Epicor Brochure

Advanced MES

EPICOR

Advanced MES Executive Overview

Staying competitive isn't easy in today's evolving manufacturing space. How do you increase efficiency and reduce costs while still complying with your customers' requirements? That's where the capabilities of Epicor Advanced MES comes in to play. Advanced MES utilizes Industry 4.0 technology on the shop floor—such as cyber-physical systems and Internet of Things (IoT) sensors—to help you gain the competitive advantage you need both now and in the future.

Discrete manufacturers use Advanced MES to improve quality, reduce scrap, help ensure on-time delivery, and boost production throughput. It's all about improving production execution and performance efficiency to gain a competitive advantage. How do you make more without more assets? Uncover and eliminate downtime to make more parts or cut costs.

Advanced MES can improve profitability by helping you find more capacity.

Epicor Advanced MES collects data directly from equipment and operators on the shop floor in real time, minimizing inaccurate and time-consuming manual data collection. With information instantly in your hands, you can become proactive—anticipate and solve production problems before they happen. Real-time insight helps you pinpoint critical issues, reduce waste, and improve quality and customer service. Everyone in the plant and throughout the business can take action to improve manufacturing performance.

Designed For Your Industry

Epicor Advanced MES was designed with your industry in mind. With its origin in the rubber, plastics, automotive, and metals industries, Epicor Advanced MES has more than 20 years of domain and industry best practices built in, yet it offers you the agility to meet changing demands and requirements.

Epicor Advanced MES is an out-of-the-box, configurable MES solution that enables rapid implementation while still being fully extensible to meet the most demanding requirements.

Epicor Advanced MES isn't just a platform—it's a purpose-built point solution, meaning you won't need extensive consulting and expensive customizations to get a quick return on your investment. Out-of-the-box tools for every level of the organization make it easy to see almost immediate business results, and Epicor makes it simple to connect to your data—no matter how timeworn or modern. Epicor Advanced MES also uses open connectivity protocol (OPC), programmable logic controllers (PLC), machine interface units (MIU), and personal computer (PC) interfaces.
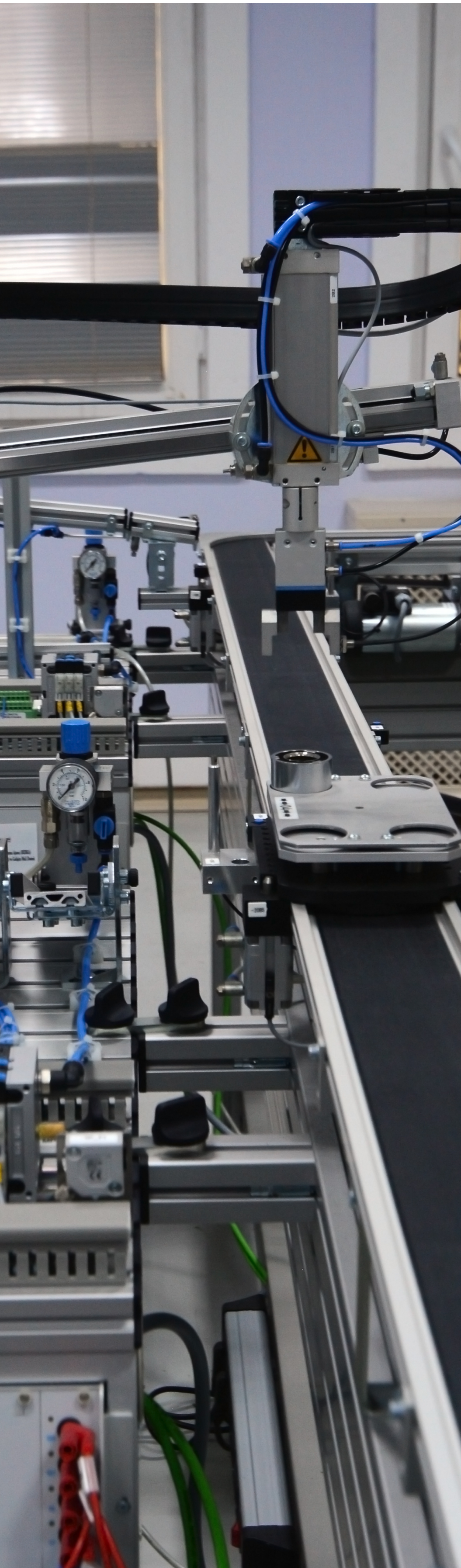
Usability

Epicor Advanced MES collects production data automatically, and it can pass this information directly to your ERP system. Operators on the shop floor use touch screen technology to add depth and dimension to the automatic production data, so you get a clear picture of the what, why, and when of downtime, cycle time, quality, and scrap. The system also has real-time alerts, notifications, and other communications, so the people who need to know are in the know when it matters most—letting them take immediate action to correct a problem or improve performance.

Whether you're making on-the-fly production schedule changes, setting up daily operations meetings, or managing dashboards and reports, Epicor Advanced MES is easy to use and ideal for one-click, drill-down insight and reporting. Most importantly, it has the option of a data exchange module that allows bi-directional integration with your other business systems such as ERP, so you can connect your top floor to your shop floor.

Value for your business

- Improve cycle times, overall equipment effectiveness (OEE), and plant productivity
- Eliminate manual data collection
- Improve scheduling agility with real-time insight into machine performance
- Monitor every cycle and every machine 24/7, giving you near-instantaneous visibility into production and quality problems
- Reduce scrap and rework with automatic part qualification and part rejection

- Capture part and machine process data for traceability purposes
- Improve quality, maximize production and reduce costs by automatically capturing statistical process control (SPC) and statistical quality control (SQC) results Monitor utility consumption and pinpoint energy savings opportunities at each machine
- Minimize downtime with faster response and resolution X Maximize machine loading and minimize downtime to reduce costs and capital expenditure Support continuous improvement initiatives and programs
- Win more business with improved customer ratings and satisfaction
- Improve equipment reliability and boost longevity Pinpoint energy savings opportunities and reduce energy consumption and total power demand Examine tradeoffs between using existing equipment and capital investments
- Support continuous improvement initiatives and programs
- Empower employees by providing them with real time data so they can make real time decisions
- Reduce Changeover Time

Real-time insight for better production and business performance

Your business isn't like anyone else's, and neither is ours. Is better productivity your goal? You need accurate data and fast information. If you've set your sights on operational excellence, you need it even faster.

Either way, real-time automated production and process data direct from your machines is the gold standard in performance improvement, and we exceed that standard with analysis, reporting, and planning to help you achieve your goals.

Epicor can help with business planning and turn strategies into tactics for improvement, because getting better is easy when the facts are clear. Ready to retire your manual data collection and intervention steps? With Advanced MES, you get accurate data instantly—not minutes, hours, or shifts later.

You and the entire operations and production teams can work collaboratively to reduce waste, inventory, and downtime; optimize equipment and capital and worker resources; and drive performance gains with Epicor.

Real-time production information boosts your continuous improvement initiative and lets you discover hidden opportunities to increase quality and yield. With more free capacity and jobs running on schedule, you can

consistently exceed customer expectations and gain more business.

Office, mobile, and global

Take the power of Advanced MES with you on a web-enabled mobile device or tablet with browser-based dashboards, information, and analysis. Plus, it doesn't matter if you have a single operation or a distributed network of plants internationally—Advanced MES is currently available in more than 20 languages and suitable for language customization.

Monitoring, Data, and Communication

The shop floor is a real-time environment, so your MES should be too. Things happen and change instantly. Sometimes a machine is down just a few minutes more than you thought, or perhaps the scrap or part count is off—just a couple of pieces can mean the difference between a happy or frustrated customer. Real-time, automatic production monitoring and process monitoring with Advanced MES

keeps your business on track and eliminates the ripple effect to customers and vendors.

We're there to help you reconnect the shop floor by constantly monitoring data directly from the machine and turning it into information for the shop and management.

You'll get automatic notifications when and how you need them, and you'll receive data to feed the rest of your Advanced MES system and your business, such as:

- Automated production monitoring for downtime and runtime
- Automated monitoring for process parameters Plant floor viewer with real-time machine state and job monitoring
- Automated alerts, messaging, and escalation
- Operator help calls with automatic routing and notifications
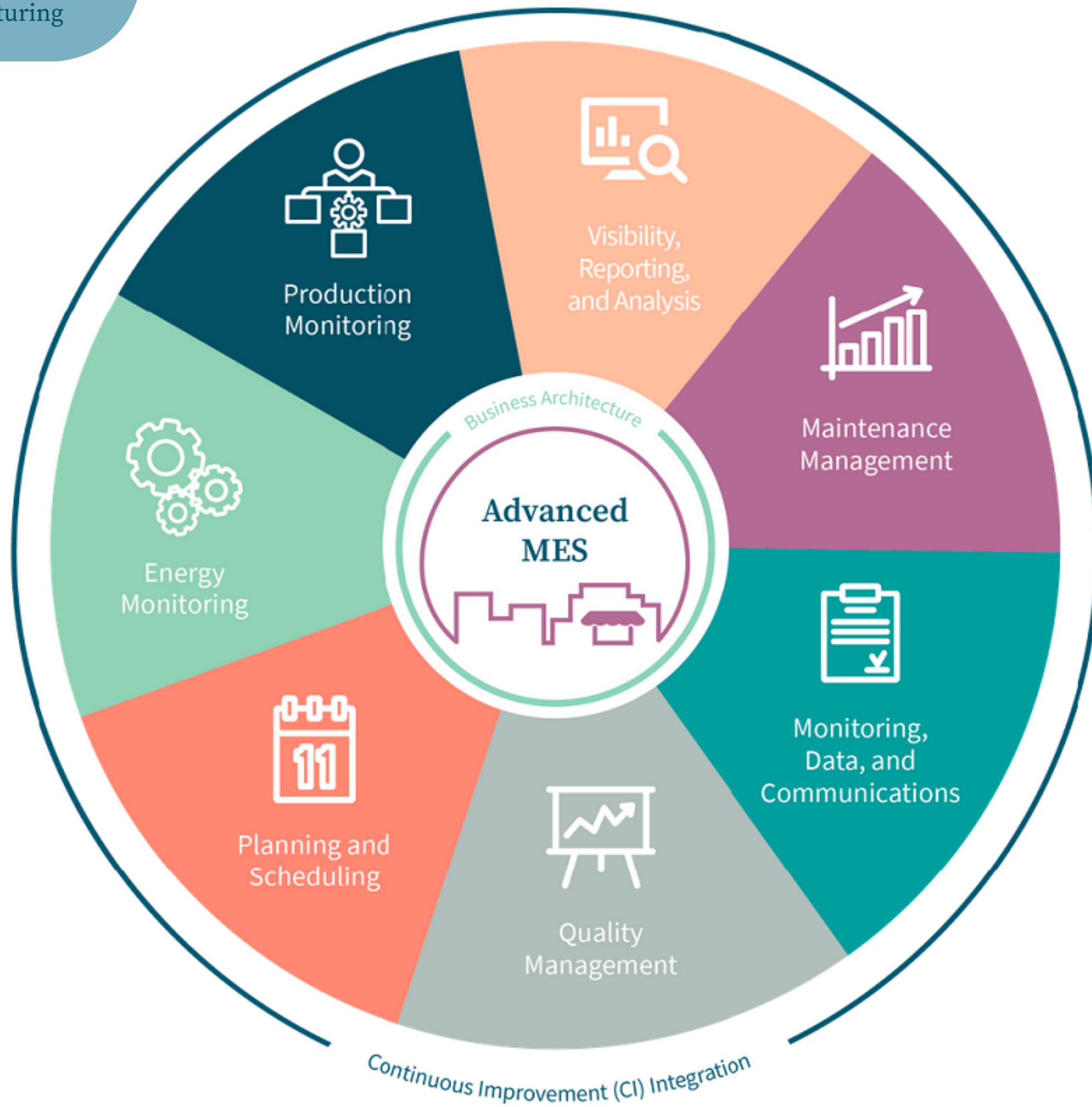
Production Monitoring

- Machine integration using OPC or IoT sensors
- Automatic data collection
- Monitor uptime/downtime
- Monitor actual cycle times and scrap

Energy Monitoring

- Monitor and analyze energy consumption by machine, job, shift, or product
- Understand maintenance and quality in context of energy consumption
- Analyze direct energy required to produce any item
- Create optimal startup sequence to lower peak consumption
- Understand trade-offs between using existing equipment and capital investments

Planning and Scheduling

- Visual production scheduling and planning for machines and tools
- Automatic schedule adjustments
- Kanban scheduling
- Labor and material requirements forecasting
- Machine capacity planning
- Tool conflicts

Quality Management

- Automate d process monitoring and parameter violation alarms
- Automatic part qualification/rejection
- Statistical process control (SPC)
- Statistical quality control (SQC)
- Monitor every cycle and every machine 24/7

Continuous Improvement (CI) Integration

- Lean
- Six Sigma®
- Theory of constraints (TOC)
- Total productive maintenance (TPM)
- Common and custom CI metrics
- OEE, asset utilization, and capacity utilization
- Mean time between failures (MBTF)
- Minor stops per runtime hour (MS/RH)
- Mean time to repair (MTTR)
- Root cause factors

Visibility, Reporting, and Analysis

- Automated overall equipment effectiveness (OEE)
- Accurate, consistent efficiency metrics
- Production metrics – from machine to enterprise
- Downtime and scrap analysis
- Operator labor and productivity visual root-cause indicators
- Real-time screens and views

Maintenance Management

- Preventative maintenance for machines, tools, and auxiliary assets
- Generate automatic MRO tasks
- Schedules maintenance around production
- Rules-based maintenance based on runtime, cycles, or time
- Real-time alerts and reports

Monitoring, Data, and Communications

- Get alerts about production and machine monitoring issues
- Accelerate issue response and resolution
- Operator help calls with automatic notifications
- Automated alerts, messaging, and escalation
- Automated monitoring for process parameters

Business Architecture

- Accepts digital and analog machine signals directly from sensors or PLCs or via OPC-compliant PLCs
- Includes a template specific to plastics, metals, rubber, and related industries, with complex capabilities like active cavity tracking and family molding
- Microsoft® Windows Server® and Micros Server® (current versions)
- Open architecture for interfacing to busi
- Out-of-the-box bi-directional interface to

> "We used to run 3–4% scrap. Last month, we were down to 1.37%. You can't get much better than that. That's world class, and is largely attributable to Advanced MES. It's the tool that gives us the numbers we need to make good decisions."
>
> **Dave Rose, Quality Engineer, Clairos**

Get Your Schedule Under Control

Does your production schedule ever change on the fly? Shift supervisors probably wrestle with it every day— even when things are running smoothly. With the Epicor Advanced MES click-and-drag production schedule, you can change instantly based on new requirements or watch the schedule update and adjust automatically based on actual machine speeds, production counts, equipment status, conditions, or job specifications. Epicor makes it easy to plan by showing line availability based on machine/ part/tool compatibility, and the system shows you optimal plans based on prior part performance. What-if analysis— combined with built-in machine capacity planning and labor and material forecasting—makes Advanced MES the first choice in MES.

- Use visual drag-and-drop, real-time scheduling, and planning for machines and tools
- Make automatic schedule adjustments
- Perform Kanban scheduling
- Forecast labor and material requirements
- Optimize machine capacity planning
- Identify and resolve tool conflicts
- See the real-time view of actual production availability
- Complete usage-based maintenance planning

Improve Quality

Statistical process control (SPC) and statistical quality control (SQC) with Epicor Advanced MES use real-time, automatic data to help you respond to production conditions before making bad parts. SPC and SQC with factual data enable consistent results without constant oversight.

They compare cycle time and process data to control the limits you set—providing rich, instant information to machine operators, quality and reliability engineers, and maintenance professionals. SPC and SQC features include:

- Monitor every cycle and every machine—24/7
- Automatically qualify or reject parts
- Track part and machine process data for
- traceability purposes
- Get statistical quality control (SQC) and statistical process control (SPC)
- Enable automated process monitoring and parameter violation alarms
- View part weights and dimensions, machine process parameters, and correlation analysis

Product Optimization

Epicor Advanced MES delivers more capacity with the same assets. When you get more free capacity and jobs run on schedule, you consistently exceed customer expectations and earn more business. Knowing which changes have the greatest impact makes it easy for everyone to work toward the same goal, whether that goal is happier customers, more product, or better cost structure. We're here with data and information to answer key questions about performance, so the tough decisions get a little easier.

- Manage machine loading and minimize downtime
- Manage family of parts and color changes
- View cost reporting for scrap and machine downtime
- Compare actual cycle times to standard and planning rates
- Optimize assets, plants, and network
- Evaluate schedule conformance
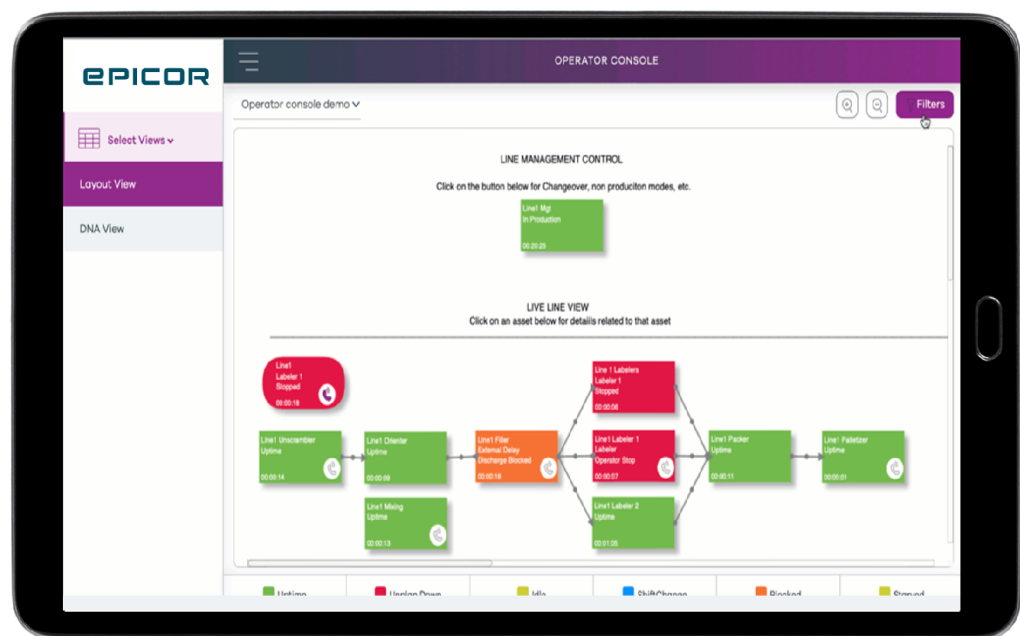
Factory View

Live visualization into your manufacturing operations is a critical part of any Industry 4.0 solution.
Use the Epicor Advanced MES to visualize what is happening in your facility. The color-coding helps you visualize when things are operating well and when you have a problem that you need to take action on.

Intelligent Root Cause Analysis

our ABLE module models machines and production lines with no modification to PLC logic to provide downtime reasons/locations automatically; referred to as Autotagging - production lines and machine stats, counts, and root cause are all coalesced in our logic engine and published via Kepware.

This non-intrusive method combined with our advanced diagnostics validation tools allows for remote deployment. Our root cause algorithm has helped our customers achieve 20% higher data fidelity creating more actionable intelligence.

Digital Twin

The Epicor Advanced MES ABLE Digital Twin™ application is a versatile tool that pulls data from your IoT devices to create a visualization of all your shop floor data.

A digital twin is a representation of a physical system, recreated in software. Our Digital twin system for manufacturing is built on top of your Advanced MES solution and is used to monitor processes, detect downtime, and predict performance.

Using the ABLE Digital Twin application's replay mode you can go back in history and visually review information to perhaps see what caused an issue that occurred earlier in the day.

Armed with real information you will be in a better position to implement continuous improvement programs to help improve efficiency on your shop floor.

Energy Monitoring

Scheduling workload in a way that reduces the plant's total power demand and takes advantage of rate variations can translate to significant savings—in terms of total energy consumed and the actual cost per kilowatt-hour. Tackle power consumption and the cost of energy with Epicor Advanced MES and Energy Monitoring. We help you analyze load patterns, production requirements, and resource energy demands, giving you the power to reduce peak demand and capture energy savings. With the Advanced MES solution, you can quickly and easily capture and analyze energy performance indicators (EPIs) to reduce consumption and cut costs.

- Monitor and analyze energy consumption by machine, job, shift, or product
- Receive real-time scorecards
- Understand maintenance and quality in the context of energy consumption
- Evaluate idle vs. shutdown-restart tradeoffs
- Analyze price accuracy with direct energy required to produce any item
- Monitor energy by asset, job leveling, and loading

Make Better Decisions with Analytics

From the top floor to the shop floor, it's important to know how your business is performing at all times. That's why Epicor built a powerful, out-of-the-box reporting and analytics system that delivers important information in easy-to-digest dials, graphs, and charts.

Advanced MES scoreboards and displays empower front-line professionals to take action and make improvements instantly, without having to wait for days or weeks to find out how they're doing or if they face machine or tool problems. Whether it's regarding maintenance, quality, or other operations, stakeholders have facts in-hand to support their recommendations, and management has what they need to understand trade offs from every angle. Epicor Advanced MES delivers a comprehensive picture of production.

Our Analytics platform provides customizable and interactive dashboards to make it easy to analyze the data inside your business systems. The dashboards contain visual KPIs, graphs, charts, and tables, so you can quickly review important information about your business performance and make informed strategic decisions.

Once you have spotted an area of interest in the visual metrics, the EDA grid is where you conduct most of your analysis, and unlike a spreadsheet, you can "drill down" into the data with a simple click to reveal additional levels of detail—all the way down to the transactions—and find your answers.

Build your own dashboards or take advantage of our prebuilt content packs that include:

- Key performance indicators
- Plant comparisons
- Scrap dashboards
- Downtime dashboards
- Mean-time dashboards
- OEE dashboards
- Availability dashboards
- Performance dashboards
- Mean-time between failures
- Mean-time to failure
- Mean-time to repair
- Schedule views
- Shift production reports
- Tool change views
- Tool requirements views
- Machine parameter views
- Material needs views
- Material used views
- Maintenance views
- Operator metrics
- Top 10 dashboards
- Cavitation efficiency displays

- Cycles out of spec dashboards
- Engineering dashboards
- Help call metrics
- Incident log views
- Utilization metrics
- Job production views
- Machine scoreboards
- Energy usage views

Maintenance

Machine maintenance planning based on calendar can result in unnecessary maintenance being done, or worse—unexpected machine downtime as a result of late maintenance. Epicor Advanced MES provides real-time preventative maintenance for peak machine effectiveness.

- Machine and tool preventive maintenance (PM)
- Cycle or run hour PM
- Automated alarms and notices for PM

Industry Leading Service and Support

Epicor has over 45 years of experience delivering industry-focused, world-class solutions, and ongoing customer care and service to over 24,000 customer installations. It is a true global solutions partner with support offices all over the world. The key vehicle that transforms Epicor for Industrial Machinery into a successful business solution is our Implementation Methodology. Epicor delivers one of the most cost-effective and efficient techniques to plan, design, validate, and deploy your Epicor solution. Staffed with direct employees around the globe who are properly trained and equipped with world-class implementation tools, Epicor follows our proven methodology designed specifically around Epicor software and our customers. The end result is an on-time, on-budget implementation of your Epicor solution that allows your company to quickly begin using Epicor Advanced MES in day-to-day operations saving you time and money by providing broad functionality at a lower total cost of ownership.

EPICOR

We're here for the hard-working businesses that keep the world turning. They're the companies who make, deliver, and sell the things we all need. They trust Epicor to help them do business better. Their industries are our industries, and we understand them better than anyone. By working hand-in-hand with our customers, we get to know their business almost as well as they do. Our innovative solution sets are carefully curated to fit their needs, and built to respond flexibly to their fast-changing reality. We accelerate every customer's ambitions, whether to grow and transform, or simply become more productive and effective. That's what makes us the essential partners for the world's most essential businesses.

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