

Why 60% of Traditional MES Projects Fail

Manufacturing Execution System (MES) implementations have historically been plagued by high costs, long deployment times, and limited flexibility. Research indicates a majority of these projects struggle to meet their intended goals – with studies often citing failure rates between 50% and 70%. In today's fast-paced manufacturing environment, such shortcomings result in budget overruns, delayed ROI, and frustrated teams. This whitepaper examines the key challenges with traditional MES and outlines how a **Composable MES** approach can dramatically improve success rates. Manufacturing executives will gain insights into overcoming MES pitfalls and learn why a modular strategy is emerging as the future of manufacturing operations.

Challenges with Traditional MES Projects

Traditional MES solutions were not built for agility. Below are some of the main reasons these projects frequently fail to deliver value:

- **Rigid, Monolithic Systems:**

Conventional MES platforms are difficult to customize, often forcing companies to adjust their workflows to fit the software rather than the other way around. This rigidity makes it hard to adapt the system to changing business needs or process improvements.

- **High Upfront Costs:**

Implementing a traditional MES involves significant investments in software licenses, hardware, and consulting. Customizations drive costs even higher – in some cases, every €1 spent on MES licenses can require €5 in services to tailor and integrate the system. Such heavy upfront costs can be prohibitive and strain ROI calculations.

- **Lengthy Implementation Timelines:**

Deployment of a traditional MES can take months or even years. It's not uncommon for projects to span 12–18 months before delivering any value. These long timelines delay the return on investment and often lead to project fatigue within the organization.

- **Complexity Leading to Low Adoption:**

Legacy MES interfaces and processes are often overly complex and IT-centric. The people on the shop floor – those who need to use the system daily – may find it unintuitive. In fact, many MES are built for IT administrators rather than operators, resulting in low user engagement and underutilization of features.

- **Scalability Issues:**

Traditional MES architectures struggle to scale and evolve. Rolling out to multiple sites or

adjusting to new requirements typically means heavy re-customization at each instance. Over time, these systems become brittle, creating bottlenecks and making upgrades painfully slow and costly.

As a result of these challenges, many MES projects end up over budget, behind schedule, or abandoned entirely. Manufacturers who rely on outdated MES find it difficult to keep pace with market changes, quality demands, and efficiency targets – leading to **missed opportunities and competitive disadvantage**.

Composable MES: A Smarter Approach

Composable MES offers a modern alternative designed for flexibility, scalability, and rapid deployment. Instead of a one-size-fits-all system, a composable MES is built from modular components that can be easily added, removed, or reconfigured to match your unique operational needs. By leveraging a modular, often cloud-native architecture, manufacturers can implement just the functionality they require and scale up over time without the constraints of traditional systems.

In contrast to monolithic MES, a composable solution is agile. New capabilities can be introduced as independent modules (microservices) that snap into the overall system without disrupting existing operations. This approach dramatically reduces customization effort and makes the MES more resilient to change. The result is faster implementation, lower risk, and a system that evolves with your business.

Benefits of Composable MES

01 Faster Time to Value:

Deploy a working MES solution in a fraction of the time of traditional implementations. By adopting ready-made modular apps and templates, plants can go live quickly – often accelerating time-to-value from years to months or even weeks.

02 Lower Total Cost of Ownership

Reduce the upfront investment and ongoing maintenance costs. A composable MES often uses a pay-as-you-grow model, so you only pay for the functionality you need. The modular approach also means updates or changes affect isolated components, cutting down expensive development or consulting work.

03 Scalable and Adaptable

Easily expand or modify your MES as your business evolves. Whether adding a new production line, opening another facility, or adapting to a process change, a composable MES can scale without a complete overhaul. This adaptability ensures the MES continues to fit your operations over time without major reinvestment.

04 Seamless Integration

Connect the MES effortlessly with other enterprise systems like ERP, CM, PLM, or IoT platforms. Open APIs and modern integration tools in composable MES make data flow smooth across systems, breaking down silos. For example, machine data from IIoT devices can be incorporated in real-time, something legacy MES often struggle with.

05 Higher Success Rates

Organizations adopting composable MES report significantly improved project success compared to traditional MES rollouts. With reduced complexity and more stakeholder alignment (thanks to faster results and better usability), these initiatives are far more likely to meet their goals. In short, a composable approach directly addresses the common failure points of legacy MES, setting the stage for a successful implementation.

Key Functionalities of a Modern Composable MES

A common misconception is that a modular MES might sacrifice functionality. In reality, a well designed composable MES provides all the critical capabilities expected from an MES, including:

- **Real-Time Production Monitoring:**

Live dashboards and alerts give managers instant visibility into production rates, machine performance, and quality metrics. This real-time insight enables proactive decision-making and immediate response to issues on the factory floor.

- **Work Order & Job Management:**

Digital management of work orders ensures every job is properly scheduled and executed. The MES coordinates production planning, sequencing, and resource allocation (people, machines, materials) in one system for maximum efficiency and on-time delivery.

- **Performance Tracking & OEE:**

Built-in analytics track key performance indicators like Overall Equipment Effectiveness (OEE), cycle times, and downtime. By identifying bottlenecks and inefficiencies, the MES helps operations teams continuously improve and maximize throughput.

- **Traceability & Compliance:**

End-to-end traceability functions record each step of production and material movement. This guarantees full genealogy for every product, which is vital for quality control, regulatory compliance, and fast root-cause analysis in the event of any issues or recalls.

- **Guided Work Instructions:**

Interactive, step-by-step work instructions (often delivered on tablets or screens at workstations) guide operators through their tasks. This reduces errors, shortens training time for new staff, and ensures standardized best practices are followed on every shift.

These functionalities are delivered in a user-friendly way, often through intuitive apps or interfaces tailored to each role. Unlike older systems, a composable MES's features can be continuously updated or extended without disrupting the whole system, ensuring you always have access to the latest innovations (e.g. AI-driven analytics, mobile access, etc.) as they become available.

Why Now?

The manufacturing landscape is evolving rapidly. To stay competitive, companies must embrace digital transformation and build more agility into their operations. Traditional MES, conceived in an earlier era, are ill-suited for today's demands of connectivity, flexibility, and speed. Industry leaders are recognizing this and shifting toward more modern solutions. In fact, Gartner analysts predict that by 2025, **60% of new MES deployments will use composable technology** () – a strong sign that the era of monolithic systems is ending.

By moving to a composable MES now, manufacturers can position themselves at the forefront of this industry shift. A composable MES helps you stay ahead by offering:

- **Greater operational resilience**

in volatile market conditions, thanks to the ability to quickly adapt processes or scale capacity up or down.

- **More control and visibility**

over your production processes, resulting in better quality and efficiency. The enhanced transparency means fewer surprises and data-driven management.

- **A future-proof platform**

that grows with your business. As new technologies (IoT, AI, etc.) emerge, a composable MES can incorporate them seamlessly, ensuring your operations are always leveraging the best tools available.

The question is no longer if manufacturers should modernize their MES, **but when and how**. Forward-thinking organizations are acting now to avoid falling behind with outdated systems that hamper growth.

Next Steps: Transforming Your MES

Are you ready to explore how a Composable MES can transform your operations?

Taking the next step now could dramatically improve your manufacturing efficiency and agility. We invite you to reach out and discuss your specific challenges – whether it's reducing downtime, improving quality, or accelerating new product introductions. Our experts can show you how a composable MES approach would address your needs and drive real, measurable impact.

Don't let your MES project become another statistic in the failure column. **Contact us today at [AVEVA Select Benelux](#) or [AVEVA Select Scandinavia](#)** to schedule a consultation and discover a smarter path forward for your manufacturing execution system. Together, we can build a more resilient, flexible MES that propels your operations to the next level of performance.