

How MES Boosts production efficiency by driving quality?

MES 通过推动质量管理提升生产效率

With SIMATIC IT MES for life science industries.

SIMATIC IT MES 在生命科学领域的应用。

SIMATIC IT

Answers for industry.

SIEMENS



SIMATIC IT

The SIMATIC IT MES portfolio can cover the complete range of plant-related processes from warehouse management to the shipping of finished products. Because projects scopes can vary widely, Siemens MES solutions are complete yet adaptable and scalable, enabling customers to pick and choose the processes they need to automate. They can also choose to benefit from the capability to design their own, specific processes.

SIMATIC IT MES 组合可覆盖与工厂相关的从仓库管理到成品发运完整范围的所有过程。由于不同项目的范围变动可能很大，因此西门子 MES 解决方案具有完整的适应性和可扩展性，使客户能够选择适应其需要的不同流程。客户还可以通过选择设计满足其自身特定需求的流程功能从而最大限度的获益。

The SIMATIC IT MES for Life Sciences portfolio is divided into two principal sets of functional modules. The first group is collected within the The SIMATIC IT MES group which covers the functionality needed for manufacturing within a GMP facility. The second group of functional modules benefits from the The SIMATIC IT MES cross industry expertise and experience in providing data driven and IT service components within the SIMATIC IT MES Production Suite.

SIMATIC IT R&D Suite is a software platform managing all work- and dataflows related to R&D in an integrated way. It links the R&D environment with the production floor and speeds up time-to-production and time-to-market.

SIMATIC IT Intelligence Suite translates critical, real-time manufacturing information into business-level performance indicators, managing and distributing the information at every level in the organization with advanced role-based visualization based on the latest Microsoft technologies.

SIMATIC IT MES 生命科学组合划分成包含两个主要的功能模块集的组合。第一组中的所有功能模块集成在 SIMATIC IT MES 中，涵盖了在 GMP 设施内制造所需的功能。第二组的功能模块在 SIMATIC IT MES 生产套件中，通过提供数据驱动和 IT 服务组件的 SIMATIC IT MES 跨行业专业知识和经验，使用户最大程度获益。

SIMATIC IT 研发套件是一个以集成方式管理所有工作和研发相关数据流的软件平台。它将研发环境与生产平台相结合，加快了从研发到产品生产的时间和产品的上市时间。

SIMATIC IT 智能套件把关键的、实时的生产信息转化为业务级别的业绩指标，通过微软的 latest 技术，使用先进的基于角色的可视化方法管理并分发组织中各级别的信息。

SIMATIC IT MES also includes specific packages that cover the requirements of the process, the discrete or the life science industries. These are best practice solutions bundling dedicated functions and operational expertise for these specific industries.

The SIMATIC IT MES offering comes completed with an innovative offering of Value Added Services. These cover the entire product and project lifecycle, from the consultative analysis of the investment requirements with the value framework tool, over the project implementation, product training and including post-installation technical support.

The cooperation with certified partners ensures a worldwide service and maintenance network with an outstanding skill level and expert know-how.

This entire portfolio fits within the Siemens concept of 'Totally Integrated Automation' – linking shop floor to top floor, as well as offering the possibility for a 'one stop shop' from control and automation, to MES, ERP and even PLM.

SIMATIC IT MES 还包含了满足流程行业、离散行业 and 生命科学行业需要的具体软件包。这些最佳实践解决方案捆绑了特定行业的专用功能和业务专长。

SIMATIC IT MES 包括了不断革新的增值服务。这些覆盖了整个生产和项目周期，从使用价值框架工具对投资需求进行咨询分析，到项目实施、产品培训包括安装后的技术支持。

与认证的合作伙伴合作，这保证了拥有出色技能的服务和专家团队，从而确保全球性的服务和维护网络。

这一整套产品符合西门子全集成自动化的观念——把车间层与高层结合在一起，同时，使从控制层和自动化层到 MES、ERP 甚至 PLM 的“一站式”服务成为可能。





MES for Life Sciences: Operational Excellence at and across plant level 生命科学 MES：工厂和跨工厂级别的卓越运营

The life science industries are currently facing many challenges, ranging from increased competition, cost pressures and regulatory compliance to patient safety and reducing time-to-market. Today, being able to produce better and faster is critical and achieving operational excellence is the required strategy for modern life science manufacturers.

生命科学行业当前正面临许多挑战，从日益激烈的竞争、成本压力和法规的遵从到患者安全和缩短上市时间。现今，能够更好更快的生产至关重要，卓越运营是现代生命科学制造企业的战略需求。

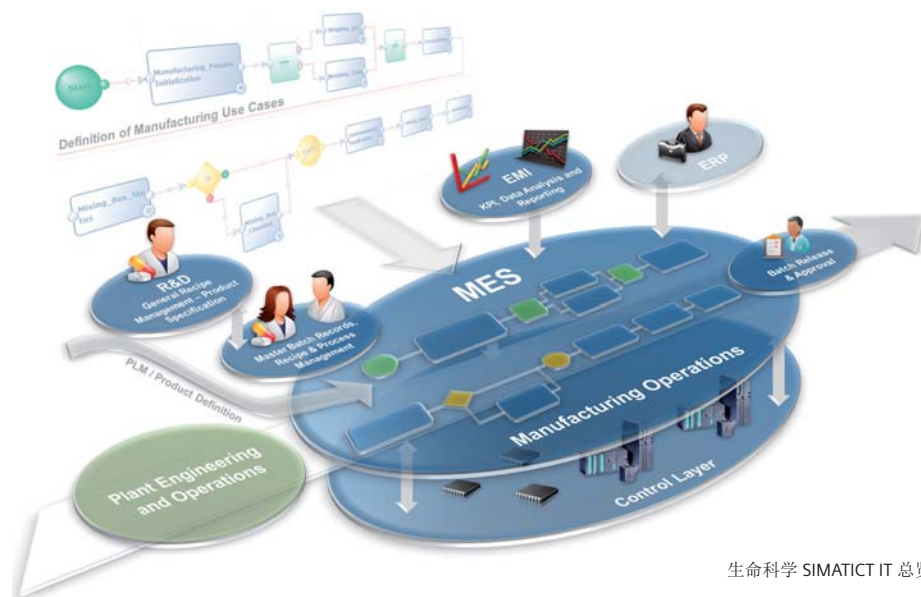
Efficient manufacturing is about consolidating and optimizing available manufacturing resources, including equipment, people, processes and products at and across plant level. Manufacturing Execution System (MES) with embedded Manufacturing Intelligence, addresses these requirements. MES encompasses real-time production execution and data availability, delivering production and quality information that supports optimization of production activities from order creation to finished goods. Seamlessly integrated with automation and business systems, MES helps you manage your entire plant operations on a global scale.

高效的生产是巩固和优化现有的制造资源，包括工厂和跨工厂级别的设备、人员、工艺和产品。嵌入式智能制造执行系统(MES)满足了这些需求。MES包含了实时生产执行和实用性数据，提供生产和质量数据，支持从工单生成到产品完成过程中生产活动的优化。通过与自动化和企业业务系统的无缝集成，MES帮助您以全球视野管理整个工厂的运营。

SIMATIC IT MES for Life Sciences: 生命科学 MES：

Siemens has been active in the pharmaceutical industry for many years. The mission of the Siemens MES Centre of Excellence for Life Sciences is to provide pharmaceutical and life science companies with the right MES software and services to help them achieve operational excellence.

西门子已活跃于制药行业很多年，西门子生命科学 MES 的任务是为制药和生命科学企业提供适合的 MES 软件和服务帮助企业实现卓越运营。



生命科学 SIMATIC IT 总览

SIMATIC IT MES for Life Sciences is a modular, flexible and scalable MES platform that meets the ISA-95 standard. SIMATIC IT MES for Life Sciences bridges the gap between R&D and manufacturing, and integrates and optimizes development, quality and manufacturing processes to ensure optimal manufacturing and market responsiveness.

Out-of-the-box and pre-validated, SIMATIC IT MES for Life Sciences offers a wide range of MES functionality together with a sound validation package, enabling advanced interoperability and reduced complexity.

生命科学 SIMATIC IT MES 是一个模块化、灵活、可扩展的 MES 平台，且符合 ISA-95 标准。生命科学 SIMATIC IT MES 为研发与制造、集成与优化开发、质量与制造流程之间构架了一座桥梁，以确保最佳生产和市场应变能力。

生命科学 SIMATIC IT MES 以开箱即用与预先验证的特点提供了广泛的 MES 功能。这些功能与可靠的验证包一起提供，实现了先进的互操作性并降低了复杂性。

SIMATIC IT MES for Life Sciences guarantees full compliance with GxP and FDA procedures and ensures fast deployment, low TCO and high ROI.

SIMATIC IT MES for Life Sciences optimizes manufacturing processes, enforces quality and regulatory compliance and shortens time-to-production and time-to-market.

With SIMATIC IT MES, improve factory productivity and quality at a lower cost.

生命科学 SIMATIC IT MES 保证完全遵守 GxP 和 FDA 规程，并确保快速部署、低总拥有成本和高投资回报率。

生命科学 SIMATIC IT MES 优化了制造流程，加强了质量和法规遵从，缩短了研发到生产的时间和产品的上市时间。

使用 SIMATIC IT MES，以低成本的方式提高工厂生产力和产品质量。

Feature Highlights 功能锦集

Integrating R&D and manufacturing processes, workflows and data

SIMATIC IT R&D Suite offers tools to define and manage corporate specifications, recipes, and bills-of-materials on a global scale. ELN functionality and formula workbench enable search and re-use of all existing research data. SIMATIC IT R&D Suite is based on the same architectural platform as the Production Suite, which facilitates the transfer of general recipes to manufacturing operations and the integration of R&D workflows with manufacturing processes.

集成研发与制造工艺，工作流与数据

SIMATIC IT 研发套件以全局视野定义和管理企业整体规范、配方和物料清单。ELN 功能和公式平台可以搜索并重用现存的所有研究数据。SIMATIC IT 研发套件基于与产品套件相同的架构平台，它能够帮助从总体配方到制造过程的转换，并促进研发流程与制造工艺的集成。

Plant Intelligence

Plant intelligence is the standard ETL solution and includes a structure for the data, using metadata, that helps users to find what they need, from multiple sources, in a consistent manner. Tools are provided that allow data to be manipulated into the required outputs. Management can instantly view dashboards, scorecards, KPIs and analytics, to effectively take appropriate decisions on a plant or corporate level. Manufacturing Intelligence provides global visibility into plant operations.

SPC

SPC/SQC functionality for product and process monitoring and analysis. RT data collection, calculation of process trends, calculation of deviations, real-time alarming. Defect checking of discrete products using statistical methods. Supports Lean and Six Sigma. Uses Data Historian and Report Manager.



工厂智能

工厂智能是标准的 ETL 解决方案，包括使用元数据的数据结构，通过一致的方式，从多个数据源，帮助用户找到他们的需要。提供操纵数据从而实现要求输出的工具。管理者可以即时地查看看板、计分卡、KPI 和分析仪，高效地在工厂与公司级别做出合适的决定。制造智能提供了在工厂操作过程中的整体可视化。

SPC

产品和过程监控和分析的 SPC/SQC 功能。RT 数据采集、过程趋势计算，偏差计算，实时报警。离散产品缺陷检查使用统计方法。支持精益生产和六西格玛。使用 Historian 的 Report Manager。



Asset Performance Management

Asset Performance Management bundles OEE, maintenance and manufacturing intelligence functionalities. From equipment effectiveness, breakdown analysis, maintenance and spare part management all the way to multi-site KPIs and real-time dashboards, it combines all that is required for optimized asset utilization, energy savings, effective plant management and manufacturing visibility. Each module is also available separately.

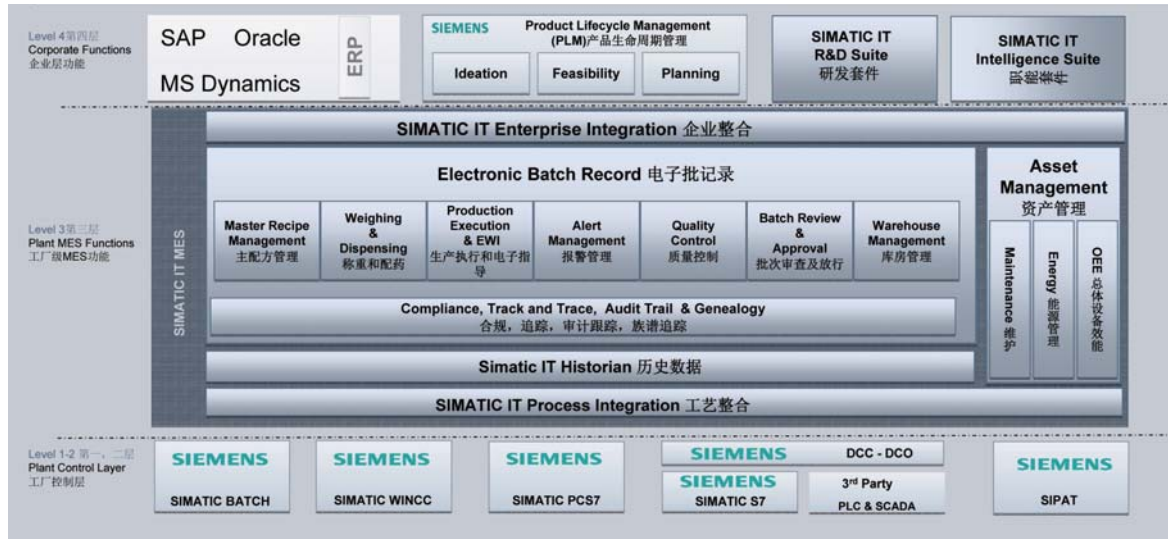
资产绩效管理

资产绩效管理与 OEE、维护与制造智能功能绑定。从设备效率、停机时间分析、维护和全程管理分解到多站点 KPI 和实时看板，它把所有优化资产的利用、能源节约、高效工厂管理与可视化制造所需求的因素结合在一起。每个模块都可以独立使用。

主配方与批记录管理

受益于强大的 workflow 技术，SIMATIC IT MES 提供了主批次记录 (MBR)，它描述了具体的制造工艺 (手工和自动)，实现了制造无纸化和工艺优化。MBR 包含了所有制药相关的数据：主配方、有效的标准操作规程 (SOP)、具体的工作指令、工作流和过程数据或步骤，如流程控制 (IPC)、关键流程参数 (CPP) 和关键质量属性 (CQA)。MBR 实现了图形化过程建模和子记录与子流程的重用。MBR 可以方便的获取 SIMATIC IT 研发套件中设计的总体配方，并分配工厂的特定信息。

SIMATIC IT for life Sciences An eBR-driven Platform



OEE

Measurement, reporting, and analysis of capacity utilization and reliability KPIs such as Overall Equipment Efficiency. Flexibility to adapt existing and define new KPIs. Uses Data Historian and Report Manager.

全局设备效率

测量, 报告并分析应用能力和可靠性 KPI, 如全设备效率。能够灵活地适应现有的或新定义的 KPI。使用历史数据和 Report Manager。

Energy Management

Integration of analytical and visualization energy management tools makes possible to monitor data in real time and inform appropriated decision-makers in case of non-conforming incident.

能源管理

可监控实时数据并具备分析及形象化并能在异常情况下提醒恰当的决策者的一整套能源管理工具。

Maintenance

Equipment incident alerting, root cause assignment, service or maintenance task definition and scheduling.

系统维护

设备故障报警, 根本原因分配, 服务和维护任务定义和规划。

Master Recipe and Batch Record Management

Empowered with powerful workflow technologies, SIMATIC IT MES offers Master Batch Records (MBRs) that describe detailed manufacturing processes—both manual and automated—enabling paperless manufacturing and process optimization. MBRs contain all pharmaceutically relevant data: the master recipe, valid SOPs, detailed work instructions, workflows and process data or steps, such as in-process controls (IPCs), Critical Process Parameters (CPPs) and Critical Quality Attributes (CQAs). MBRs enable graphical process modelling and reusability of subrecords and subprocesses. MBRs can easily retrieve corporate recipes designed in SIMATIC IT MES R&D Suite, assigning plant-specific information.

Weighing & Dispensing

The system includes a dedicated Weighing & Dispensing module, already deployed in more than 100 manufacturing facilities in 20 different countries. It includes 15 out-of-the-box weighing modes, and provides for complete traceability and reliability of the weighing operations.

称量和配药

系统包括专门的称重和分发模块, 已部署在 20 个不同国家的超过 100 的生产设施中。模块包含 15 种开包即用的称量模式, 提供完整的可追溯性和称量操作的可靠性。

Electronic Batch Record

The eBR module enables the management of complete paperless manufacturing within regulated processes. Fully compliant with FDA & GMP regulations, this module optimizes the Batch Manufacturing Documents and Processes. The efficiency of all resources is maximized: User guidance, equipment allocation, SOPs. Every operation within production execution, whether human or

PLC controlled, is controlled and tracked. EBR permits the review of the product batch record by exception, providing better time-to-market and significantly reducing review and release times.

电子批记录

eBR 模块实现了监管流程中完整的无纸化生产。此模块优化的批生产文档和流程, 完全符合 FDA 及 GMP 规定。所有资源的效率最大化利用, 包括用户指导、设备配置、SOP。生产执行过程中的每一步操作, 不论是手工或 PLC 控制, 都能得到控制和跟踪。EBR 使基于异常的产品批记录审查成为可能, 显著减少审查和放行时间, 从而缩短产品到达市场的时间。

Integrated Quality: IPC, SPC, LIMS & PAT

SIMATIC IT integrates quality in the production process with in-line and off-line quality management. At-line quality provides a series of procedures and methods to monitor, analyze and control biological, chemical and physical hazards in processes and operations. The Statistical Process Control tool (SPC) monitors the performance of the production lines and predicts significant deviations that may result in rejected products. Off-line testing is taken care of by the Laboratory Information Management System that manages the workflow in laboratories, optimizing collection, analysis and reporting of quality data in the lab and on the production line. Through modelling, sampling and testing, the lab and the production areas become more integrated environments. SIMATIC IT also connects with SIPAT, the Siemens solution for Process Analytical Technology requirements offering in-line quality.

质量集成: IPC, SPC, LIMS (Unilab) 和 PAT

SIMATIC IT 在生产过程中集成了在线和离线质量管理。在线质量管理提供了一系列规程和方法来监控、分析和控制在工作过程和操作中生物的、化学的和物理的危害。统计过程控制工具 (SPC) 监控生产线性能并预测导致次品的明显偏差。离线测试由实验室信息管理系统负责, 它管理实验室 workflow、优化采集、分析并报告在实验室和生产线上的质量数据。通过建模, 采样和测试, 使实验室与生产区域成为更加集成的环境。SIMATIC IT 同时还与 SIPAT 连接, 这是西门子为在线质量管理过程分析技术提供的解决方案。

Unilab

Fully scalable LIMS (Unilab), for consistent management of quality data and workflow throughout the enterprise. For use in QC, service or R&D environments. Supports all aspects of regulatory compliance. Sample planning, sample data storage, compliance, alarming, reporting. Unilab is part of Simatic R&D Suite and an optional component of Simatic IT Production Suite.



实验室管理系统

具有高度扩展性的 LIMS (Unilab), 整个企业的质量数据和工作流一致管理。可用于 QC, 服务和研发环境。支持法规遵从的所有方面。取样规划, 样品数据保存, 合规, 报警, 报告。Unilab 是 Simatic IT 研发套件的构成组件, 也是 Simatic IT 生产套件的可选组件。

Batch Release & Approval

Batch Release & Approval enables efficient batch release through review by exception. The electronic batch record automatically generates the execution report and an alert report, making it easy for dedicated signatories to assess relevant information for batch approval or rejection.

批放行与审批

批放行与审批使得在例外情况下批次的放行能有效地通过审查。电子批次记录自动地生成执行报告和警报报告, 使专用签署能方便的访问批次被批准或被拒绝的相关信息。



Warehouse Management

The Warehouse module controls and pilots material flows in real time, from ingredient receipt in the warehouse to dispatching. It provides a comprehensive material tracking and tracing system, down to the container/lot level, performing automatic checks on quality and inventory at each step of production.

仓库管理

从原料处方到配送, 仓库模块实时地管理并指导着物料流向。它提供了全面的物料追踪与跟踪系统, 下至容器 / 批次级别, 在生产过程的每一步对质量和库存进行自动检查。

Material Control & Tracking:

The system allows for the management and tracking of all the materials at plant floor level including raw and packaging materials, semi-finished and final products, from the reception of goods to the shipping of manufactured products. It comprises out-of-the box features which conform to FDA-GMP procedures.

物料控制和追踪

系统允许管理和追踪工厂现场级的所有物料, 包括的种类有原材料、包装材料, 半成品和成品, 管理的范围涵盖从物料的接收到产成品的发运。包括符合 FDA-GMP 流程的开包即用特征功能。

Audit Trail & Genealogy

SIMATIC IT MES records all operations for product and regulatory review purposes. It provides 21CFR Part 11 compliance, providing access control, e-signatures, audit trail, forward and backward genealogy, data security and electronic records.

审计跟踪和谱系

SIMATIC IT MES 记录所有为生产和常规复审而进行的操作。它遵从了 21CFR Part 11 规程, 提供访问控制, 电子签名, 审计跟踪, 向前和向后的谱系, 安全数据和电子记录。

Product Order Manager

Import orders, schedule, create a production order for a defined product, execute and monitor production, and create production report.

产品工单管理

导入工单排程, 为定义的产品创建工单, 执行和监视生产, 创建生产报告。产品和过程监控和分析的 SPC/SQC 功能。RT 数据采集、过程趋势计算, 偏差计算, 实时报警。离散产品缺陷检查使用统计方法。支持精益生产和六西格玛。使用 Historian 的 Report Manager。

Core - FDA cGMP Compliance and Integration Hub

The Core module records all operations required for product and regulatory review purposes. The system provides 21CFR Part 11 e-signatures, audit trail, batch genealogy and electronic records including eBatches. The Core also provides the integration hub to ERP, LIMS, automation systems via OPC and any third party applications. The system can also be accessed via mobile devices.

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With the Simatic MES for GMP solution, Siemens aims to provide innovative and best-of-breed solutions for life science companies, integrating advanced functionalities in the off-the-shelf software. This means that the solution includes many components that are pre-validated.

Data Historian

Displays real-time plant data; archive of historical plant data. KPI calculation, data analysis and reporting of continuous and batch production information. Native interfaces to Siemens control products and OPC. Standard reports provided by the Report Manager.

Data Integration Service

Reliable XML message exchange with other applications including B2MML implementation, SAP, MQ Series and generic connector such as Web Service, .NET, and COM. Acts as plant level message bus, including message buffering.

审计跟踪和谱系

可靠的 XML 消息交换，可与第三方应用集成，包括但不限于 B2MML 实现，SAP，MQ Series。通用的连接器支持 Web Service，.NET 和 COM。工厂级的消息总线，包括消息缓存。

核心 - FDA cGMP 法规遵从性和集成集线器

核心模块记录所有产品和以合规为目的要求的所有操作。系统提供满足 21CFR Part 11 要求的电子签名、审核跟踪、批族谱和包括 eBatch 的电子记录。系统核心还提供到 ERP、LIMS、通过 OPC 集成的自动化系统和任何第三方应用程序的集成集线器。此外系统还可以通过移动设备访问。

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通过 Simatic MES GMP 解决方案，西门子的目的是提供生命科学公司创新的，集成先进的现成软件功能的最佳同类解决方案给生命科学公司。这意味着该解决方案包括许多组件已经预先通过验证。

历史数据记录

显示工厂实时数据，记录工厂历史数据，KPI 计算，数据分析以及连续和批生产信息报告。到 Siemens 控制产品的本地接口和 OPC 接口。通过 Report Manager 提供的标准报表。

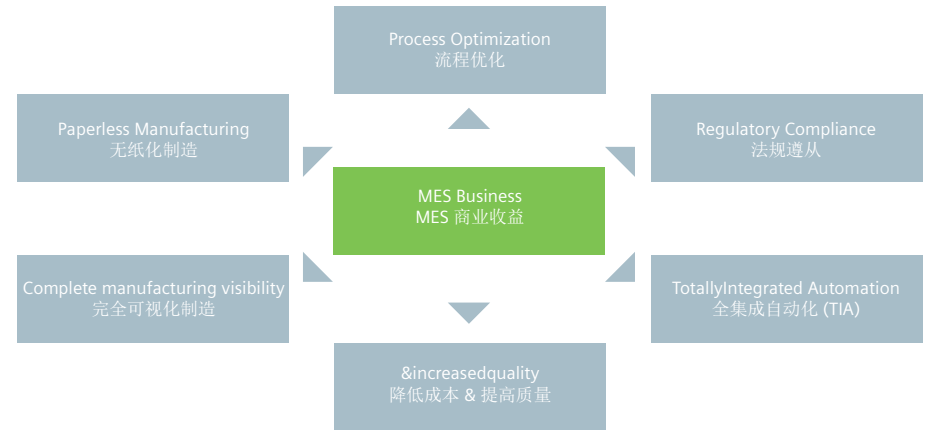


MES – The foundation for Operational Excellence

MES – 卓越运营的基础

MES deployments show significant benefits for life science manufacturers, ranging from increased quality and regulatory compliance to more effective manufacturing, shorter time-to-market and enhanced performance management.

从质量提升和法规遵从到更高效生产、更短的上市时间和增强的绩效管理，MES 的部署显示了它为生命科学制造企业带来的重大意义。



Regulatory compliance

SIMATIC IT MES for Life Sciences ensures compliance with international regulations and standards, fostering quality across processes and providing greater visibility. Complete manufacturing traceability, audit trails, effective sample management, batch genealogy, electronic batch recording, e-signatures and LIMS facilitate information retrieval and batch release by exceptions.

遵从法规

SIMATIC IT MES 生命科学确保遵从国际法规与标准，促进跨流程的质量并提供更强大的可视性。完全的制造可追溯性、审计跟踪、高效采样管理、批次谱系、电子批次记录、电子签名和 LIMS 都为信息获取与批次例外放行提供了便利。

Paperless manufacturing

The life science industry has to accurately manage a large volume of documents, starting with the recipe. Paper-based systems, however, are often error-prone. SIMATIC IT MES for Life Sciences supports paperless manufacturing using electronic records and electronic signatures. Paperless manufacturing translates into faster information exchange and retrieval, reduced need for storage space, fewer human errors, good data integration, KPIs and advanced information queries, thus driving better productivity and higher quality.

Process Optimization for continuous improvement

SIMATIC IT MES in Life Sciences supports the continuous improvement process as it enforces compliant execution of lab and production processes and accurately compiles manufacturing data for regulatory-required records. It enables analysis of process performance and corrective action management. Process variability is therefore reduced.

SIMATIC IT MES for Life Sciences simplifies and secures complex lab and manufacturing processes, whether manual or automated. Directed manufacturing, real-time non-conformance communication, material flow management and e-batch review by exception are just a few deliverables from SIMATIC IT MES that ensure operational excellence through better performance.

Cost reduction & Increased Quality

SIMATIC IT MES for Life Sciences reduces costs and improves operational performance. SIMATIC IT MES eliminates errors, and significantly reduces scrap and process delays. Seamlessly integrated with ERP and automation systems, SIMATIC IT MES performs data monitoring, automatic controls and calculations. This leads to enhanced productivity, safer production, higher quality and shortened cycle times.

无纸化生产

从处方开始，生命科学行业需要准确地管理一大批文档。然而基于纸张的系统易于出错。SIMATIC IT MES 生命科学支持使用电子记录和电子签名进行无纸化制造。无纸化制造带来了更快的信息交互和信息获取、更少存储空间、更少的人工错误、良好的数据集成、KPI 和高级信息查询，从而带动了更好的生产力和更高的质量。

过程优化带来的持续改进

SIMATIC IT MES 生命科学支持不断的过程改进，因为它强制遵从从实验室和生产过程的执行，并准确编译生产监管所需的记录数据。它实现了过程性能分析和校正活动管理。过程的不确定性因此降低。

SIMATIC IT MES 生命科学通过手动或自动的方式使得复杂的实验室和制造过程简单化且安全化。受监管的制造、实时不一致通信、物料流程管理和例外电子批次审核只是 SIMATIC IT MES 可交付成果的一部分，它们确保了更高效的卓越运营。

成本降低和质量提高

SIMATIC IT MES 生命科学降低成本并提高运作效率。SIMATIC IT MES 排除了错误并显著降低了废品率和生产延期。通过与 ERP 和自动化系统的无缝连接，SIMATIC IT MES 执行数据监控、自动化控制和计算。这带来了更高的生产力、更安全的制造、更高的质量和周期时间的缩短。



Totally Integrated Automation

Within the Siemens concept of Totally Integrated Automation (TIA), SIMATIC IT MES for Life Sciences offers integration from field and control level through to operations and management, thus ensuring optimal manufacturing and market responsiveness.

The seamless integration between Siemens MES and Siemens automation systems increases operational reliability, minimizes validation efforts and delivers end-to-end industrial IT solutions.

Increased Manufacturing Visibility

By providing the right performance management and analytical tools, SIMATIC IT MES enables cross-site performance comparisons and reporting, thus contributing to operational excellence and the ability to run a global business effectively. SIMATIC IT MES for Life Sciences improves asset utilization and performance through better process visibility.

全集成自动化

在西门子全集成自动化 (TIA) 的观念中，SIMATIC IT 生命科学提供了从现场和控制级别到操作和管理级别的集成，因此确保了优化制造和快速的市场反应。

西门子 MES 和西门子自动化控制系统的无缝集成增强了运行的可靠性，最大限度地减少验证工作，并提供了终端到终端的工业 IT 解决方案。

全集成自动化

通过提供正确的绩效管理和分析工具，SIMATIC IT MES 实现了跨站绩效比较和报告，从而促进了卓越运营和有效运行全球业务的能力。SIMATIC IT MES 生命科学通过更好的过程可视化提高了资产的利用率与绩效。

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