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# Back to the future – the next generation MES system

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PRESS RELEASE

# Back to the future – the next generation MES system

## 'In the science fiction movie "Back to the Future", the protagonist Michael J Fox goes back to the future. The manufacturing industry needs to go back to the future too. '

**By Robert Golightly, Product Marketing and Dr Warren Becraft, Senior Principal Business Consultant, AspenTech**

As the decades rolled by, this once illustrious industry watched the IT sector take the information super highway, leaving the rest of the industry in the dust. Now, manufacturers have no time to waste in the adoption of innovation to accelerate into the future. According to LNS Research, the future Manufacturing Execution Systems (MES) solution will be interconnected with multiple platforms and come equipped with sophisticated functionalities that can handle adverse situations in the shop floor in real time.

### Taking hold of what tomorrow promises

Before hurtling into the future, manufacturers need to identify and remove baggage from the past. This clearly alludes to the general lack of interoperability across Manufacturing Operations Management (MOM) software infrastructure, creating a problem in both batch and continuous processing.

Today, customers want a seamless working experience with a global, unified MES solution. Bulk chemical manufacturers and refiners need to redefine unified solutions. This includes reference to batch operations and trends, such as the Industrial Internet of Things (IIoT), Smart Manufacturing – being factored into MES architectures and functionalities. Truly, there is no escaping the rise of enterprise MES for smart manufacturers facing fierce competition in this virtually borderless world.

**Say
no to**

### paper-based production management

A thing of the past – historic paper-based systems require a lot of time and effort. It slows down work in the process, costing companies excessive time, money and reduces agility in production.

This brings in the concept of Electronic Batch Records (EBR) to eliminate paperwork. Beyond capturing workflow activity, EBR literally replaces paper logbooks to track information holistically. The ISA-88 standard captures the migration process from paper-based production management to EBR. It contains models and terminology on controlling batch processes. These models provide a hierarchical and modular categorization process to manufacture the production by executing the process. This forms the basis of standardization within batch process automation. In an ideal world of execution, the Research & Development (R&D) department will develop the ISA-88 General and Site recipes. The information is further communicated to Production and Engineering before being translated into ISA-88 Master Recipes, which are equipment-specific.

Overall, digital manufacturing accelerates ramp up and time-to-market. Effective EBR takes hours off the production process to reduce time-to-market and inventory turns. It also accelerates operational excellence and the New Product Development and Introduction (NPDI) process. These metrics table a strong case for management to adopt the concept of digital manufacturing, as it literally teleports the plant into the next era of growth.

### Smart Manufacturing is here to stay

With high stakes to capture the future of process manufacturing, we can borrow a leaf of thought from Charles Darwin's thinking on human evolution. He said, "*It is not the strongest species that survive, nor the most intelligent, but the ones most responsive to change.*"

**In fact, the Manufacturing Enterprise Solutions**

Association (MESA) clearly spells out, "*The next generation Smart Factory feeds real-time information to a more empowered workforce through a combination of smart facilities, machines and equipment with built-in sensors, self-diagnostics and connection to other smart systems. Production processes in the Smart Factory can be optimized for best use of manpower, equipment and energy resources through simulation with digital representations and models. Smart Manufacturing encompasses and goes beyond smart machines, IIoT and the Smart Factory, recognizing that manufacturing processes in the 21st century go beyond the plant floor and must integrate the entire value chain that creates the final product.*"

Smart Manufacturing goes beyond models. It is a platform for applications to make better and faster decisions. With the next generation MES system, predictive analytics is an evolved form of machine learning. According to ARC's Peter Reynolds, "*Three things make machine learning different from predictive analytics. Machine learning algorithms are designed to adapt continuously and improve their performance with minimal human intervention. Process workflow also embeds Machine learning algorithms. That is, they become seamlessly integrated into the process to the point where they are invisible to the user or operator.*"

The future belongs to analytic providers, who can combine domain expertise with technology. These providers can develop more insightful analytics for asset performance, while advanced analytics make its way into the area of asset management. ARC's Ralph Rio analyzes, "*A modern Enterprise Asset Management (EAM) system provides the needed visibility, planning and execution to achieve the key goals for assets, which are uptime, asset longevity, cost control, and safety along with the executive needs for high return on assets (ROA). These goals directly affect C-suite objectives in the P&L statement and balance sheet for revenue, cash conservation, profitability and risk management. The average age of assets continues to increase, requiring improved asset management to operate as designed, while extending the service life of the asset.*"



### MOM will get us back to the future

MOM, or the Manufacturing Operations Management, is well positioned to deliver insights on production assets via advanced analytics and deep machine learning. This enables the organization to achieve stronger operational excellence and accelerate informed decisions wholeheartedly.

The Smart Manufacturing Leadership Coalition (SMLC) advocates an open, shared platform for developing, deploying, managing analytics and intelligence. The convergence of this shared platform

meeting the rise of IIoT will disrupt business models for asset management and subject matter assistance. The move towards prescriptive analytics will drive a consolidation cycle in a crowded vendor landscape. Survivors include those who combine analytics, machine learning and domain expertise to drive greater value and reduce the risk of program failure. Procedural automation is of strategic importance in bridging the gap between system and operator, as the industry pushes forward towards autonomous decision-making and action.

Indeed – just like Michael J Fox, we are surely leaving the lack of interoperability in the past behind to capture an envisioned future with the next generation MES system.
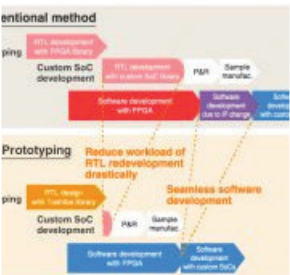
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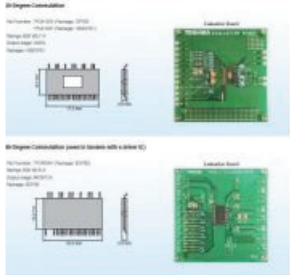**Categories**     **Tags**

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