

Solutions

*Professional IT solutions
for the Smart Factory!*



WE CREATE SMART FACTORIES

MOTIVATION



Increase productivity with manufacturing IT

There is no question about the increasing value of manufacturing IT. The benefits have such a magnitude that production companies can no longer shut themselves away from addressing this subject, especially bearing in mind Industry 4.0.

If we talk about solutions we mean IT-based solutions that we design and implement for production companies. We can fulfil your needs from one source. You can also decide if and when you would like to participate and add your own input at any stage of the project.

MPDV's experienced project managers guarantee a trouble-free project run and to phase-in all people involved. This avoids friction, costs remain within the stipulated parameters and benefits come quickly into fruition.

The experts from MPDV rely on innovative and field-tested products and flexible services when implementing a solution. However, you are still in the driver's seat and you decide on the components and the services you require.

SOLUTION & BENEFITS

Tailor-made IT solutions

Production companies profit from MPDV's tailor-made IT solutions, the extensive expertise and the long-standing project experience. MPDV is one of the leading suppliers of IT solutions for the Smart Factory with more than 1.250 implemented MES projects and more than 40 years of experience in production IT. Businesses of all sizes and from different industrial sectors confide in our modular, scalable and integrated solutions.

An IT solution can be considered as a good one if the defined task is solved in a user-friendly and sustainable way. In this light, our experts develop together with the future user a solution package that fulfils all requirements. To achieve this, we combine existing products with services on a needs-base. Coordinating all people involved and the communication with your project leader is taken on by one of our experienced project managers. The result is a quick introduction and thus, a quicker return on investment (ROI).



Your advantage: All from one source

Turnkey solutions like in the construction industry have the advantage that time for coordination is reduced to a minimum. Tested and established processes ensure a smooth collaboration of all people involved. Overall, there are attractive benefits for the future user:

- Effective communication for all aspects
- Reliable project plans including progress control
- Marginal disruption of the running production
- Verifiable costs and fast ROI
- Predictable project risks
- High security of investment
- Expandable solution - bearing in mind Industry 4.0



Professional lifecycle management

A sophisticated lifecycle management ensures that your IT solution is always up-to-date and future-proof. A steady implementation of release or version changes enables you to profit from improvements and upgrades. If you sign a maintenance contract, extensive support services will be available to you. We can also support you in additional measures, like the roll-out of functions and modules or a local roll-out of the system for use across other production areas or sites.

INTEGRATION

Classification of manufacturing IT

A Manufacturing Execution System (MES) closes the gap between management and production according to the VDI guideline 5600 (based on IEC 62264). In order to play that role, the system must be thoughtfully embedded into the business landscape. This includes the connection to essential IT systems like the ERP and also to machines, equipment and processes and, finally, the interaction with the MES users.

Apart from a large portfolio of MES functions, MPDV's solutions also offer the ability to integrate the system horizontally and vertically. Horizontally between the individual MES applications across the complete value chain and vertically, between shop floor and management systems by using powerful interfaces.



Things to consider when choosing an MES solution

Due to the fact that an MES is used across all business levels and the specific requirements in the shop floor, the MES solution should entail certain characteristics necessary for applications close to production. Apart from our long-standing experience in the production environment, our MES solutions profit from the input of the HYDRA Users Group, an association of HYDRA users. Therefore, our customers can rely on MPDV's Manufacturing Execution Systems to work with state-of-the-art technology and at the same time, to have a practice-led approach.

Essential characteristics of MPDV's IT solutions:

- Support of an uninterrupted 24/7 system operation
- Extensive system monitoring
- Multi-instance and multi-system capability
- Multi-leveled, role-based authorization concept
- Flexible configuration and customization options
- Unicode-capability and multi-lingual language tables
- Offline ability during failure of IT components
- Integrated escalation and workflow management
- Cloud capability and processing of big data volumes
- Combining mobile and stationary MES applications

PROJECT MANAGEMENT

Implement projects professionally

According to DIN 69901, project management embraces the entire spectrum of management tasks, organization and tools to process a project. Project management for you, the customer, means that the project goals are achieved:

- in the specified time,
- in the right quality,
- and within the budget.

During an IT project, the MPDV project manager takes on the critical tasks to implement the project successfully. These include:

- Defining tasks clearly
- Strict planning and monitoring of all activities
- Assigning responsibilities
- Complying to quality, deadlines and costs
- Documenting the whole project
- Managing risks

If you are experienced in implementing IT projects, just select those tasks from our service portfolio that we should accomplish for you.



Projects come in all kinds of forms due to different content. Common project goals are:

- Introduction of an MES system
- Upgrading an existing system
- Release change for a running system
- Replacement of an old MES system

All these disciplines are covered by long years of experience of MPDV's project managers. MPDV employees are always up-to-date by attending regular training programs. In addition, MPDV is a member of the GPM (German Society for Project Management and member of IPMA International Project Management Association) and is actively participating in the task force "Project management for medium size companies".



The main goal of IT project management is to merge suitable products and services into a compatible solution, and to coordinate the activities of team members for the complete project duration. To achieve the above, the project management relies on our in-house business units Products and Services.

Determine your contribution

Numerous companies have experience implementing an IT project. Naturally, you can utilize your project management know-how and decide yourself to which extend the MPDV project manager should be involved. You can select from service packages defined by MPDV that can be individually adjusted, if required.

Basic project management

The MPDV project manager takes on the scheduling and the control of separate project steps. He takes care and synchronizes activities continuously along the whole project run, organizes the kick-off meeting and documents the project. The project manager is always briefed on the technical fine tuning and organizes the exchange of documents. On your end, there will be a counterpart for the MPDV project manager to coordinate all members of your project team.

Advanced project management

For our advanced project management, we have incorporated a joint escalation management, on-going cost control, risk management and a change request management. Further tasks for the project manager are continuous reporting, identifying target conflicts, and the evaluation and prioritization of project goals.



We offer supporting services for your project manager if you require additional resources or essential know-how. We can arrange for consulting ahead of the project. During this session, we prepare your project manager for the tasks ahead and provide best practice training. Also we offer to consult and support your project leader during the running project in form of defined service packages or on demand.

Outsourcing the project management enables you to spare vital resources and to rely on MPDV employees completely. That in turn means that the MPDV project manager will fully coordinate the project team in your company.

PRODUCTS

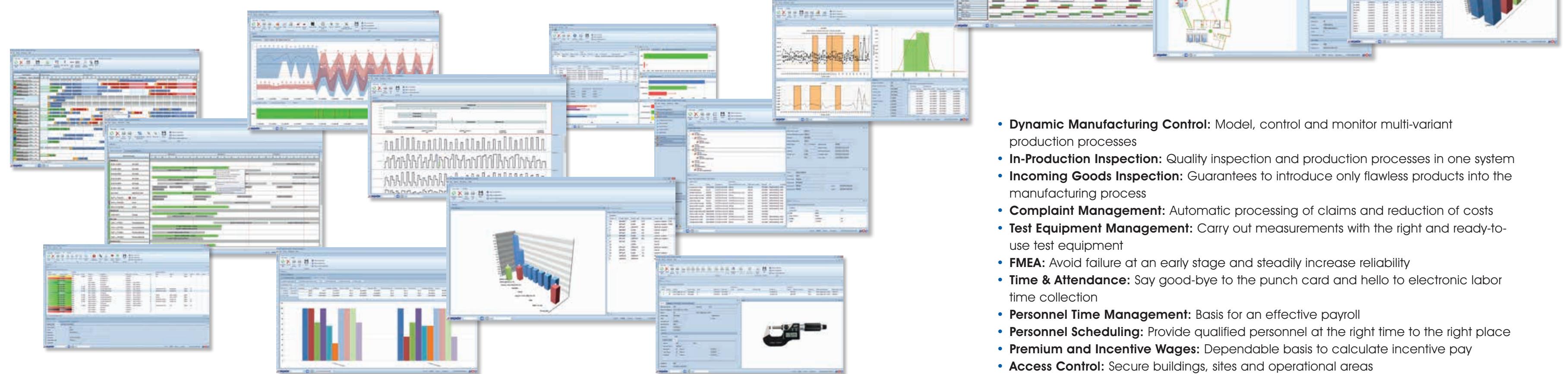
Products for the Smart Factory

The basis for a successful solution are field-tested products by MPDV that consist of the MES HYDRA product family among others. HYDRA provides all required components that are needed for a mature, field-tested system concept:

- Interfaces to machines and equipment
- Acquisition and information functions in the shop floor
- Powerful programs to:
 - process recorded data
 - prepare and maintain master data
 - perform detailed planning and production control
 - conduct monitoring and controlling
- MES functions used for mobile devices and web browser
- Dashboards for overall KPI systems
- Basic functions and interfaces to seamlessly integrate the MES into existing business processes and IT environments

From a functional point of view, there are application packages that fulfil the requirements of an MES according to the VDI guideline 5600:

- **Shop Floor Data:** Maximum transparency of production orders
- **Machine Data:** Reliable, reproducible data to improve machine utilization
- **Shop Floor Scheduling/Detailed Planning:** Optimization of machine assignment and reduction of idle times
- **Tool and Resource Management:** Minimize maintenance, set-up and provisioning time
- **Material and Production Logistics:** Ideal control and monitoring of production material
- **DNC and Set-up Data:** Reduce set-up times by automatic provision of NC/ set-up data
- **Energy Management:** Detect energy waste and reduce production costs
- **Process Data:** Document, monitor and identify trends
- **Tracking & Tracing:** Complete product transparency during fabrication



- **Dynamic Manufacturing Control:** Model, control and monitor multi-variant production processes
- **In-Production Inspection:** Quality inspection and production processes in one system
- **Incoming Goods Inspection:** Guarantees to introduce only flawless products into the manufacturing process
- **Complaint Management:** Automatic processing of claims and reduction of costs
- **Test Equipment Management:** Carry out measurements with the right and ready-to-use test equipment
- **FMEA:** Avoid failure at an early stage and steadily increase reliability
- **Time & Attendance:** Say good-bye to the punch card and hello to electronic labor time collection
- **Personnel Time Management:** Basis for an effective payroll
- **Personnel Scheduling:** Provide qualified personnel at the right time to the right place
- **Premium and Incentive Wages:** Dependable basis to calculate incentive pay
- **Access Control:** Secure buildings, sites and operational areas



We can also provide suitable components like industrial shop floor terminals, flexible machine interfaces and customary reading devices to complete your MES solution. These components are field-tested and fulfil production requirements.



You can find a comprehensive description of our products in a brochure with the same title. You can browse through common MES applications starting with data collection arriving at evaluations, reports and planning functions, illustrated with numerous screenshots.

SERVICES

Services for the Smart Factory

Apart from products, needs-based services are also part of the introduction of manufacturing IT or an upgrade of the system. Our experts support you from the initial consultation, through the implementation stage and finally, when operating the system. We also offer the relevant training. The project manager coordinates required services for an IT project and clarifies what contributions you will make, the support you require from MPDV and what activities we are taking on.



Our services include all type of support for all phases of a system introduction. Please refer to our brochure Services for further information.

Conceptual phase



- Feasibility study
- Specifications and tender
- Requirement specifications and fine concept

Implementation phase



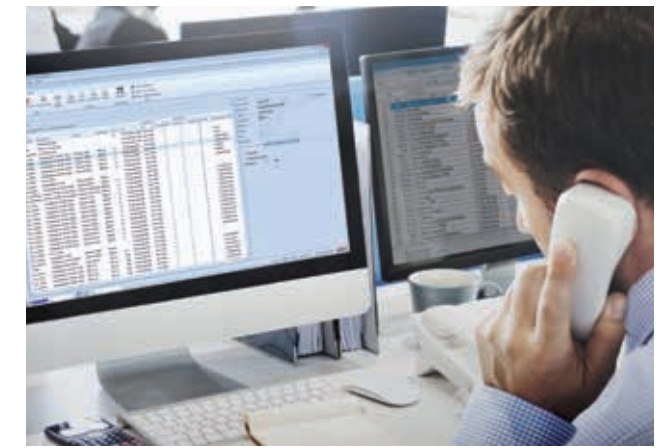
- Support during MES integration
- Implementation services
- Configuration and customizing
- Individual programming

Training & Certification



- MES HYDRA User
- MES HYDRA Advanced User
- MES HYDRA Developer
- MES HYDRA Certification

System operation

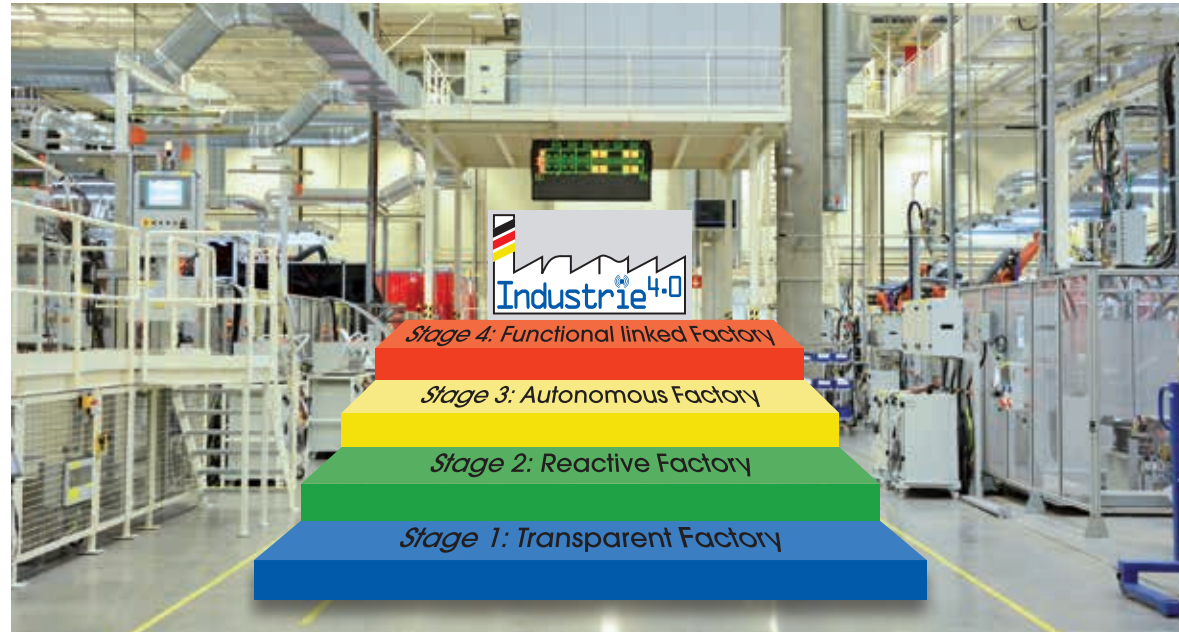


- HYDRA system support
- Life cycle management
- System upgrades and roll-out

New challenges with Industry 4.0

In future, manufacturing IT will be confronted with new tasks, adding to the daily challenges in the production environment. The constantly increasing digitalization offers required, basic technologies but the applications must adhere to the new challenges. Thus, the experts from MPDV have developed the four-stage-model "Smart Factory" and support production companies on their way to Industry 4.0.

The first stage on your way to the Smart Factory is the "transparent factory". That means, companies know promptly what is happening in production. That is where the "reactive factory" (stage 2) sets in - this is when collected data is aggregated and properly visualized in order to quickly see the repercussion if introducing changes to the shop floor. It is essential to quickly react to interruptions in the shop floor with targeted measures. Then, we arrive at the third stage, the "autonomous factory", where you can develop local standards for production processes based on the already achieved reactivity. And finally, you reach the fourth stage "the functionally linked factory". This final step considers associated processes and systems like PLM, energy management and site management.



The first two stages, "transparent factory" and "reactive factory" can be achieved almost completely with an MES solution. We recommend to digitalize existing processes and also on this occasion, to critically inspect these procedures. Often, you can simplify processes and avoid unnecessary waste. You can do the above by introducing an MES or upgrade existing HYDRA systems.

The third and fourth stages partly exceed the performance scope of present MES systems. State-of-the-art manufacturing IT offers valuable support though, e. g. designing local control loops like ekanban or connecting PLM systems to production.

FLEXIBILITY

In a package or separately

If we look at the IT landscape of production companies, there are two obvious categories: On the one hand production companies that basically operate without IT support. On the other hand businesses that introduced IT-based systems in the past but only covering parts of the MES portfolio. This often led to self-programmed solutions. At the same time, companies gained valuable experience in supporting production processes using IT applications.

Independent of the category your business falls into, the experts from MPDV have the right offering for you. It is your choice whether to source products, services or solutions from MPDV.

Apart from Solutions introduced here, MPDV offers the following:

Products – use the kit

You can benefit from all the advantages of a standard software when using MPDV's products. Simultaneously, you can generate real added value with your own input. You can decide flexibly which products and applications you can use and if you would like to add your own software components or the ones from another supplier.

Services – consulting and services for the Smart Factory

MPDV offers individual, needs-based services. They can be added to products or detached from it. Experts from MDPV support you in the introduction of an MES or implementing your machine connection. They also provide support, carry out training and assist you in operating your HYDRA system. Our consultants can rely on 40 years of experience and knowledge from projects in the production environment.

Products

Innovative building blocks with which you can implement an individual solution for your Smart Factory

Services

Services, such as practical training, worldwide support and system support with which we help you on your way to the Smart Factory

Solutions

Tailor-made IT solutions for the Smart Factory, which we put together for you from our products and services, including professional project management

MPDV Mikrolab GmbH

headquartered in Mosbach, is the market leader for IT solutions in the manufacturing sector. With more than 40 years of project experience in the manufacturing environment, MPDV has extensive expertise and supports companies of all sizes on their way to the Smart Factory. Products such as MPDV's Manufacturing Execution System (MES) HYDRA or the Manufacturing Integration Platform (MIP) enable manufacturing companies to streamline their production processes and stay one step ahead of the competition. The systems can be used to collect and evaluate production-related data along the entire value chain in real time. If the production process is delayed, employees detect it immediately and can initiate targeted measures. More than 800,000 people in over 1,250 manufacturing companies worldwide use MPDV's innovative software solutions every day. This includes well-known companies from all sectors. MPDV employs around 420 people at eleven locations in Germany, China, Malaysia, Singapore, Switzerland, and the USA.



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