Manufacturing Execution Systems (MES): What to consider when initiating your MES journey?

Executive summary

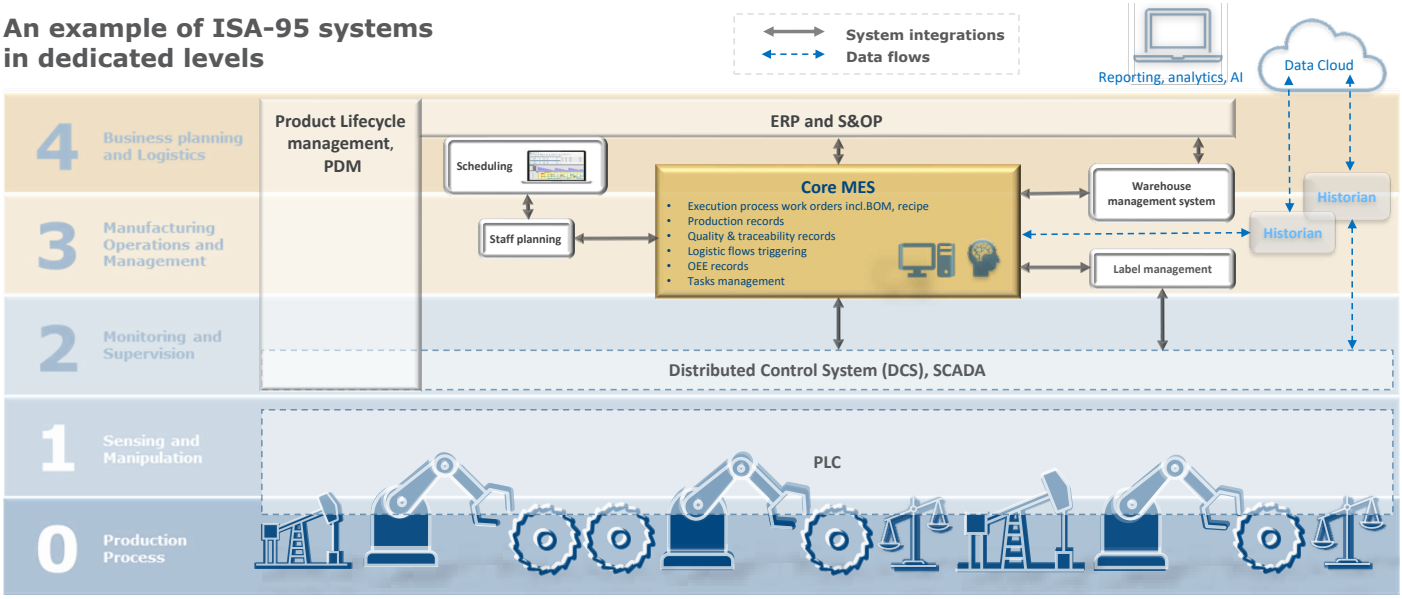
A Manufacturing Execution System (MES) is designed to **manage and optimise manufacturing processes** especially in discrete manufacturing and the process industry.

A MES system **brings value** by:

- Integrating enterprise level system, like ERP/PLM, data to shopfloor-level data and control
- Providing real-time visibility for manufacturing processes, production schedules and orders, inventory levels, quality control, and equipment statuses
- Coordinating the operational personnel work and giving a holistic situational awareness overview
- Helping to reduce manufacturing costs, minimise waste, improve product quality and give full traceability
- Providing detailed data and analytics for quick decision making for improvements and continuous development

MES at the heart of the execution process – in the L3 layer in ISA95 standard

An example of ISA-95 systems in dedicated levels



What are the first steps when exploring the need for a MES software?

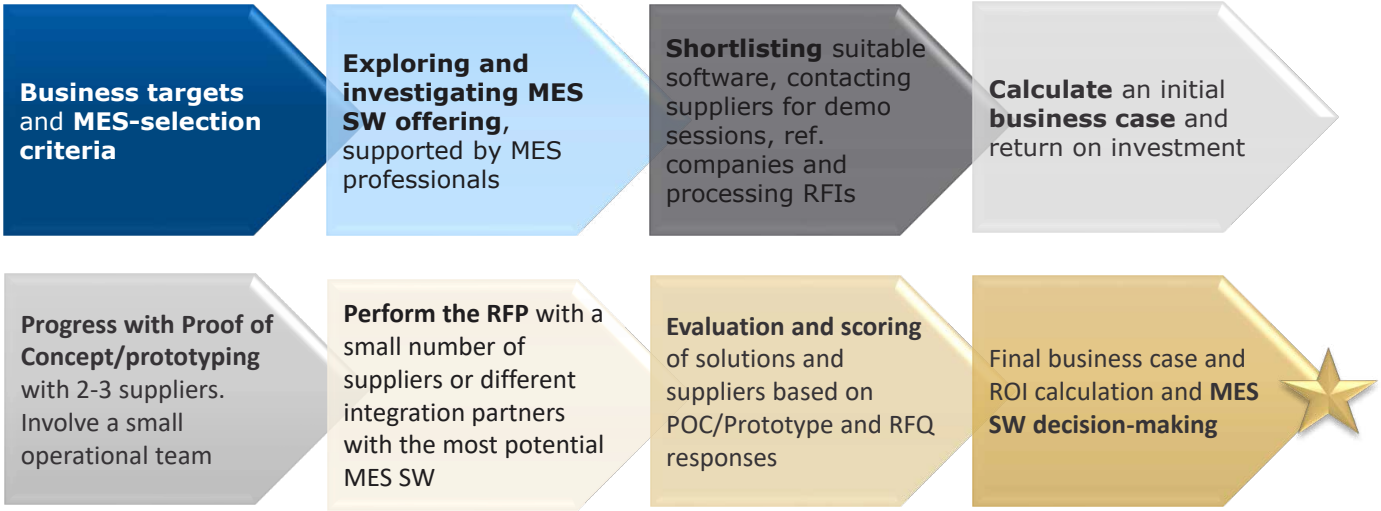
Use your strategy to set the target state and selection criteria for your MES. Gain a holistic view of manufacturing solutions, architecture and processes, and explore the biggest development needs.

Important steps to start with:

1. **Ensure project governance**
   MES solution owner, business owner and business organisation commitment in focus.
2. **Know your business**
   Understanding own operating model, manufacturing processes, equipment and IT systems (See more: Midagon manufacturing maturity assesment).
3. **Explore the high-level needs**
   Main issues and development opportunities, and turning them into tangible goals and objectives. Identify the requirements for master data (See more: Fixing the foundation first).
4. **Identify the MES scope and scale**
   Manufacturing site/s in the scope, processes that MES should or could handle, and MES as part of the manufacturing systems architecture.
5. **Investigate MES offering**
   MES software suitability to your business line, e.g. Oil&Gas, Food&Beverage, Pulp&Paper, or Pharmaceuticals.

Main steps towards MES software decision-making

MES software investigation and deeper exploration are important investments for the future. Your pre-defined MES selection criteria are the baseline for the assessments. The business representatives' involvement in the proof of concept and evaluation phase is a great way to gain commitment to the change and implementation of the new MES software.



Lifetime costs should be carefully evaluated when planning a new Manufacturing Execution System

1 Project costs

- **Project resources internally**
- **Supplier's or integrator's project delivery costs**
- **License costs**
- **IT infra costs**
- **Integration costs** to L2 or L4 systems

2 Annual maintenance and incident support costs

Resourcing decision:

- To build a **deeper MES SW competence in-house** or
- **Use external supplier support** (preferably the same supplier who implemented the system) **and the Service Level Agreement** (SLA) options based on priority

3 Annual usage costs

- **Annual SW maintenance** (SW upgrades, other possible updates and the IT infra setup maintenance)
- **Key user network costs**
- **Continuous development**

MES implementation costs can be a small portion of MES lifetime costs, which should be well understood.

Consider a Proof of Concept (POC) or Prototyping phase*

This phase provides deeper information about the system, supplier collaboration and internal process status.

MES SW providers are quite often willing to perform a **Proof of Concept** or **Prototype** of their MES solution. This "mini-MES" is modelled with the customer's own data and processes, with a fairly small scope. It has no, or limited, integrations to other surrounding systems.

This phase is highly recommendable, as it allows you to gain a deeper understanding of:

- **The solution's capabilities**, functionalities, user experience and usability
- **The supplier's behaviour and capability** to respond to customer requirements, ideas, questions and challenges and propose best practises
- **Your own process descriptions** and how they can be modelled into the MES software (processes, master data, factory taxonomy, assets, quality systems, automation/ERP interaction, etc.)

*Prototyping = Functioning model of the product to gather feedback by testing
Proof of Concept = Small scale demonstration to show that concept is feasible

The importance of choosing the right supplier

- The focus is often on the MES software selection and its features. Identifying the suitable MES software for your needs is essential but finding **the most value-adding supplier** is equally important.
- 3rd party assessment can be used to ensure an objective and **high-quality supplier selection process**. Examples of supplier evaluation aspects from the *Midagon Solution Provider Selection Delivery Guide:*
  - Supplier capabilities and experience
  - Supplier SWOT analyses (Strengths-Weaknesses-Opportunities-Threats)
  - Technologies used and ways of working
  - Visits to the supplier's reference customers
  - Pricing is one of the primary decision factors, but it requires a lot of effort to get comparable prices from different vendors.
- A Proof of concept phase together with business representatives gives valuable feedback on how **smooth the supplier cooperation** is, helping with the supplier selection.

This Midagon Point of View highlights actions for building a solid foundation for your MES journey

In the next Point of View, we will discuss how to continue the MES journey based on the foundation.

1 Foundational elements in place

- MES has a critical role in efficient production operations and operative personnel satisfaction.
- With a shared understanding of the objectives of MES and its role in the enterprise architecture, the organisation is internally ready for the MES journey.
- Against these objectives, you can identify and select the right partners and technologies.

2 Our next Point of View: From the MES project to improved daily operations

- Build and maintain commitment among your stakeholders – from operative personnel to top management.
- Manage development roles & responsibilities efficiently – from day one to stable daily operations with new MES capabilities.
- Ensure an efficient end-to-end operative flow – it's not only about the MES but also about industrial efficiency.

Looking to improve your manufacturing operations with a new MES? Get in touch!

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