

Services

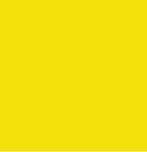
*Practical consulting and support
for the Smart Factory!*



WE CREATE SMART FACTORIES

MOTIVATION





Challenge manufacturing IT

When designing and introducing manufacturing IT (e. g. Manufacturing Execution Systems (MES)), the requirements significantly differ from other IT projects because MES functions need to be seamlessly integrated into the heterogeneous, distinctive production of a manufacturing company. On the one hand, the process involves integrating machines and equipment from a variety of manufacturers, and on the other realizing interfaces to upper-level IT systems (ERP, PLM, HR). Such a project concerns all corporate levels and reveals extremely versatile demands for the project team.

For more than 40 years, the experts at MPDV have been confronting the "challenge MES" head on and have proven their competencies and skills in more than 1.250 projects that have been realized around the world based on their MES HYDRA. Manufacturers can benefit from this expertise, while they can always decide for themselves which services MPDV can provide for them and which project segments they can take charge of on their own and in-house.

CUSTOMIZED

Key to a successful IT project

Typically, an IT project consists of several phases, which, depending on the company size, the complexity of processes, objectives and many other factors, can have a different emphasis:

- Concept phase to determine the current state and to define goals
- Implementation phase during which the defined concept is implemented
- Training and certification (if applicable) of all employees involved
- System operation for maintaining and upgrading the productive system

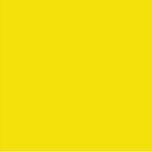
Defining all phases accurately and completely working through the work packages included in each of them ensures the success of the project. The experts at MPDV offer tailor-made support services throughout each phase of your project. You have the choice to either implement complete work packages or to commission individual services.



Concept phase



Implementation phase



Do it yourself or with the support of MPDV?

The expertise available in-house varies from one company to the next. Many production businesses do employ experts in the field of automation technology. However, an in-house IT department is not necessarily something that can be taken for granted in smaller and medium-sized companies. Often, the absence of IT expertise is a deliberate choice. Companies rather buy IT support in addition to focus on their own core competencies. When introducing manufacturing IT, both shop floor expertise as well as IT competence are required. A comprehensive understanding of how the systems involved interact, starting from the ERP to the manufacturing IT and including the control units for the machines and equipment in the shop floor are critical prerequisites for a successful project.

Decide for yourself how many and which services you request from MPDV. You define what it is we can do for you, where we can provide support and which subjects you would like our assistance or coaching on – according to your very own requirements as a future operator of a Smart Factory.



Training & Certification



System operation

CONCEPT

Services during the concept phase

Irrespective of where a manufacturer stands today, before introducing manufacturing IT, the company must do some homework. This includes conducting a feasibility study that describes the current state, including current workflows and processes. In addition, the company must define the objectives it wants to achieve by introducing manufacturing IT. Not until this economically oriented basis has been set, and has been accepted by everyone involved, will concepts be developed, functions be selected and concrete requirements be specified. The experts at MPDV can either provide support from the start or at various points within this initial phase of introducing manufacturing IT.

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



Concept phase

Implementation phase

Feasibility study – can your objectives be achieved?

Each project starts with the analysis of the initial situation. Here, not only the existing production environment is reviewed and documented, but also the currently lived processes as well as existing interfaces. Generally, this process is broken down into several steps and scopes of function. Combined with the target definition, an initial draft implementation recommendation can be derived.



The individual services that MPDV offers as part of a feasibility study include:

- State analysis of relevant processes
- Process descriptions on the most important scenarios in the shop floor
- Description of relevant interfaces
- Definition of the desired target state
- Preparation of an implementation recommendation for management

Training & Certification

System operation

Requirement specifications and tender process – what exactly should manufacturing IT do?

The next step involves fine-tuning the goals that were defined and to take a closer look at not only the planned processes and workflows, but also at the future infrastructure. In the production environment, the interaction between ERP and manufacturing IT is critically important. However, what must also be taken into account is how the existing machines and equipment will be incorporated. Here, the level of detail gradually increases from the draft to the fine concept.

For these topics as well, MPDV offers services that can be requested as needed:

- ERP/MES integration consultation – for SAP users as well (based on distinctive experience)
- Consultation on the architecture for manufacturing IT, including a definition of a shop floor scenario
- Shop floor connectivity consultation as the basis for connecting machines and equipment
- Deriving MES tasks from the requirements defined in the feasibility study
- Selection of MES modules in accordance with the VDI guideline 5600 (based on IEC 62264 and ANSI/ISA 95) in order to further specify the required functions
- Preparation of specifications or a vendor-neutral tender process





Target specifications and fine concept – how can the preset goals be achieved?

The more fine-tuned the concept becomes, the more detailed the required functions can be specified. This process ends in a document that is designated as specifications, fine concept, system specifications or detailed concept, depending on the company's internal terminology. At this point we will compare your individual requirements and the functions of the products by MPDV. If needed, customer-specific adjustments are defined.

The specifications can be prepared by yourself as the user, supported by MPDV or any other competent partner. Once the specifications are complete, an important milestone has been achieved and the implementation of manufacturing IT can begin.

IMPLEMENTATION

Introducing manufacturing IT

Also for the implementation phase, future users can choose whether they merely want to receive consultation in order to perform the implementation on their own or whether the experts at MPDV should take on this task. MPDV staff is highly experienced in the configuration of system functions, customization options as well as the customized development and programming of MES applications. Our experts also have a broad knowledge of classic IT and automation topics.

In addition to services relating to the implementation of HYDRA applications, programming services can also be commissioned separately from MPDV products.

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



Concept phase

Implementation phase



Support during integration

If needed, the experts at MPDV can provide support for the sizing and procurement of IT components that guarantee fault-free operation of the MES system in the future. Various technical questions must be answered upfront:

- Does the current IT landscape need to be expanded in order to introduce the system?
- Which IT security measures must be put in place for operation?
- What should an emergency concept look like for a scenario in which IT components fail?
- What must be taken into account with regard to the network, the server, the office client and the data collection devices?

Also with regard to interfaces to the automation technology, we can rely on wide-ranging experience: Over the last few years, more than 25.000 machines from a variety of manufacturers have been connected to MES HYDRA. In addition, users benefit from MPDV's expertise regarding interfaces to other IT systems such as ERP, HR or QM.

Moreover, we can provide answers to issues relating to a system roll-out and can coach the project manager of the future user if necessary.

Training & Certification

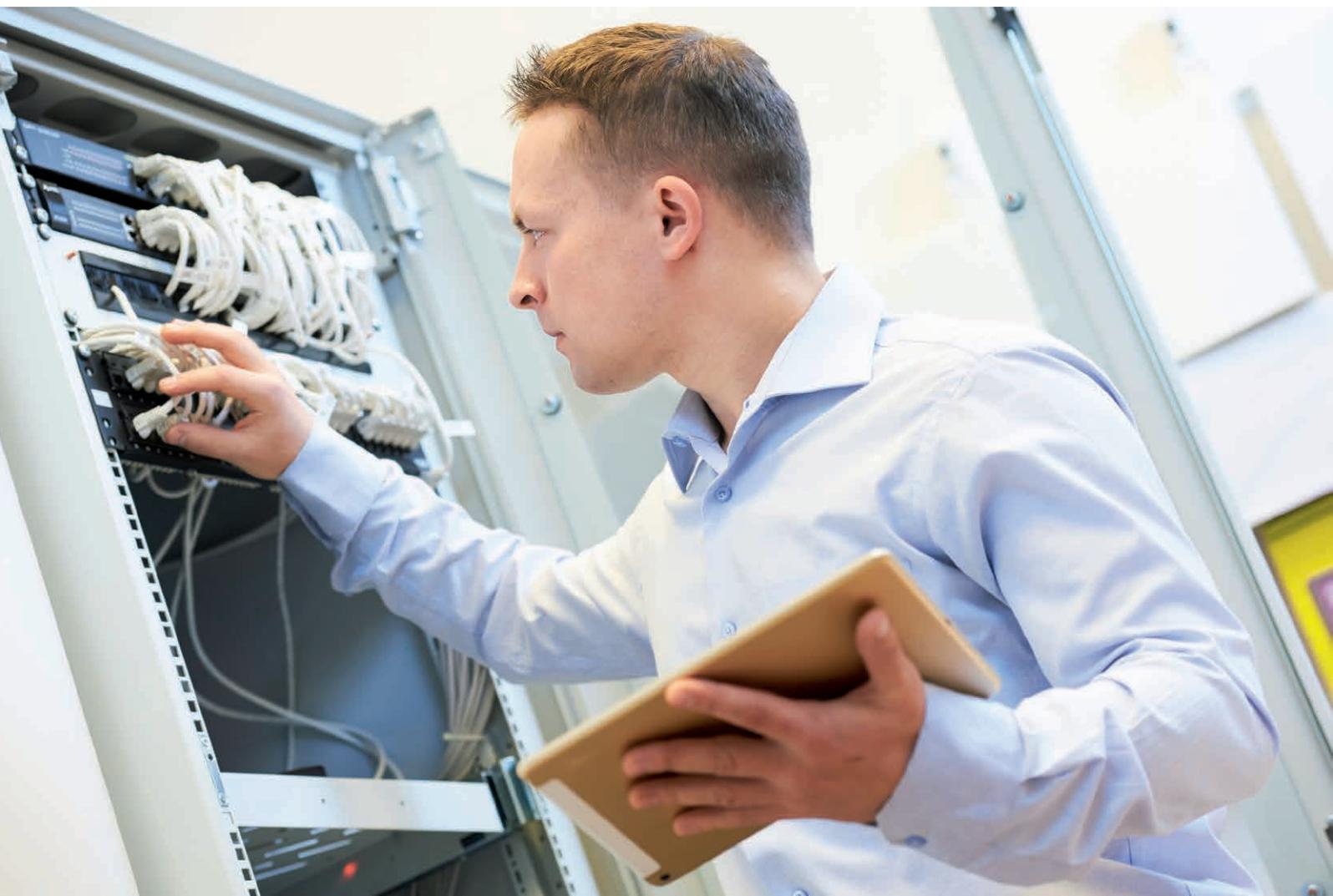
System operation

Implementation services

With the direct support of MPDV's experts, a manufacturer can save its own internal resources during the introduction of manufacturing IT. Here it is important that the requirements defined in the specifications are implemented exactly and that necessary interfaces are configured and put into operation.

We provide needs-based support for all tasks performed during the introduction of manufacturing IT:

- Integration into the existing IT landscape
- Setting up the interfaces to ERP, HR and QM systems
- Installing and commissioning of MPDV's products
- Transferring master data from other systems
- Connecting machines, equipment and measuring devices
- Function test and go-live



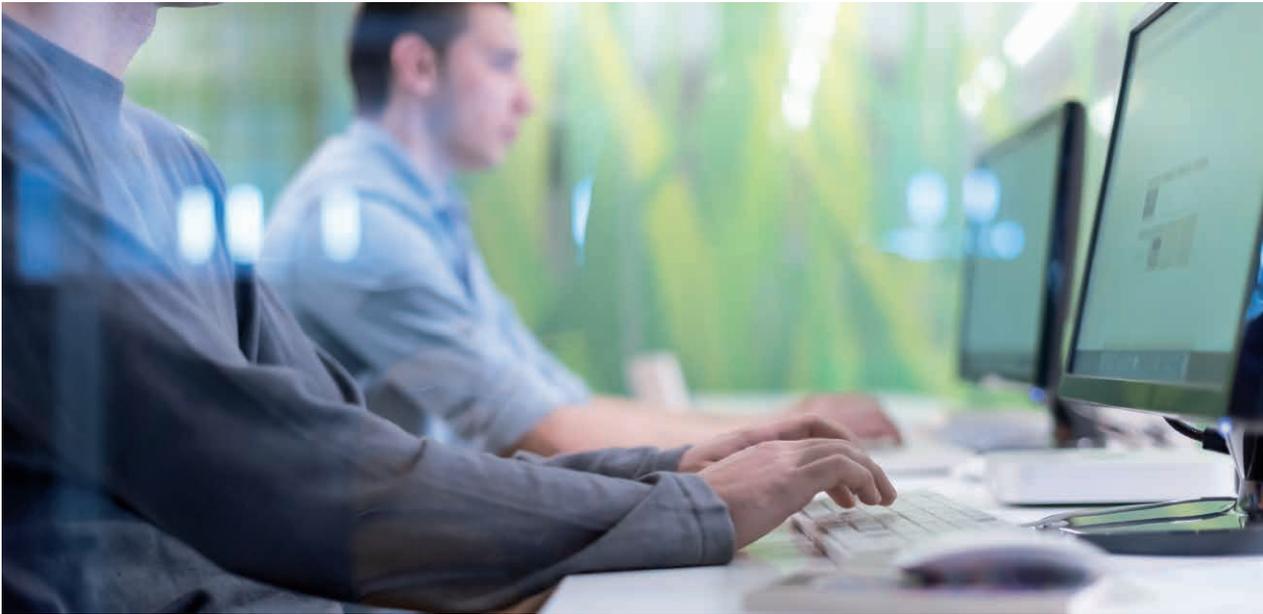


Configuration and customization

The objective should always be to map individual requirements in the manufacturing IT in a way that the characteristics of a standard software program remain unchanged. MPDV's systems offer a wide range of configuration and customization options to do so. For example, users can customize the design of user interfaces, evaluations, statistics and dialogs or reports and labels according to their needs.

The experts at MPDV offer services to perform the required tasks and to support any other issues:

- Customized design of intuitive user interfaces
- Mapping relevant processes using a wide range of configuration options
- Mapping customized requirements using various development tools
- Support during upgrades or modification of HYDRA standard functions



Individual programming

There are application scenarios that do not belong to the standard portfolio of an MES. For this reason, they can only be conditionally mapped in the HYDRA standard. Alternatively, they need to be realized outside of HYDRA. Such scenarios require individual programming. Our experts master a wide range of programming languages based on many years of experience in the field and offer services to fit any need in this regard:

- ABAP/SAP development for custom applications in SAP systems
- Programs developed in Java, .NET and ASP.NET for customized MES upgrades
- Development of customized reports and analyses
- Development coaching when proprietary applications are designed

Concept phase

Implementation phase

KNOWLEDGE

MPDV Training & Certification

For more than four decades, MPDV has been successfully introducing the MES HYDRA to companies all over the world. During this time we have gained a great deal of valuable experiences, which we have now incorporated into our new, optimized training program "MPDV Training & Certification".

Whether beginner, advanced or developer: Our new training program is aimed at HYDRA users, implementation partners and interested parties, and is tailor-made to the specific requirements.

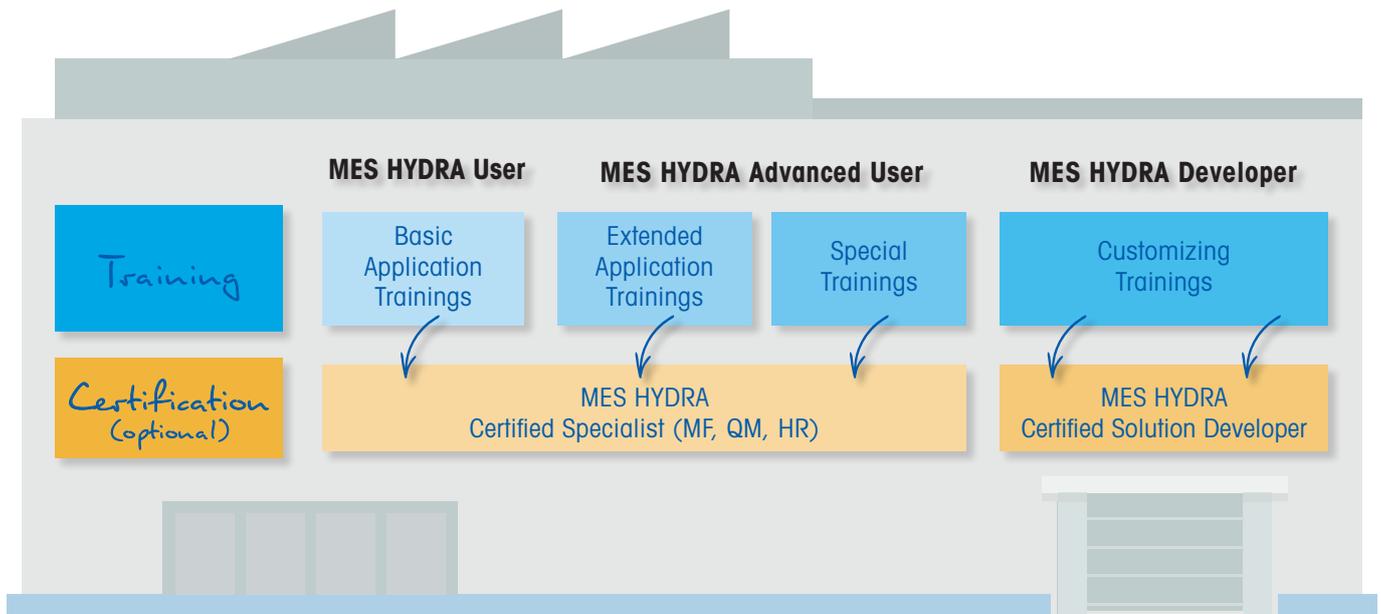
We offer more than 50 courses worldwide that have a common standard in terms of content and methods. They are held in German, English or Chinese at one of our locations in the USA, Singapore, China or Germany as required.

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



Training & Certification

System operation



MES HYDRA User

Are you about to implement the MES HYDRA or specific HYDRA applications? Do you have a new employee who should learn how to operate and use HYDRA?

With our Basic Application Trainings (BAT) you as a beginner and user will receive all the skills as well as tips and tricks for the most effective use of HYDRA. The BAT trainings enable you to autonomously configure HYDRA, create master data and set up the MES functions in a user-friendly fashion.

MES HYDRA Advanced User

You are successfully using HYDRA in your company and want to use the system even more efficiently?

In our Extended Application Trainings (EAT) or Special Trainings (SAT, SPT) for selected HYDRA applications, we provide in-depth technical and project skills. Intensive and hands-on exercises help you to apply the acquired know-how in your company in the best possible way.

MES HYDRA Developer

Are you an experienced MES HYDRA user and want to customize the system yourself? In addition to the necessary licenses, we offer tailor-made training courses for every customizing requirement.

Become an MES HYDRA developer and learn how to independently design, develop and implement customizations for your company in our Customizing Trainings.

MES HYDRA Certification

MPDV Training & Certification offers you different options to get certified in the MES HYDRA fields of manufacturing, quality management and human resources or in specific roles.

During an examination, your acquired knowledge as well as your extensive experience in dealing with MES HYDRA will be tested by MPDV trainers and experts. Use this offer as proof to your employer or as a calling card to your customers and auditors.



LIFE CYCLE

Manufacturing IT in use

After installation, commissioning and go-live, the manufacturing IT goes into the operating phase. Maintenance and upgrades to the system can be performed by the user himself, with the support of MPDV or assigned to MPDV entirely. For simple installations it is typically sufficient to import the service packs that are made available periodically. For more complex systems a consistent system support plan ensures availability and up-to-dateness.

MPDV offers flexible services to fit your needs and that can be combined to ensure a stable system operation:

- HYDRA system support in the required depth
- Life cycle management of the HYDRA applications in use
- System upgrades and roll-outs, including template management



Concept phase

Implementation phase

HYDRA system support

The MPDV support team members have the necessary depth of knowledge needed to support HYDRA users with any questions and problems that may arise while using the HYDRA system. To offer support, we provide:

- A telephone hotline (1st level) available at appropriate service times
- An experienced 2nd and 3rd level support team, if needed with direct contact to software development
- Special documentation and advanced workshops

Upon request, MPDV also provides 24/7 support or promised response times. MPDV's local presence in Germany, the United States, China and Singapore allows follow-the-sun concepts. In addition to general software maintenance agreements, we also enter into tailored customer service agreements with our customers when required.

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



Training & Certification

System operation

Life cycle management

Manufacturing companies are subject to continuous change. Production processes change, new machines are purchased and the organization continuously adjusts to current circumstances. In order to keep up with these transformations, it is imperative that the manufacturing IT is continually geared to respond to the current demands of the industry. In addition to the updates and service packs included in the software maintenance agreement, MPDV also offers additional services:

- Delta analyses of production processes and MES functions
- Consultation on system upgrades
- Preparation of release or version changes

The objective of life cycle management is to ensure that changes have a minimal impact on active production operation. Those production companies that are well-prepared for a release or version change and that test the new functions in detail are able to benefit from an almost seamless and uninterrupted transition.



RELEASE CHANGE
UPGRADE
UPDATE



System upgrades and roll-out

Once the performance capabilities of an IT system have been tried and tested during operation, new ideas regarding an expansion of the system are usually quick to follow. Adding new application areas, connecting to additional departments or plants and any new demands often trigger ideas for functional and regional upgrades of the system. Here, the experts at MPDV are able to consult with and support HYDRA users in:

- Rolling out the MES into other departments, plants or locations
- Implementing new MES applications and functions
- Configuring and customizing new applications

Just as during the implementation phase of introducing a new system, when contemplating system upgrades, companies may approach MPDV to request individual programming options.

FLEXIBILITY

More than services

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.

Products

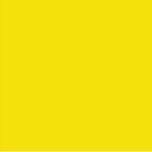
Innovative building blocks with which you can implement an individual solution for your Smart Factory

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



Apart from Services 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.

Solutions – all from one source

We can accompany production companies wishing for a complete IT solution from beginning to end. Experienced project managers coordinate closely with you, the future user, when certain activities are required and which services you have to carry out yourself. You create the premise for the introduction – our experts shoulder the overall responsibility of the project.

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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info@mpdv.com

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