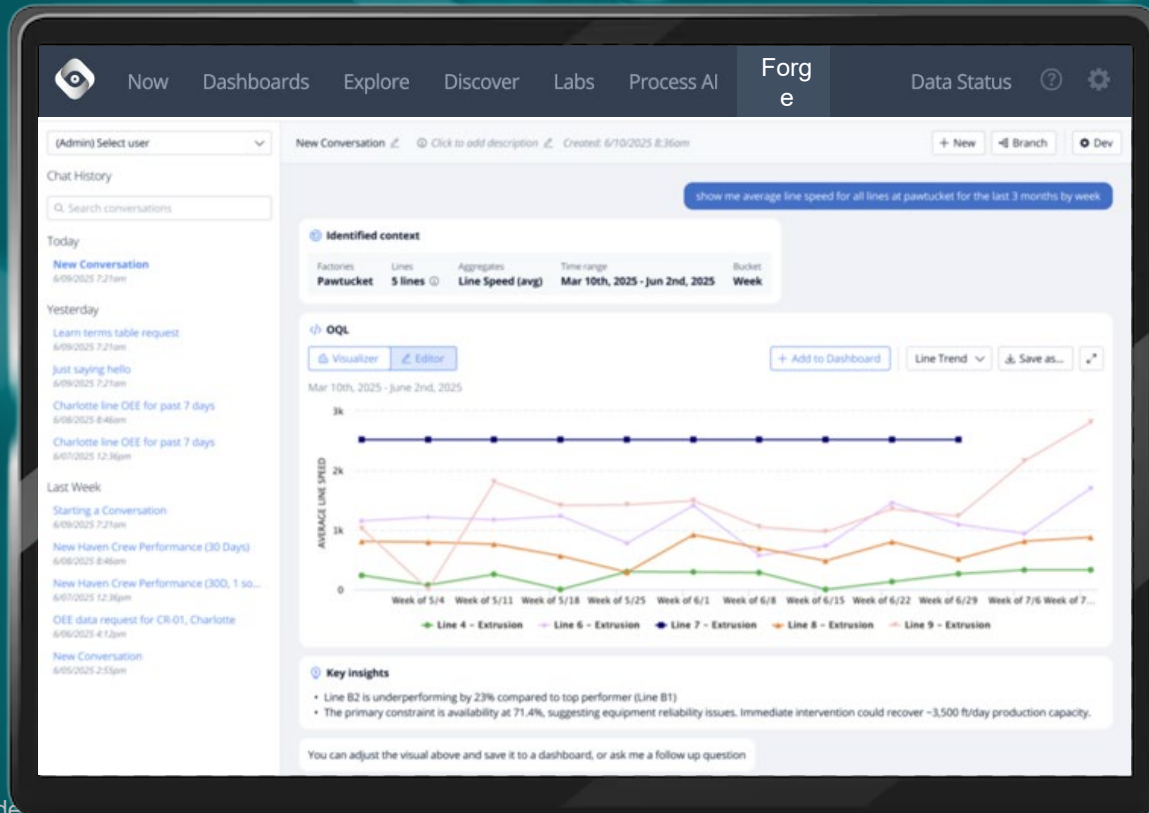
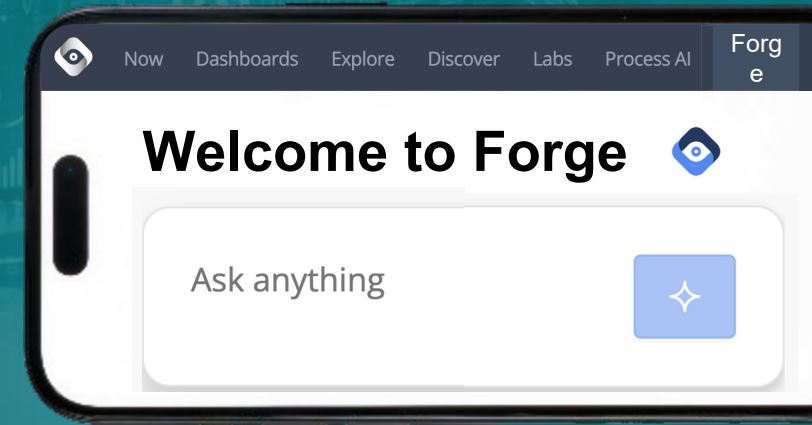
On the right side, there are two detailed instruction cards. The first card is titled '1 of 3' and contains the text: 'Once the blender operator calls and says that the blender is empty and your amps start to drop on the extruder, open the orifice all the way.' It includes an image of a control panel with two green buttons. The second card is titled '2 of 3' and contains the text: 'Pull the plug.' It includes an image of a mechanical component being pulled. A 'Next' button is visible at the bottom right of the second card.

Supporting imagery

Steps provided detailed instructions

# Forge

Agent-driven interface to perform data analysis, dashboarding, & complex data queries in seconds



## Native Access

Forge is native to the Oden platform, allowing you to quickly add new analysis to existing dashboards and reports in a single click

## Seamless Setup

Forge supports customer led configuration, allowing you to add new lines, recognize and label patterns, and adjust rule sets

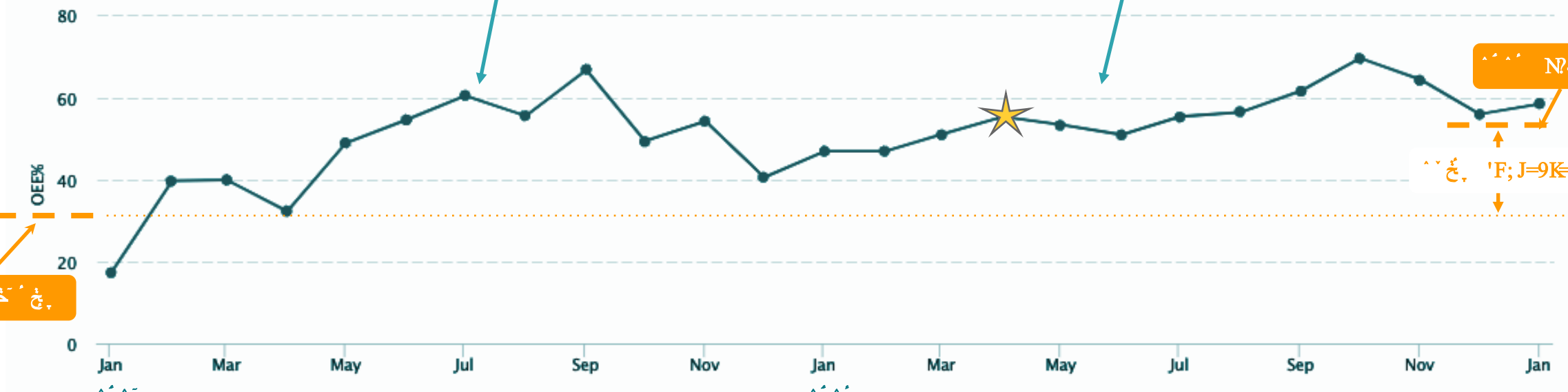


# +21.4% Increased OEE

## Ink & Chemicals PAI Case Study

OEE by Month Line Trend

Jan 1st, 2023 - Jan 16th, 2025 | Filters:



\$9; IGQ F9QIAKA=FLAA< ; 9M<K  
G>MF=; =KK9JQ<GOFLE =>  
A; J=9KF? 9N9A9: A&Q: Q ^ ^ ,

. JG; =KK ' HJGNA<= A; J=E =FI9D  
J=; GE E =F<9LAGFK<A=; IIOIGGH=J9IGJK  
IGA; J=9K= H=J>GIE 9F; =: Q ^ ^ ,

N?<^ ^ G^ ,

^ ^ G^ , 'F; J=9K=

N?<^ ^ G^ ,





## Partnership Impact



- ^  
- ##



پیل IG پیل  
JG<MLAF 1; @<M@



+  
\*: K <<=<



IG  
0=L=FLAG 09L=

## #N=FL- N=JNA=O

### What

- ❖ Behind the scenes plant tour, demos, and thought leadership discussions

### Why

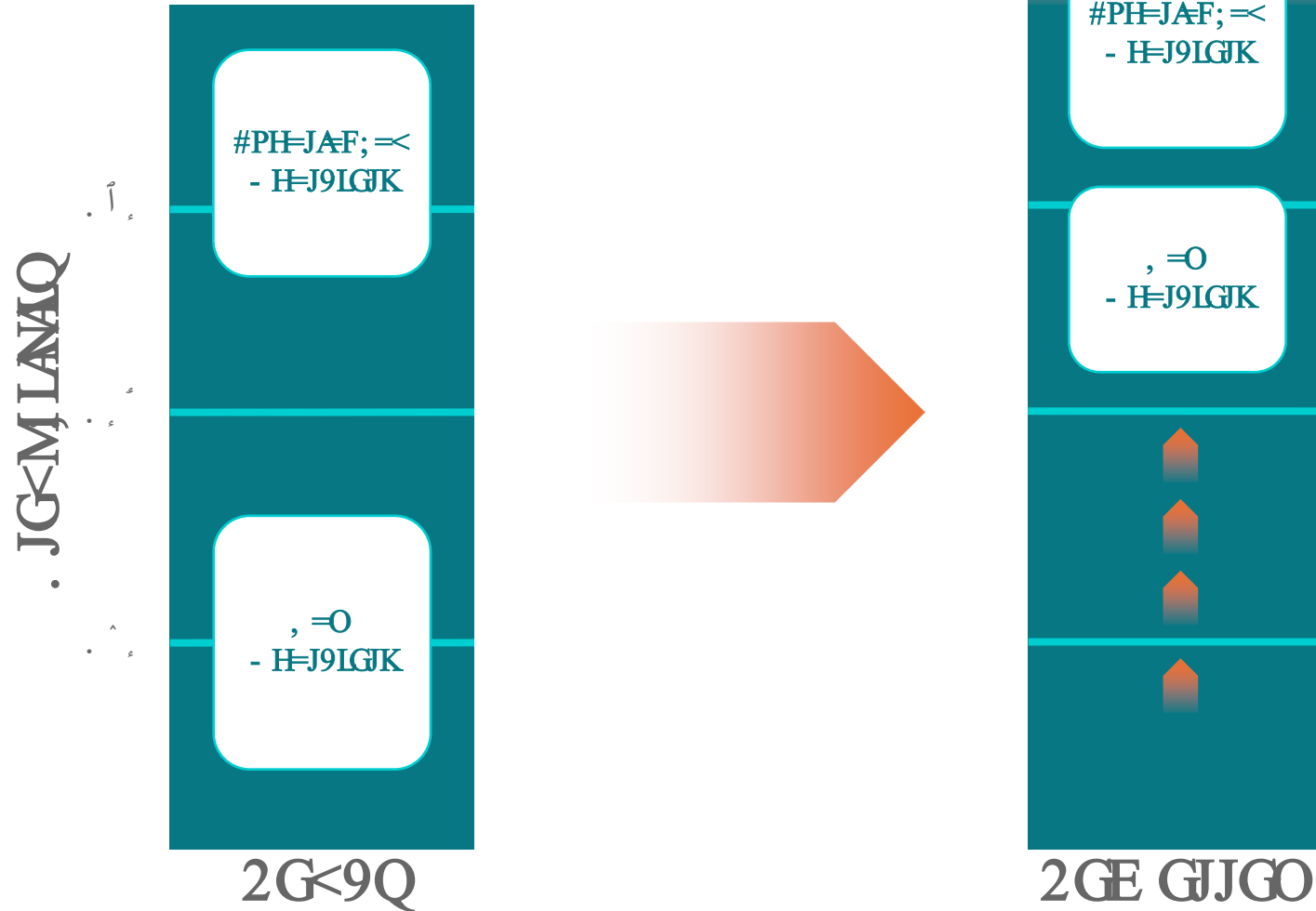
- ❖ See Industry 4.0 & AI-driven solutions in action

### Learn

- ❖ Approaches and best practices to drive change management from the plant floor to the C-Suite

April 8th and 9th | Charlotte, NC

# Bridging the Productivity Gap



# Why Oden



\$G, MK=< GF L@=  
\$JGFL\*Æ=

- H=J9IGJKJ=; =Æ=

<QF9E A

J=; GE E =F<9LAGFKAÆ

L@= E GE =FL<

'E E =<AL=

Æ HIGN=E =FIK@HH=F

E A<KaA<



2MFC=Q" 9L9  
#F? Æ=

" 9L9 <G=KF<L@N=LG: =

LAQGJ GJ?9FA<<

" 9L9 >JGE 9IDKQK=E KAK

MFAA<<; D9F=<<9F<

KJ=9E DÆ=<<



2Æ =<IG<49DAÆ

, GE GJ=LÆ =<9F<

J=KGM; =<; GFKME Æ?

HAGIK<

" =HIQQE =FL<=DA=JKN9DAÆ

OA@Æ< <9QK<



# Labeled, Contextualized Data as the Trusted Foundation

2Æ =K=JAK" 9L9 AKFGL=FGM @

√ 5 @L@JE =LJA : =@NGJ AKFGJE 9DGJ FGLAK; G<=H=F<=FLOA@GL@JN9JA: DK9F<  
; GFL=PLJL9L=

'FL=? J9L=< ; GFL=PL>JGE GL@=J KQKL=E KAKHJGF= LGE AK9D&FE =FL

√ 0=I MA=E =FLIG9D&F ; GFL=PLIGA&; J=9K=9; ; M9; Q

1 LADE AKK&? ; GFL=PL: =; 9MK=FGL=N=JQL@F? AK; 9HLM=<

√ " 9L9 \*9: =D&? AK; JAA9D9<<AA&F IG&E HJGN=; GFL=PL>9; ; M9; Q9F< @DI- H=J9IGJK

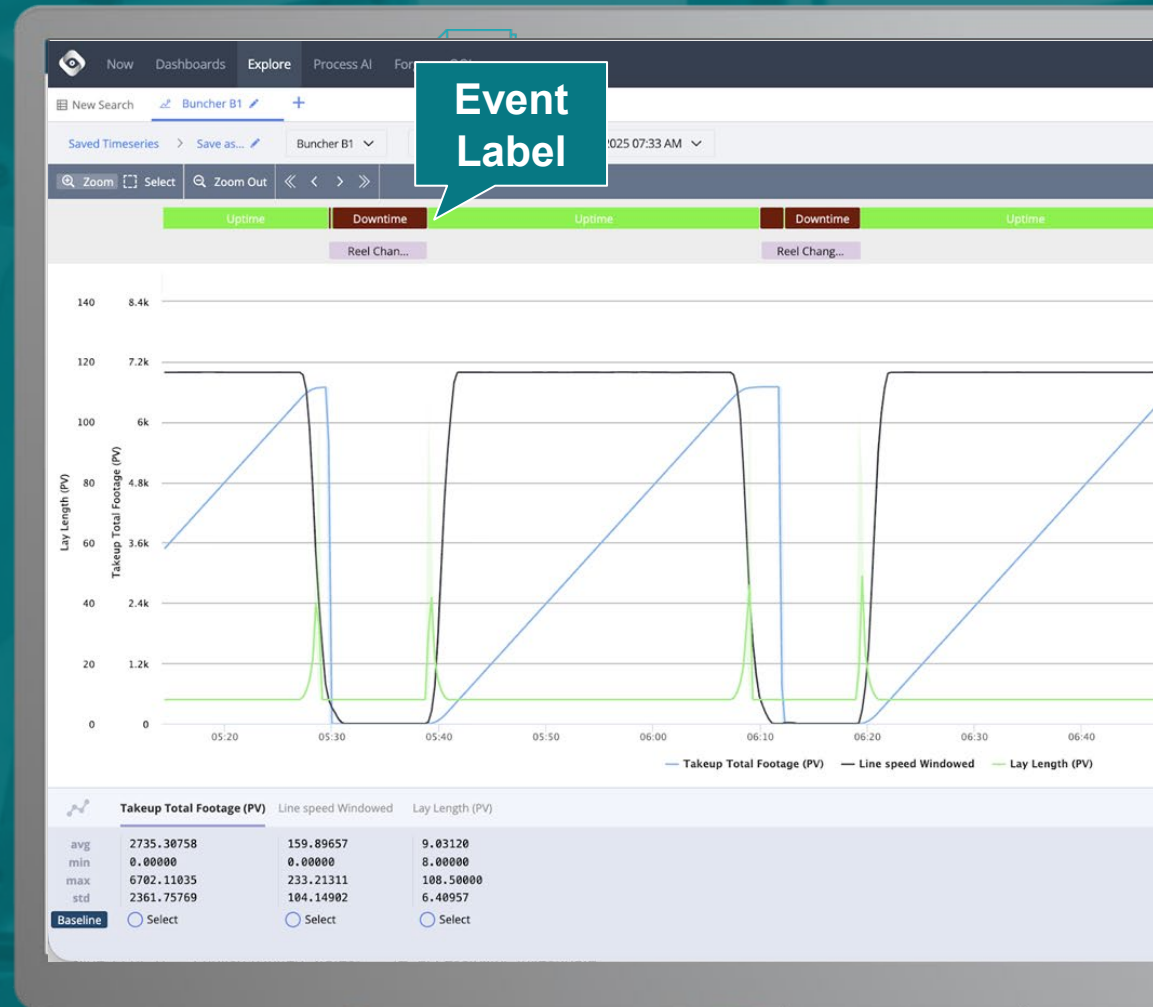


Rules-Based

Simple & Complex Harmonic Patterns

Anomalies

Supervised Models



# Give Data a Purpose, Then Start the Flywheel

