

ERP Software

Practical Solutions for the Back Office

PMA Industry 4.0 Forum and ERP Shoot Out 2025

Presenter



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Specialties:

- Enterprise technology systems
- Business process design
- Emerging technologies

What We'll Cover

ERP & The Back Office	01
Level 1 - Foundational	02
Level 2 – Connected	03
Level 3 – Dynamic	04
The Future	05

Setting the Stage

ERP & The Back Office

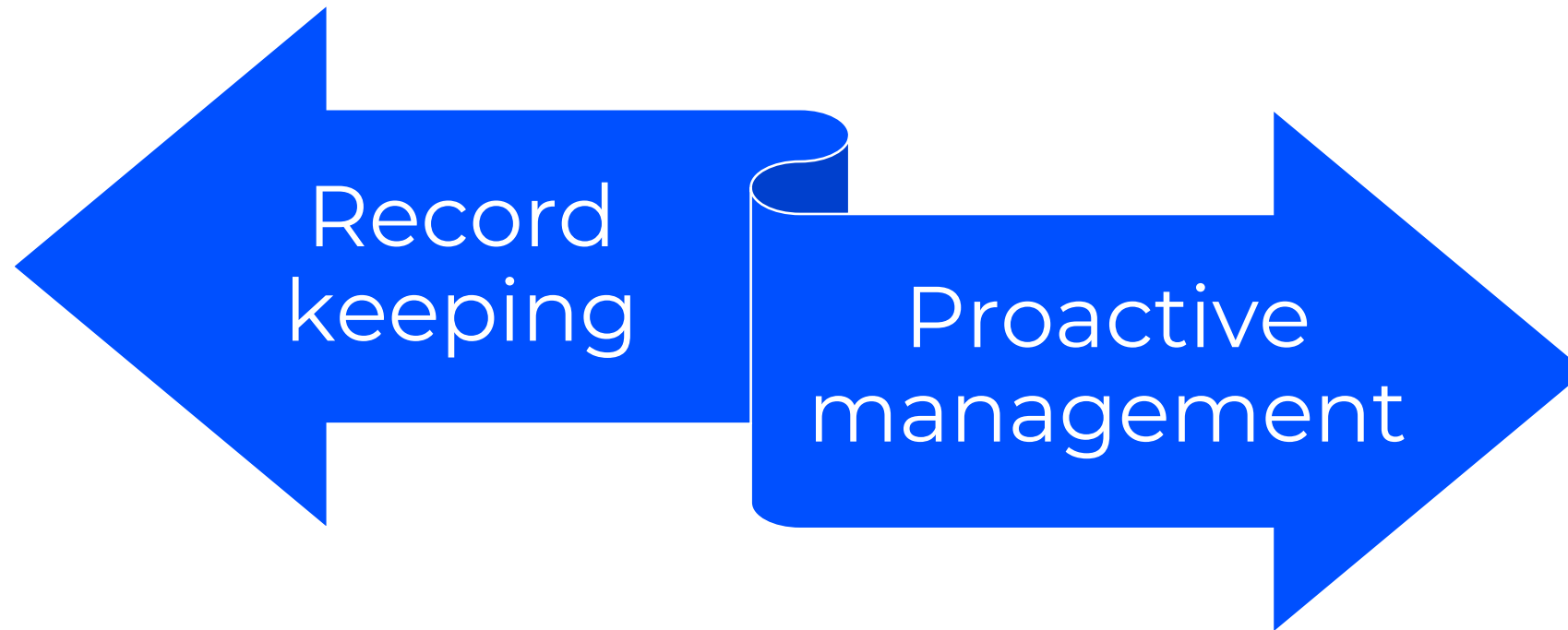
ERP Systems

The one-stop-shop for transaction management



The Evolving Role of ERP

Managing the Back Office





Foundations of the Back Office

Structure

Clearly defined
processes creating
trusted data by trained
staff

Item master attributes
and fulfilment
parameters

Clarity

Granular visibility into
active and historical
activities

Drill-down on job cost
variance reporting

Control

Enforcement of
standards to create
consistency and monitor
performance

Engineering change
control

Which factor challenges your back office the most?

1 Structure

2 Clarity

3 Control

Maturity Levels of Technology Automation

Level 1: Foundational

Persistent Challenges

- 01** **Paper-heavy**
Legacy systems are supported through manual workarounds and physical paper trails
- 02** **Duplicative work is common, accepted**
Valuable time is spent on manual tasks and double entry
- 03** **Processes are tribal**
The business relies on the availability of a few key resources to keep things in order





Opportunities for Automation

Level 1: Foundational

Electronic document storage

Robust, standardized item master

- BOM & Routing setup
- Fulfilment settings

Item change control

- ECR → ECO → ECN
- Workflows for part change vs revision

Decoupled sales and procurement

- Purchase to meet aggregated demand

System-generated invoicing

- Shipping / Accounting integration
- Invoice templates

#1 Goal for Automation - Level 1

Modernize the Business

Improve Existing

Reduce Reliance on Paper

Paper-oriented processes accommodate needs for process flexibility and are low cost but create control and reporting tradeoffs

Build Process Continuity

Manual processing and data capture create long, arduous hand offs that introduce timeline and quality risks

Select a New System

Identify solutions that work for the industry – find technology that will fit the needs of the business without customization



Case Study: Hometown Trolley

- Replace outdated network equipment
- Migrate production data to SharePoint
- Introduce tablets on the shop floor
- Introduce TV for production schedule

Reduced manufacturing lead
time by 2 days per build

ERP System Selection

Creating structure for thorough evaluation



Gather Requirements

Identify ERP functionality that is critical to supporting current and future-state needs



Evaluate ERP Vendors

Identify ERP software options and facilitate structured product demonstrations



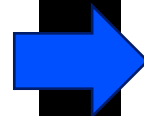
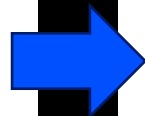
Build the Change Story

Define the change – what it is, how it will benefit the business. Socialize the story to substantiate new priorities



Prepare Key Resources

Identify the individuals that will be consequential to making the change successful and intentionally offload some of their work

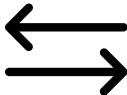


Level 2: Connected

Persistent Challenges

- 01** **Data is abundant, information is scarce**
Systems generate a lot of data, but turning it into actionable insight is a struggle
- 02** **Integration gaps**
ERP isn't fully integrated with specialty, 3rd party software, manual work arounds
- 03** **Customization debt**
Legacy customizations and poor implementation complicate change
- 04** **User adoption & training**
New features or modules are underutilized by non-power users

Specialty Enterprise Software

-  Customer Relationship Management (CRM)
-  Financial Planning & Analysis (FP&A)
-  Human Capital Management (HCM)
-  Quality Management System (QMS)
-  IoT Production Monitoring
-  Electronic Data Interchange (EDI)



Opportunities for Automation

Level 2: Connected

Basic Integration

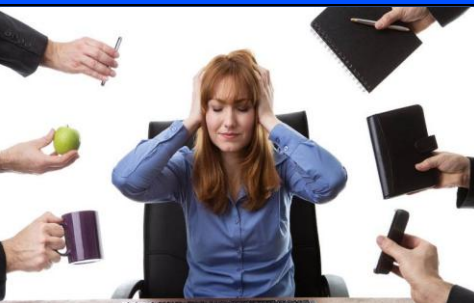
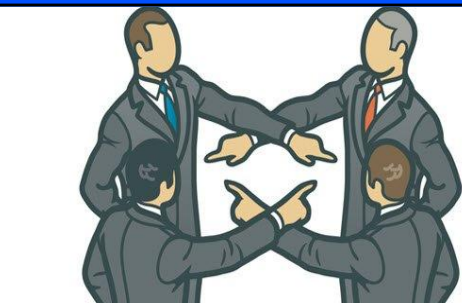
- Part data – CAD/ERP
- Customers & Orders – CRM/ERP
- Production Monitoring – ERP/MES/IoT

System Workflow

- Quote → Sales Order → Work Order
- System recommendations (MRP / APS)
- AP Automation
- Bank reconciliation

System Reporting

- Role based dashboards
- Flagged discrepancies
- Tasks & approvals

Checking	Handoffs	Approvals	Missing Information
✓ CHECK ✓ CHECKED ✓ RECHECK			
<i>Unnecessary checking or quality controls</i>	<i>Manual handoffs or communications between process steps</i>	<i>Inappropriate levels of approval or control in the process</i>	<i>Incomplete data set to continue in the process</i>
Prioritization	Interruptions	Ownership	Nothing Happening
			
<i>Scheduling challenges</i>	<i>Insufficient time to finish a task completely</i>	<i>Lack of clear ownership of a task in the process</i>	<i>Unnecessary process wait time</i>

Streamline **Modern Systems**

Immediate Actions for Automation



Map Processes

Build process diagrams of key workflows – focus on points of process divergence. Identify opportunities to cut out processing time & complexity



Integrate Systems

High-priority, disconnected systems create data silos. Map the data flows and build the connective layer of the business



Role-Based Analytics

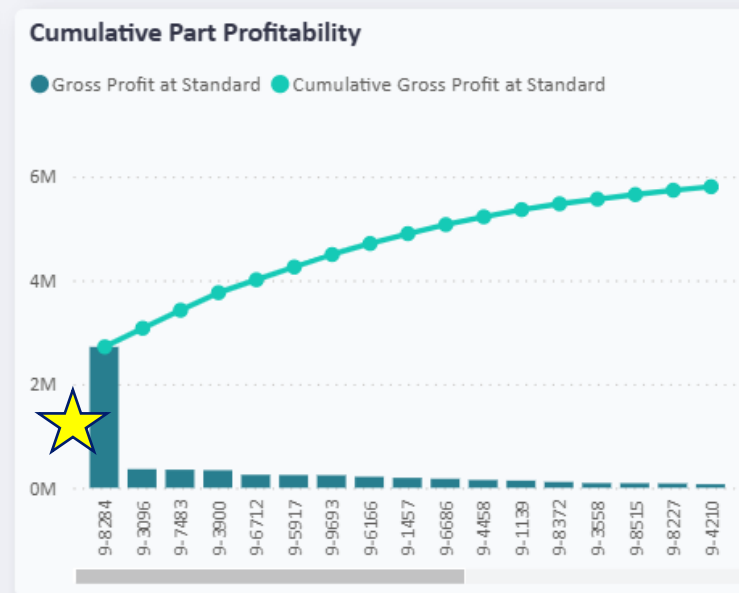
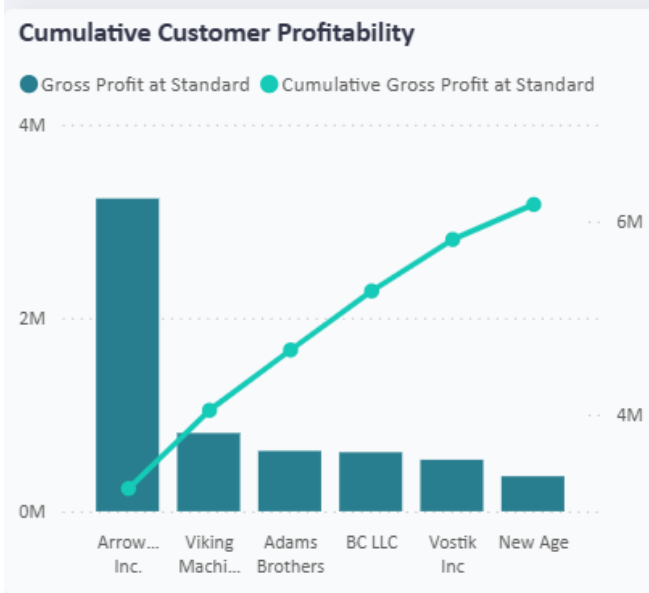
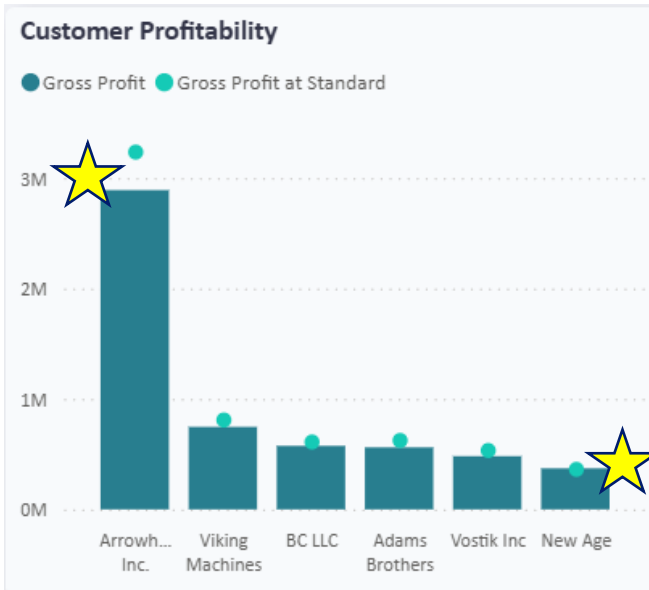
Build reporting that highlights metrics that are important to a department, team, or specific role



Implement & Train

Build out a data storage and visualization strategy





Tool Performance

Tool	Part ID	Profit Margin %	Profit Margin % at Standard	Variance to Standard	Units
2-9-7483	9-7483	84.3%	77.0%	▲ 7%	4,784
2-9-6712	9-6712	79.8%	74.6%	▲ 5%	5,940
2-9-6686	9-6686	78.6%	68.8%	▲ 10%	4,850
1-9-9693	9-9693	77.1%	72.2%	▲ 5%	5,855
1-9-8227	9-8227	77.0%	68.8%	▲ 8%	7,032
1-9-4458	9-4458	76.1%	68.9%	▲ 7%	4,097
3-9-4458	9-4458	76.0%	68.7%	▲ 7%	4,119
2-9-9693	9-9693	74.4%	72.1%	▲ 2%	11,747
Total		64.6%	70.8%	-6%	386,090

What back-office process have you automated that has been the most impactful to your business?

Level 3: **Dynamic**

Persistent Challenges

01

Data governance and quality at scale
Ensuring accurate, consistent, traceable data flowing across systems

02

Maintaining integrations
ERP isn't fully integrated with specialty, 3rd party software, manual work arounds

03

Managing tech bloat and costs
Legacy customizations and poor implementation complicate change

04

Managing change
New features or modules are underutilized by non-power users





Opportunities for Automation

Level 3: Dynamic

Data warehouse / data lake

- Real-time, multi-system analytics
- Predictive reporting from AI/ML

Middleware (iPaaS)

- Create & maintain integrations
- Event-driven automation
- Error-handling

Master data management

- Duplicate management
- Master record management

The Future of Technology Automation

Generative AI

Definition:

Systems capable of creating new and original content by learning from existing data

1

Natural, Flexible Interaction

Meets users where they are – recognizes intent and adapts to how people naturally think and speak

2

Instant, Complex Results

Users don't need to know all of their data sources – Generative AI aggregates information and presents custom results

3

Personalized, Long-Format Reasoning

Hold long, analytical conversations with Generative AI that promote brainstorming around complex ideas

4

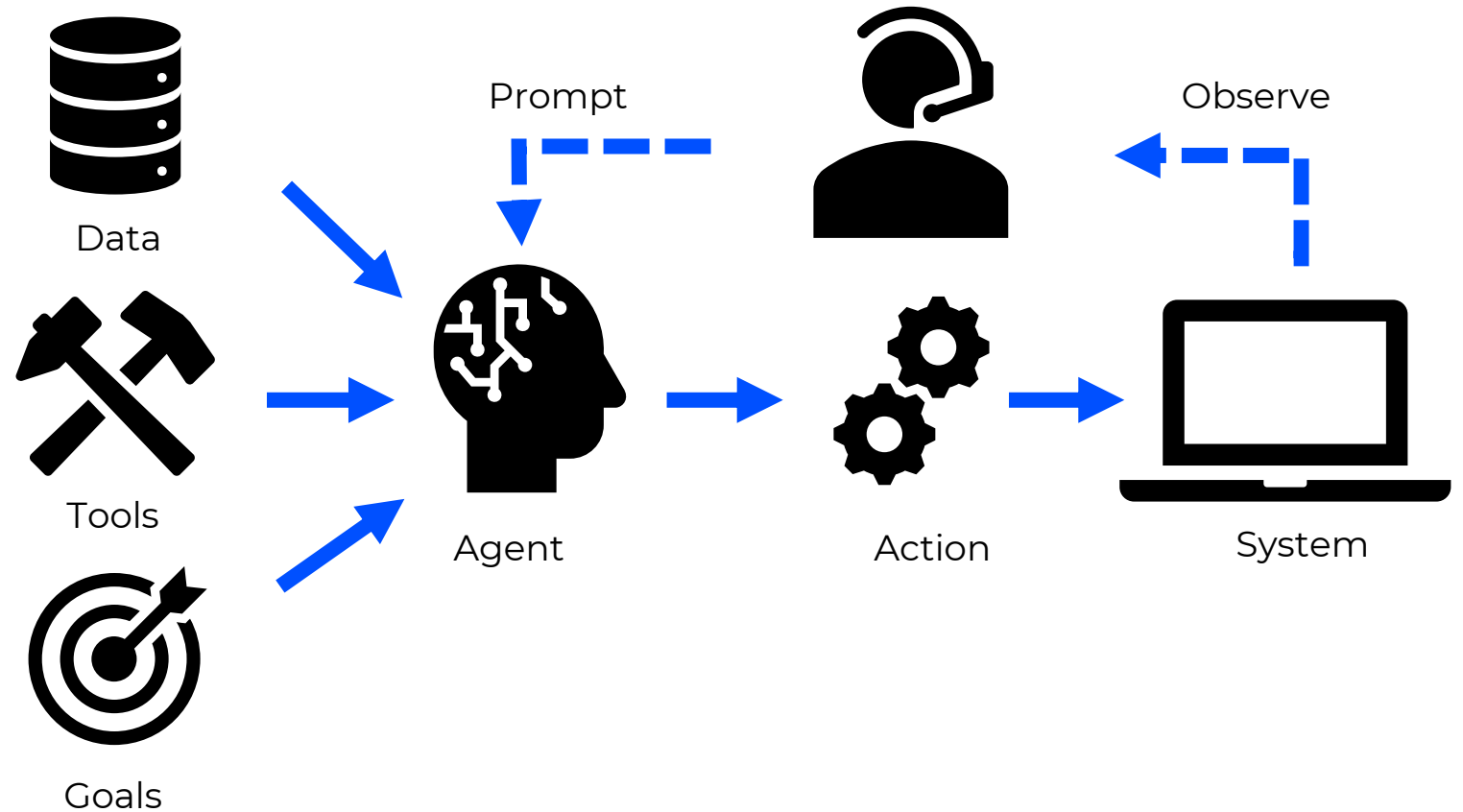
Produce Original, Creative Content

Generative AI can produce custom files of all types and generate code to program software

Agent AI

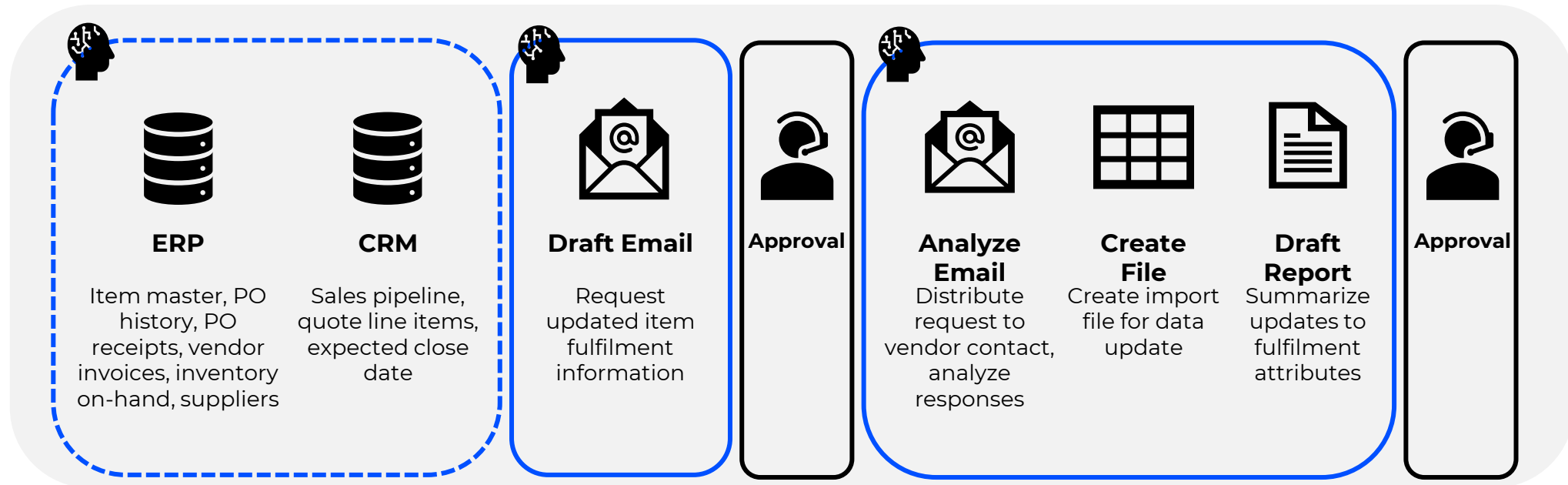
Definition:

An AI-powered system that can reason, plan, and act to complete tasks or entire workflows autonomously, with human oversight at key moments.



AI AGENTS

FULFILMENT DATA MANAGEMENT





Give me a breakdown of cost drivers for the Industrial Valves product category in March. Which products had red flags, and what were they?

In March, the Industrial Valves category saw a 5.6% drop in average gross margin compared to February. This was primarily driven by rising raw material costs and reduced production throughput.

Key Cost Drivers:

- Material Costs: Average unit cost for stainless steel rose 9.3%, affecting 80% of SKUs in the category
- Throughput: Line 2 experienced a 12% drop in output due to unexpected downtime on March 11-15

Biggest Impact:

- Valve Model VX-310: margin dropped from 28% to 18% on \$740,00 of finished goods



Is Line 2 still experiencing unplanned downtime this month, or did that issue get resolved?

Line 2 has performed marginally better this month. Unplanned downtime is currently down 10% compared to March, with 18 hours logged so far in April vs 20 hours last month.

The root cause in March was a faulty hydraulic actuator, which was replaced on March 17. A preventative maintenance task was also added to check actuator wear every 45 days.



Recommended Prompts

Create a trend analysis for downtime by month

Schedule a meeting with production & maintenance

Create a reminder to review Line 2 downtime in 30 days

Ask Anything

The more technology evolves, the more the baseline expectations change – are you doing enough to keep up?

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Microsoft's 2025
Work Trend Index
Report

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