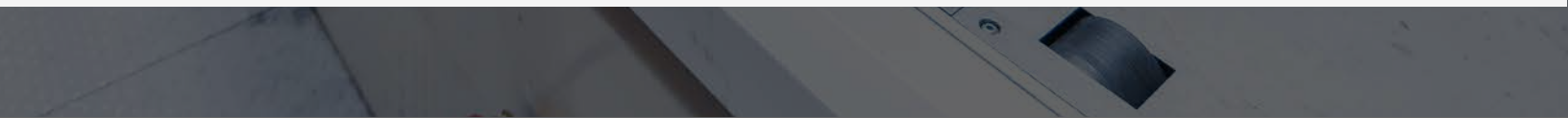
PINpoint

4 BIG BENEFITS OF AN MES

(MANUFACTURING EXECUTION SYSTEM)

for Discrete Manufacturing



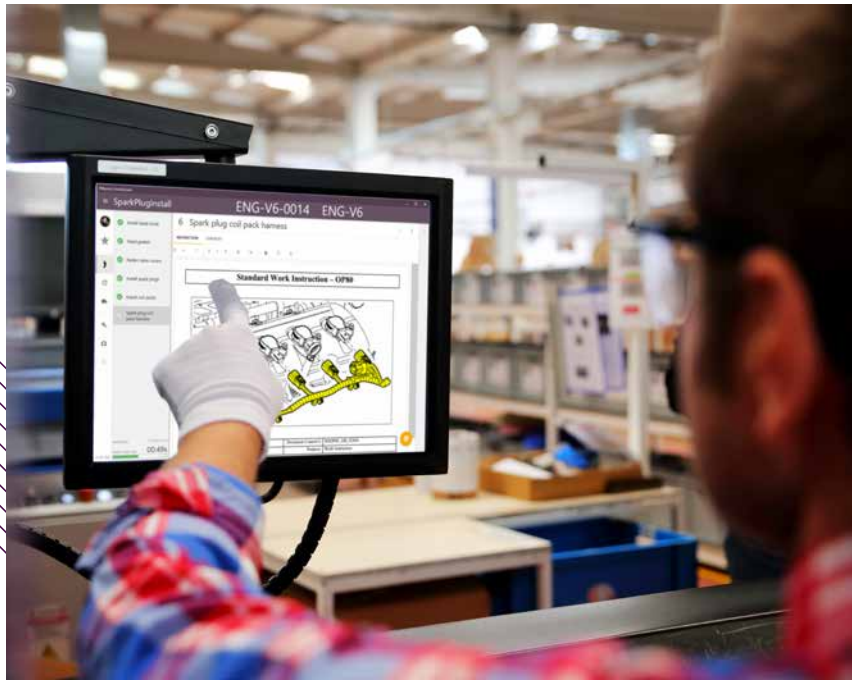
THE PRESSURE IS ON TODAY'S DISCRETE MANUFACTURERS

High-quality products are expected quickly, cost-effectively, and consistently, and there are numerous supply chain **challenges**: bottlenecks, lack of productivity, overproduction, inventory control. How can a manufacturer overcome these challenges and create **efficient** production?

Discrete manufacturers are looking for help to operate profitably.

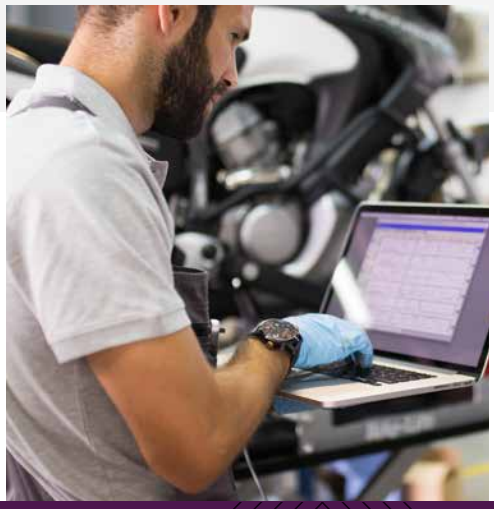
Increasingly, discrete manufacturers are looking for help to operate profitably in a demanding environment. An MES is increasingly delivering that help.

More and more during modern manufacturing, plant managers are beginning to use **manufacturing execution systems** (MES), which are **software-based solutions** that ensure efficiency and quality are proactively and **systematically** part of a manufacturing process.



MES: WHAT IT IS AND WHAT IT DOES

A manufacturing execution system tracks, monitors, and controls the assembly process in real-time, ensuring **optimized production**. An MES is the **critical link** between ERP systems and plant floor control systems, giving manufacturers complete **visibility** and **control** across the entire assembly line and allowing operations to **rapidly respond** to changing requirements and customer demand.



Profitability is the main business driver to improve a manufacturing process.

While an MES certainly benefits the bottom line, there are many more things to keep in mind.

So, what crucial functionality can you expect?

- **Data Collection** — Manual or automatic information input helps evaluate production
- **Product Tracking** — Numbers provide real-time insight on the process
- **Quality Control** — Know the quality status of every product
- **Performance Analysis** — See where the process lacks efficiency
- **Labor Management** — Connect the strengths of employees and equipment

A manufacturing execution system is an integral part of an efficient plant's operations, boosting **productivity** and enhancing profitability. So, as you consider the **cost analysis** of implementing a system, what specific daily benefits can you expect from the solution?

MES BENEFIT #1 — PRODUCTIVITY

Both the back and front office, as well as a manufacturing line, increase productivity when all members of a manufacturing team are **on the same page**. Using an MES, everything is centrally stored and easily visible by all team members.

Productivity jumps when a **realistic production plan/schedule** unites the team. The system establishes production shifts as well as sets **production goals** and TAKT and cycle times. The resulting plan is then made **visible** throughout the plant so that everyone understands how they are contributing or hurting the achievement of production targets.

The use of big screens and **real-time alerts** bring additional focus to issues that occur throughout the day with the goal of **reducing downtime** and using every second of available production time.

Every step in the process is documented.

Every step in the process — order placing, product development, quality control, production analysis, etc. — is documented, so any time- or cost-wasting issue can be identified and corrected.

A plan is not enough. To find potential productivity improvements, discrete manufacturers need to understand **exactly** where all time is going on the assembly line. The system can provide **insight** into how every second for every operator at every station is being used.

Traditional measures, such as over cycle time or OEE, don't reflect what's **really** happening. For example, what about the time lost as a product moves from station to station? What if an **operator cannot release** a product from a station because the line is blocked downstream? Where does that time go?

A manufacturing execution system "fills in the blanks," gives a **complete picture** of every inefficient second, and drives efficiency improvements. Collecting and analyzing this **rich data** over time reveals insights and offers clues on how to squeeze out every second of non-value add time to make **efficiency improvements**. The savings in **direct labor costs** alone often justify the cost of the system.

MES BENEFIT #2 — INCREASED QUALITY

Quality begins with great design and great components, but both can be undermined by an inconsistent assembly process. Quality must be built into **every step** from design to assembly to product delivery. **Consistent** assembly is achieved by enforcing a repeatable process and **ensuring operators** are:

- Trained before being authorized to work at a station
- Informed about safety and/or quality issues in real-time
- Provided with clear instructions and with visual aids
- Error-proofed to ensure every step is completed
- Guided to ensure that every bolt is properly fastened to the right torque and angle
- Given the ability to note defects instantly and flag defective products
- Building products in the sequence required by the production schedule

A manufacturing execution system ensures that:

- Every process step is properly completed
- There is no deviation in the defined assembly route
- The right components are installed
- No defective parts are installed

Quality improvement is dramatic.

Controllers and managers within a manufacturing facility enjoy total transparency, complete control, and manufacturing optimization.

As a side benefit, an MES identifies problem steps in the manufacturing process, detecting any inconsistencies in real-time and supporting a **no fault-forward approach**. This huge cost-saver ensures products are being produced. Scrap, **wasted material**, and overages are also reduced due to consistent and streamlined setups.

MES BENEFIT #3 — PROBLEM SOLVING

A manufacturing execution system collects and creates a **rich data set** of product and manufacturing data.

- **Product data** focuses on everything about the product, including what components were used, quality status, fastening details, and more
- **Manufacturing data** provides information on the assembly process and time taken to build the product

This combined data set is analyzed to **solve real-world problems** that affect every assembly line.

As an example, consider the challenge of knowing who the best operators are and how that information could be used to **increase production**. An MES helps answer this question by giving users the ability to analyze and cross-compare various production metrics including operator performance (**cycle time**) by station and/or by product over various time periods.

It's hard to make money when machines don't run.

Modern scheduling and maintenance help maximize productivity.

The right system finds line balance and **hidden inefficiencies** by providing insights on where time is being lost along the assembly process. These insights help eliminate the constant firefighting that's common with many manufacturers. The key is a system that provides access to rich data that can be easily coupled with **modern analytic tools** like PowerBI, Tableau, and Microsoft Excel.

MES BENEFIT #4 — REDUCED INVENTORY

"Just in case" inventory is a money waster. **In addition** to the cost of producing excess goods, surplus inventory is expensive to transport, warehouse, and monitor. Plus, supply and demand can add/detract from the **value** of your inventory, which can shift the value of your entire operation.

Instead, use a manufacturing execution system to constantly **update your inventory** records. Excess inventory is minimized, and a manufacturing facility's actions are documented and tracked. Now, **all departments** — purchasing, shipping, scheduling — know what's on hand at each facility and what needs to be ordered.

What's your "sweet spot"?

An MES gives discrete manufacturers confidence in the amount of raw material and finished product needed for the future.

Gone are the days of a production manager **scrambling** to locate enough material to keep assembly lines running when the necessary materials **based on production needs** are available.

CHOOSING YOUR MES

Solutions can range from a **simple** system (basic functionality, a limited scope of customization) to more **complex** packages (deep support, usually in a niche industry).

Most manufacturing execution systems use established digital technologies to collect data from automated processes following standard digital process modeling. The most **technically advanced** MES packages follow "best practice" procedures to significantly help companies achieve business goals and **improve ROI**.

Our Recommended MES Checklist:

- A provider with:
  - A primary focus on manufacturing optimization
  - A proven track-record of working with demanding manufacturers
  - The ability to assist with testing, installation, support, and training
- A system that:
  - Natively supports open protocol and automation interfaces
  - Has the ability to collect and create a rich data set
  - Is configurable with no need for expensive customization
  - Can be quickly and cost-effectively installed
  - Comes with built-in reports coupled with the ability to easily create new reports
  - Has an intuitive interface that works on the shop floor and the back office

Before computing systems, an **MES** was a clipboard of hand-drawn charts and paper-based work instructions. More than simply tracking a production line's performance, today's manufacturing execution systems capture **extensive data** and **facilitate analysis** to drive efficiency and quality, solve problems, and deliver profitability.

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