

Data to Decisions: Scaling AI-Driven Manufacturing Performance Across the Enterprise

Reducing waste, improving throughput, and scaling smarter manufacturing across multiple facilities

A major North American manufacturer in the building materials industry employs more than 18,000 people and generates over \$10 billion in annual revenue. Operating across roofing, siding, insulation, gypsum, and other product lines, the organization is committed to shaping the future of construction through innovation and sustainability.

To advance this mission, the company recognized it needed more than raw operational data; it needed to transform that data into enterprise-wide action.



Reducing Waste, Improving Throughput

In 2018, InSource began supporting the rollout of AVEVA MES across the company's North American facilities. To modernize operations and build a foundation for the future, they standardized on a unified template and centralized architecture across all facilities, partnering exclusively with InSource for software design, implementation, and ongoing support. InSource took the time to deeply understand their operations and goals, delivering a cohesive, end-to-end solution spanning Historian, MES, and Connected Worker technologies. This approach provided real-time visibility for faster decision-making, significantly improved data accessibility across all levels of the organization, and laid the groundwork for future innovations like predictive analytics and machine learning.

The initiative was so successful that it gained attention from leadership and investors. As both the AVEVA MES integrator and trusted advisor, InSource played a pivotal role in guiding the adoption process, from ensuring data integrity to driving change management initiatives, which ensured consistent processes and inspections across sites.

Outcomes

Short-term: Immediate operational visibility and measurable cost savings through standardized MES and targeted AI use cases.

Long-term: A scalable, data-driven manufacturing model that enables proactive decision-making and continuous improvement across facilities.

Key Takeaways

- Standardized MES created enterprise visibility.
- AI turned data into action.
- Early results enabled scalable improvement.

Laying the Foundation with InSource

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Identifying the Next Opportunity: Making Data Actionable

By 2020–2021, the company had successfully laid a strong digital foundation using MES and Historian systems. But as the Director of Advanced Manufacturing at the company noted:

“Having data is one thing. Turning it into actionable insights across the enterprise is another challenge.”

That's where InSource stepped in again, this time to introduce Braincube.

InSource recognized an opportunity to build on the MES infrastructure by leveraging Braincube's Productivity Management System (PMS) to unlock deeper operational insights.

The concept: use smarter analytics and AI to shift from reactive to proactive decision-making.

InSource helped identify use cases as part of the company's Smart Centerlining Initiative, optimizing process settings using real-time and historical data, improving quality analytics, and eliminating inefficiencies such as excessive raw material usage and board defects.



The Power of Partnership with InSource and Braincube

One of the company's key gypsum facilities in the Southeastern U.S. was selected as the pilot site. With InSource guiding the implementation and change management process, and Braincube's AI and Product Clones layered on top of MES data, it quickly became a showcase of transformation.

Within months, Braincube delivered proof of value by optimizing board weight compliance, resulting in immediate savings of over \$100,000 annually, just by reducing raw material overuse.

“The pilot site became the catalyst for demonstrating how data could drive meaningful change,” said the Director of Advanced Manufacturing, *“Braincube helped us see what was invisible before.”*

Director of Advanced Manufacturing

Scaling Success Across the Enterprise

Following the pilot's success, they rapidly scaled Braincube to six additional plants - with 16 total facilities in scope. Each site had unique challenges, but InSource's industry expertise and Braincube's scalability made the rollout seamless.

InSource and Braincube collaborated with plant teams through weekly working sessions, training, and operational adoption practices. Gemba Walks and other daily routines were enhanced by incorporating Braincube data, allowing operators and supervisors to make smarter decisions during shift handovers and in real time.

This wasn't just a tech rollout; it was a cultural transformation. Where tribal knowledge and manual processes once dominated, teams are now empowered by data. Shift handovers became more strategic, plant personnel became "strategic agents," and collaboration across plants increased.

"With Braincube, we're not just fixing problems, we're anticipating them," said the Director of Advanced Manufacturing, "We've fundamentally changed how we operate."

Director of Advanced Manufacturing

Real, Measurable Impact

Braincube, with InSource's enablement, drove tangible results across the gypsum division, including:

- 33% reduction in starch usage at one facility.
- Significant energy savings from dryer efficiency improvements in a second facility.
- 6% reduction in stucco and additive costs per MSF (thousand square feet)
- 8% increase in line speed, boosting throughput and reducing waste

What sets this story apart isn't just the technology, it's the collaboration behind it. The company's transformation was driven by the combined strengths of InSource, Braincube, and internal leadership. InSource provided the vision for extending MES data into smarter, more informed decisions, while AVEVA MES established a standardized foundation for enterprise-wide visibility. Braincube layered AI-driven intelligence on top of that foundation, turning data into actionable outcomes. With leadership actively championing change and alignment, this partnership demonstrated that digital transformation isn't a one-time initiative, but an ongoing journey toward continuous improvement and smarter operations.

Solutions

Digital Transformation	Workforce Optimization
Operations Control	Industrial Data Visualization and Management
Manufacturing Execution	
Digital Engineering	

Professional and Managed Services

Monitor & Control	Organizational Change Management
Definition & Planning	InSource InSider
Managed Services	InCommand
Advanced Applications	

About InSource Solutions

InSource Solutions is a provider of digital transformation lifecycle management solutions for manufacturing and industrial organizations. Committed to redefining the future of industry, InSource helps organizations turn ambition into action by connecting people, processes, and technology. Acting as a catalyst for over \$1 billion in client transformations, InSource enables organizations to outperform at scale. For more information, visit www.insource.solutions



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