

NEWS



December 2018

Cover Story

Stage 4 on your way to the Smart Factory Functional networking and the digital thread



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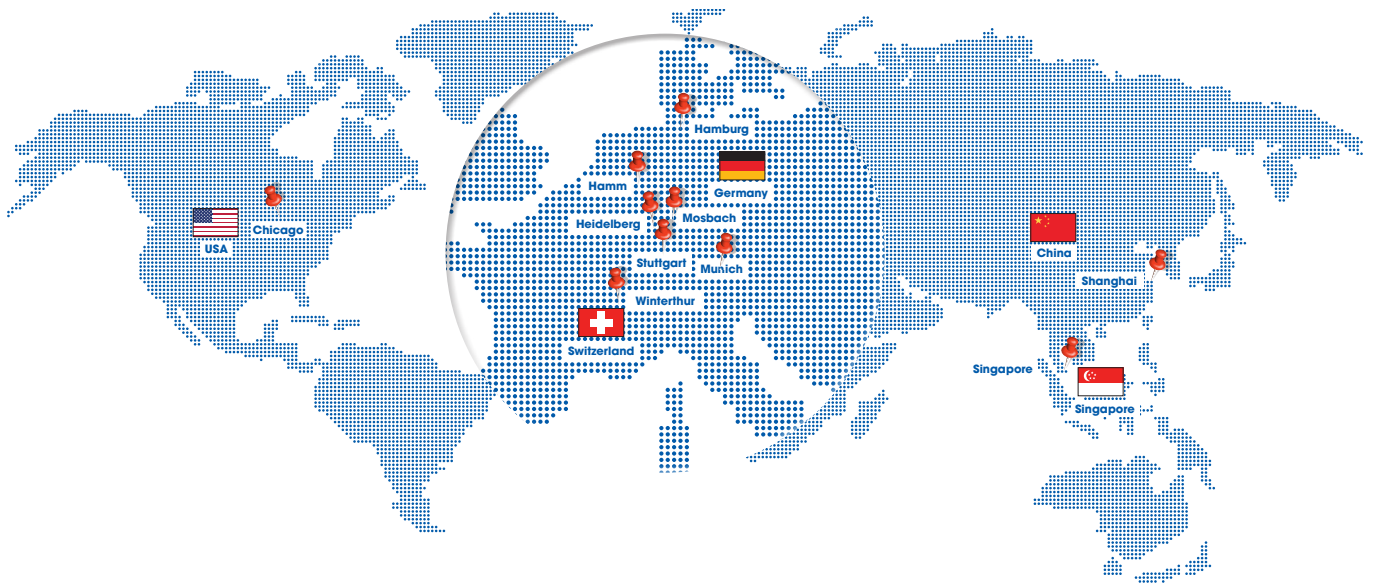
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The MES Experts near you.



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"Do-it-yourself" or "out-of-the-box"?

The demands on manufacturing IT are changing. More and more companies today ask for flexible platform solutions. Since the beginning of July, MPDV has therefore two approaches for manufacturing IT in its portfolio: the market-proven Manufacturing Execution System (MES) HYDRA as a classic "out-of-the-box" product and the new Manufacturing Integration Platform (MIP), in which individual applications can be developed first, but then combined with each other in any way and according to requirements in the sense of "do-it-yourself". In this issue, we present the functionalities of the MIP and illustrate what distinguishes the new ecosystem from a typical MES.

We have included articles on the latest functions of our MES HYDRA and introduce you to our newly designed training program. As part

of our growth, we have expanded our management board by three new members. Find out who is now responsible for what.

Of course, you will gain interesting insights into our international business with MPDV subsidiaries in Asia and the USA. We are proud to report on new partnerships, strategic alliances and HYDRA success stories. On a very special occasion, we also celebrated the 10th anniversary of the American MPDV subsidiary in Orland Park, IL.

Enjoy reading!



Prof. Dr.-Ing. Jürgen Kletti
Founder and CEO of MPDV



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Stage 4 on your way to the Smart Factory

Functional linking and the Digital Thread

Buzzwords associated with Industry 4.0 become increasingly diverse. Every idea, however basic and simple, needs an innovative name. For functional linking it is the Digital Thread. The term stands for the attempt of merging data from different IT systems to gain new insights to optimize the manufacturing process. The Digital Thread also expands the Digital Twin by another dimension – the time. But what have Manufacturing Execution Systems (MES) got to do with it?

Looking at today's manufacturing industry shows that MES systems are still of pivotal importance. Different committees and experts confirm again and again the necessity of an MES and its benefits. But more than ever, the MES must take on its intended role as the central information and data hub in the company. Stand-alone solutions for production data collection, CAQ (Computer Aided Quality Assurance) or traceability no longer meet these requirements. You need an integrated and interoperable system to realize the Digital Thread.

The Digital Thread

The Digital Thread is about merging data from different IT systems for the purpose of enriching information – i. e. broadening the horizon beyond the MES. Based on this, you can use the knowledge to optimize production processes and fulfill requirements (e. g.

traceability) much easier. Data comes from different areas of the value added chain or indirectly involved systems (e. g. logistics, facility management). This is why we speak here of the Digital Thread, which runs virtually like a thread through the entire manufacturing landscape and brings together important information from different IT systems.

Smart Factory – the functionally linked factory

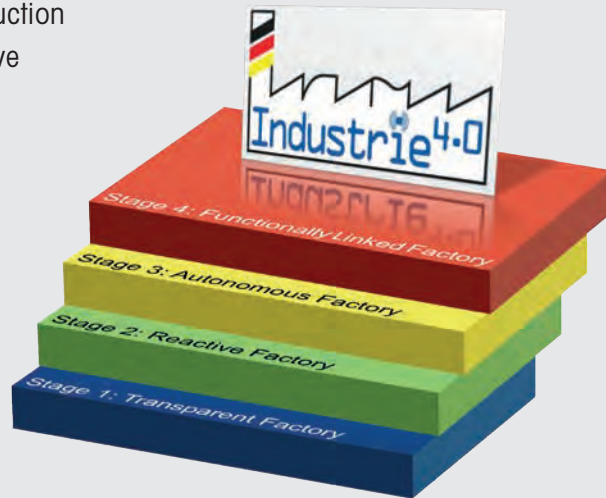
Functional linking in the sense of the Digital Thread, i. e. bringing together applications, functions and especially data that have not yet been considered or used collectively, is becoming increasingly important. As a result, functional networking also leads to a whole new level of complexities – both technically and organizationally. This makes it all the more important that both the manufacturing staff and the management understand and live such



There are many examples of functional linking – mostly they lead to more transparency and efficiency in the shop floor

Review: Four-stage-model "Smart Factory"

Stage 1 is intended to make the entire production landscape transparent to ensure and improve responsiveness in stage 2. Based on the above, the 3rd stage is all about integrating control loops and self-regulating mechanisms. The role of the human being in the factory is by no means to be replaced, but is to be adapted to today's conditions. In the end, all three stages ensure that stage 4 can be successfully implemented using functional linking.



things as transparency and responsiveness, the cornerstones of the Smart Factory. This is the only way to ensure that functional networking creates new potentials for optimization or even new business opportunities and does not end in a hopeless chaos.

Examples for functional linking

To ensure that functional linking also leads to the desired optimizations, the requirements should first be specified, the necessary structure defined and then selected interfaces implemented. The following examples of functional networking represent a selection that might be of relevance depending on the size and type of manufacturing company.

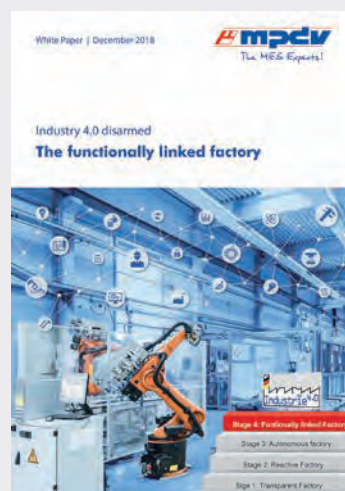
- If an MES is connected to a so-called Warehouse Management System (WMS), this results in closer integration of production and in-house logistics, which in turn leads to greater transparency and efficiency.
- The linking of production planning and building management, for example, increases process reliability in environmentally critical manufacturing processes or reduces energy costs through predictive consumption monitoring.

- In the sense of integrated engineering, the linking of design, production and quality assurance ensures, for example, less effort in inspection planning and, at the same time, more transparency in engineering.
- Cross-supply chain traceability is also a classic example of functional networking.

Details on these examples and further inter-relationships can be found in the new MPDV white paper – request at mpdv.info/wpnews.

New white paper:

The functionally linked factory



Request at: mpdv.info/wpnewsint

Foundation for the production IT 4.0 available Manufacturing Integration Platform

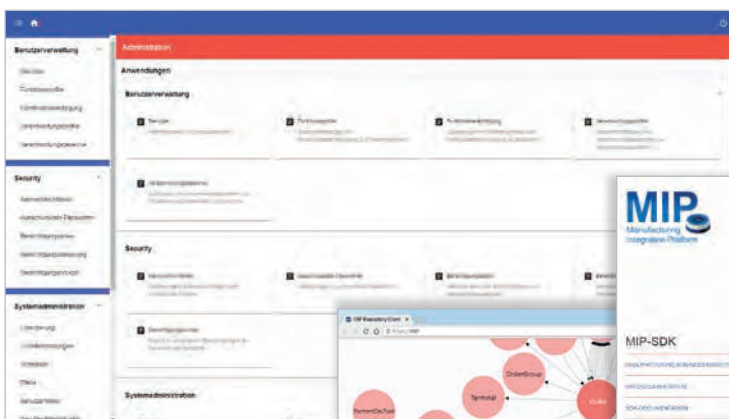
The market launch of the Manufacturing Integration Platform (MIP) raises questions on the functions provided and the demarcation from the existing MPDV product portfolio, which is strongly characterized by the Manufacturing Execution System (MES) HYDRA.

Powerful MES solutions like HYDRA, available today, provide out-of-the-box applications to increase transparency and efficiencies in production. In contrast to this and entirely in the spirit of "do-it-yourself", MIP gives you the opportunity to develop production IT on the basis of an integrative platform and to flexibly combine applications available in the future (so-called mApps) from different providers. The MIP provides the ideal environment for the digital twin of production and thus supplies the foundation of a sustainable production IT due to an open semantic information model and many helpful basic services. In combination with a multitude of mApps, the MIP forms the basis for the vision of a future production IT. The platform itself as the foundation of this vision has been available since the beginning of July 2018.

Features and operation models

The MIP can be licensed on a modular basis and operated as required. The main emphasis lies here on the user requirements. For example, access is only granted to those object types that are required for the current use case. If a connection to enterprise systems (e. g. ERP) is required, Enterprise Connectivity Services (ECS) are available that can be licensed. The integrated user management can also be applied independently or in addition to an external administration (e. g. Active Directory). So-called MIP Add-Ons provide standardized functions to facilitate the development of applications. An example would be the escalation and workflow management, which can be used out of different mApps to transmit and track messages or tasks to specific persons or groups.

The customer can operate the MIP either on-site or in the Cloud. Hybrid operation models are also possible.



Screenshot of the web-based MIP administration



Home screen of the MIP SDK

Extract from the graphical display of the objects and their relationships in the Repository Client



MIP at the MPDV website: overview with video, details, use cases

Easy access to the world of MIP

MPDV offers a Software Development Kit (SDK) to enable you to start developing applications (mApps) for the MIP. Application programmers can choose their own development environment due to the REST technology that is used. In addition to comprehensive documentation, the MIP SDK includes tutorials with sample applications, a service tester, and a repository client. In combination with the MIP, applications for own use or as a product for other companies can be developed and implemented in this way.

Product availability and next steps

MIP and MIP SDK has been available since the beginning of July 2018. MPDV is currently in talks with partners to lay the foundation for an IT ecosystem with the support of software producers, system integrators, machine and component manufacturers, and interested manufacturing companies.

Comprehensive know-how for MIP

In the meantime, a more than 100-page reference book in German and English has been published for the MIP: Manufacturing Integration Platform – Opening up new horizons in production IT. This book explains in detail and comprehensibly to different target groups not only the vision and the benefits, but also the functionality and the basic structure of the MIP. You can order this book in the MPDV Webshop and also online in bookstores (Amazon). An initial overview of the MIP is featured in a short image film in which the benefits of the MIP are illustrated. Further information on the MIP can be found on the MPDV website: mip.mpdv.com – you will also find here the MIP image video.

Reference book:

Manufacturing Integration Platform –
Opening up New Horizons in Production IT



Future and the next steps

Prof. Dr.-Ing. Jürgen Kletti, Managing Director of MPDV, is convinced: "With the MIP we have taken an important step towards the future. But we are also aware that the road to a functioning ecosystem will not be easy. That is why we are now intensively working on winning the partners." The first positive results can be expected in the coming weeks and months. For further information please refer to: mip@mpdv.com

Definition: Ecosystem

By ecosystem in the MIP environment, MPDV means that software providers, system integrators, machinery builders and engineering companies and interested manufacturing companies unite to form a network to benefit all parties - an ecosystem as it occurs in nature. Media experts also talk of a "platform economy".

Two different concepts

MES and MIP – right to exist!

Many success stories and reference reports show that Manufacturing Execution Systems (MES) are still of great importance for the manufacturing industry. The MES concept also remains relevant for the Manufacturing Integration Platform.

A few years ago it was rumored that Industry 4.0 was the end of the MES, but today it is agreed that Industry 4.0 will not function without IT systems like the MES - whether such systems will still be called MES in the future is a foregone conclusion. For instance, the VDMA talks about a "precious component on the way to Industry 4.0" in one of their white papers¹. Many so-called lighthouse projects in Industry 4.0, such as the Smart Factory KL, are also based on an MES².

The function scope of a modern MES system is specified in the VDI guideline in form of 10 MES tasks. If you complete these tasks with functions and applications, you get an integrated MES like HYDRA. Although only a few MES on the market cover the complete range of functions from a single source, the VDI 5600 guideline can be viewed as a valid basis for the definition of an MES.

In contrast, the MIP newly developed by MPDV offers the technical and semantic foundation with all important basic functions for an MES or other production-related applications. The actual application logic can be found in the mApps, which each user can configure or compile individually. Therefore, the characteristics and advantages of the MIP cannot be compared to those of an MES system.

With a modern MES, manufacturing companies can maintain their quality, reduce throughput times, improve on-time delivery,

reduce energy costs, increase efficiency, minimize working capital, optimize personnel deployment, and overall provide more transparency. The way in which these benefits are achieved varies from company to company, but can usually be broken down into a few rough steps: Collecting data, consolidate data into information, visualizing information in the correct form, taking measures and monitoring. The MIP offers for these tasks a standardized infrastructure but no applications.

In short: The MIP is not a predefined MES, but it is the basis to implement an MES with much more room for individual requirements. If companies want to introduce an MES, the subsequent user must decide whether a finished system such as HYDRA with short implementation times is preferred or a flexible platform with mApps from different manufacturers or one that is designed in-house.

Even shorter: MES HYDRA stands for "out of the box" – MIP means "do it yourself"!

1) <https://sud.vdma.org/viewer/-/v2article/render/19466593>

2) <https://www.pressebox.de/pressemitteilung/itac-software-ag/SmartFactory-KL-steuert-intelligente-Industrie-40-Anlagemit-MES-von-ITAC/boxid/791484>



MPDV white paper

Knowledge is power!

Our white papers provide you with helpful information to MES and Industry 4.0 in due form. Interesting professional articles, trend reports, and product information are included in the white papers, as well as exciting expert interviews and useful checklists for working life.

The topics of the MPDV white papers:

- Manufacturing Integration Platform (MIP)
- The functionally linked factory
- The autonomous factory
- The reactive factory
- Smart Factory in four steps
- Industry 4.0 needs Horizontal Integration



Industry 4.0 needs open systems

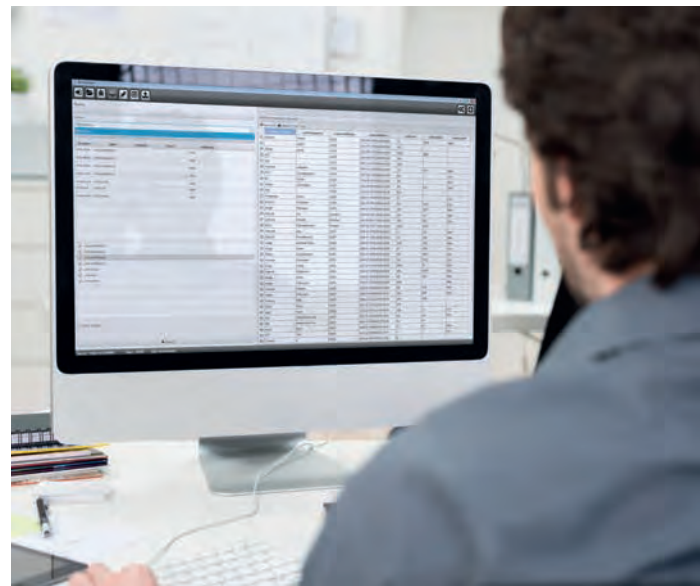
State-of-the-art interface for the MES HYDRA

In an effort to achieve the interoperability required by Industry 4.0, all systems involved must communicate via interfaces that guarantee complete and high-performance data exchange. The Manufacturing Execution System (MES) HYDRA by MPDV provides a modern service interface based on REST that connects simply and flexibly any IT system.

We often hear that today's MES are self-contained systems that have very limited options for interaction with other IT applications. An explanatively self-describing API (Application Programming Interface) based on the principles of REST (Representational State Transfer), gives every user the possibility to call HYDRA services via current standards like the http protocol. In this way, software systems of all kinds can be directly connected and also software clients can be developed in-house for HYDRA. The interoperability that can be realized is fully in line with Industry 4.0.

Of course, the tried-and-tested security mechanisms in HYDRA take effect like the monitoring of authorizations and areas of responsibility as well as checking plausibility and data consistency.

than previously available interfaces based on SOAP (Simple Object Access Protocol).



Intuitive, easy-to-use service tester application for convenient development and testing of service calls



Modern service interface based on REST enables interoperability for HYDRA

Perfect support for developers

Especially gratifying for software developers is that the REST technology is much easier to use

Users who want to use the REST interface are supplied with simple source code examples and an intuitive service tester application that greatly facilitates the development and testing of service calls. Communication via the interface is performed either per http or https protocol using a common JSON format (JavaScript Object Notation) to transfer data. This gives the user a virtually free choice of development environment. For example, .NET/C#, Java, JavaScript or VisualBasic can be used in conjunction with http and JSON.

In conclusion, the newly available REST interface is an important component for the use of the MES HYDRA in the Industry 4.0 setting.

Quality inspection with SMA

Mobile collection of inspection data

In the jungle of Industry 4.0 and more and more apps for production, integrated systems stand out clearly. MPDV's new app for mobile inspection data collection as part of Smart MES Applications (SMA) provides more flexibility and ergonomics for quality inspection during production.

The collection of inspection data focuses on two essential requirements: intuitive operation and reliability of the data. The new inspection data collection app enables mobile testing of variable and attribute characteristics and also features the inspection charts. You can also generate a sample which is then forwarded to the quality lab for further testing. If the operator uses the SMA app to log on and off orders, then the system automatically points out inspection dates due. During the inspection, the operator is

shown which values to record and whether the collected data are valid or within the specified tolerances. This ensures that measurement and input errors are already intercepted at the source.

As part of the Smart MES Applications, the new inspection data collection app seamlessly integrates into the mobile user interface of MES HYDRA.



Mobile collection of inspection data with HYDRA and Smart MES Applications

Automatically generate product control plan and inspection plans End-to-end engineering with MES HYDRA

Apart from the horizontal and vertical integration, Industry 4.0 is calling for an end-to-end engineering. For this reason, features from CAD drawings can in future be transferred directly into a test plan of the Manufacturing Execution System (MES) HYDRA with just a few clicks. The integration of FMEAs and inspection planning was also extended. This significantly reduces both efforts and the susceptibility of errors during the transition from design to production.

Whereas inspection plans previously had to be created manually in MES, the new CAD inspection plan function in the MES HYDRA now supports the automatic generation of inspection plans. Both the target value and defined tolerance limits as well as supplementary information on the characteristics are taken directly from the CAD drawing. That means, there are considerable time savings and the inspection plans are automatically based on current data. In addition, the entry of transposed digits that may occur during manual transfers is excluded by definition.

As with any interface to MES HYDRA, you can also import inspection characteristics and respond to the incoming data format. In addition, HYDRA offers basic configuration options,

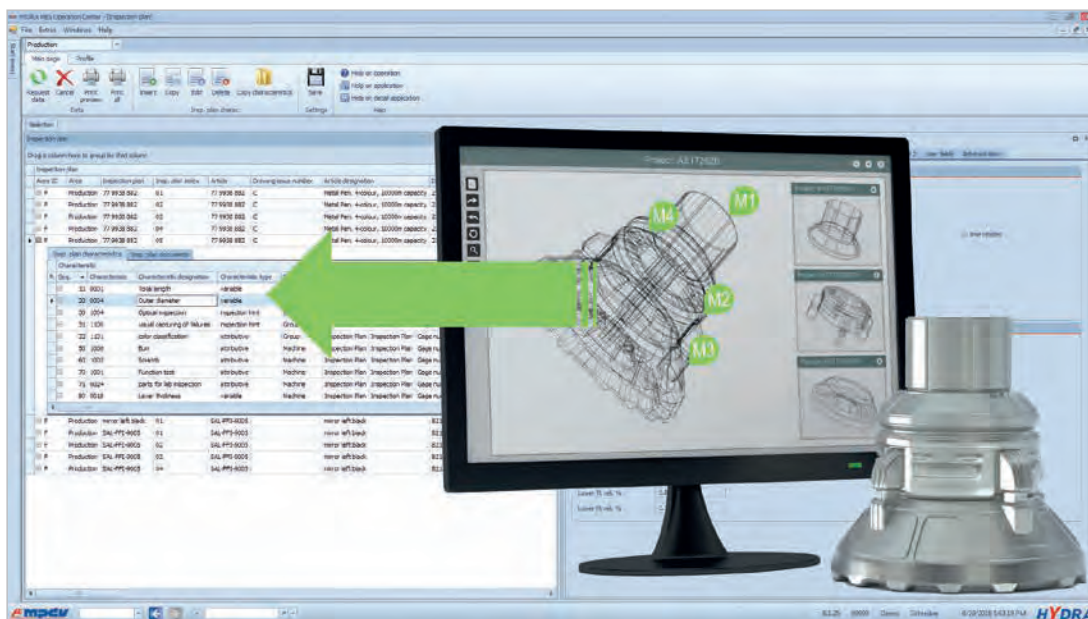
which can also be standardized in the form of templates and distributed over several areas. In doing so, the concepts of the end-to-end engineering are implemented consistently and in line with requirements.

Extended integration of FMEAs

In the scope to further develop HYDRA FMEA, functions for the automated generation of inspection plans are now also available. The data of the respective system or process element and its assigned inspection plan-relevant characteristics are used to compile the data required for the inspection plan.

HYDRA FMEA also supports you in creating a production control plan. Based on a selected system or process element, all subordinate characteristics are

automatically identified and the production control plan is generated. The new functions in HYDRA FMEA not only reduce the efforts creating and editing FMEAs, but also guarantee the consistency of data.



Automatic inspection planning: transfer of characteristics from CAD drawings

Extended integration of CAQ applications in MES HYDRA FMEA supports the inspection planning

The interlocking of product development and production must also be reflected in IT. For this reason, MPDV extends their function range of the Failure Mode and Effects Analysis (FMEA) in the Manufacturing Execution System.

As part of the further development of HYDRA FMEA, functions for the automated generation of inspection plans are now available. The data of the respective system or process element and its assigned inspection plan-relevant characteristics are used to compile the data required for the inspection plan.

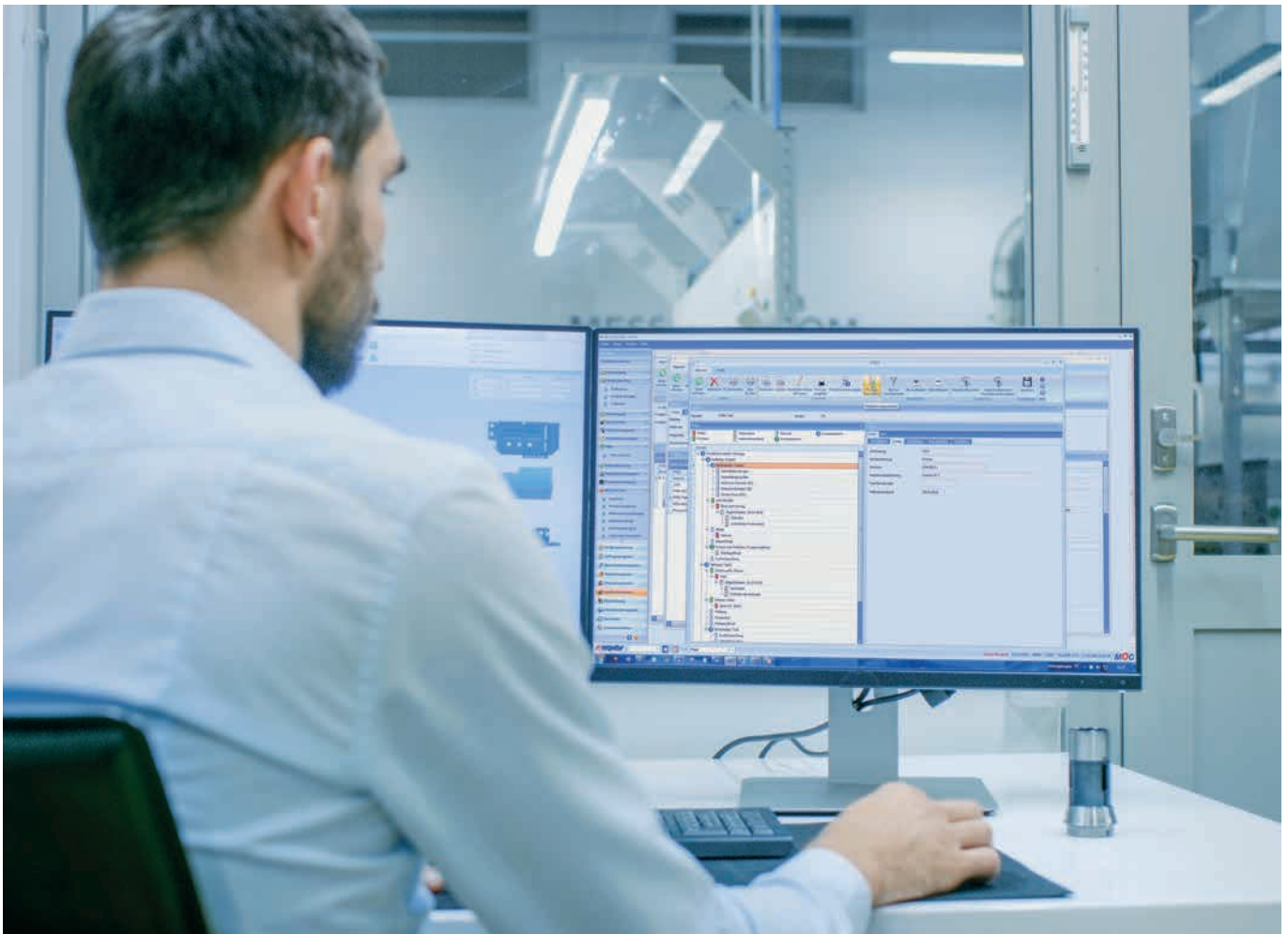
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New functions

The new functions in HYDRA FMEA not only reduce the efforts creating and editing FMEAs, but also guarantee the consistency of data.

You can find further information at <http://mpdv.info/fmeaen>



Automatic generation of inspection plans and the production control plan with HYDRA FMEA

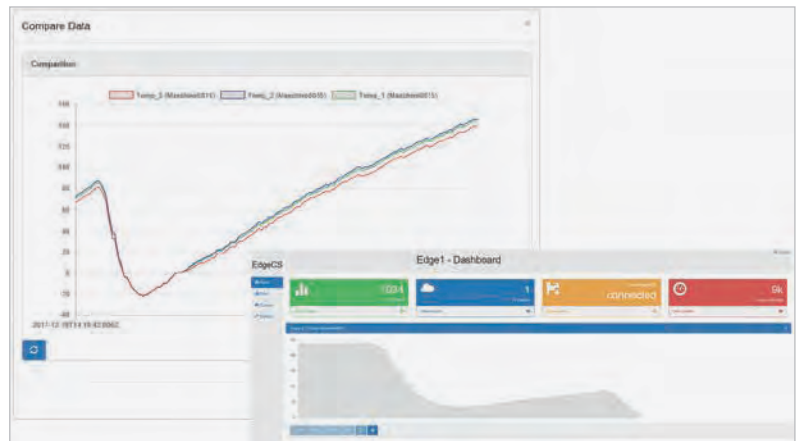
Tool for IIoT strategy Edge Computing Suite

The handling of mass data is one of the most important disciplines of a successful IIoT strategy. MPDV's Edge Computing Suite (EdgeCS) enables the use of the Industrial Internet of Things (IIoT) to collect and store mass data for analysis and optimization purposes in the production environment.

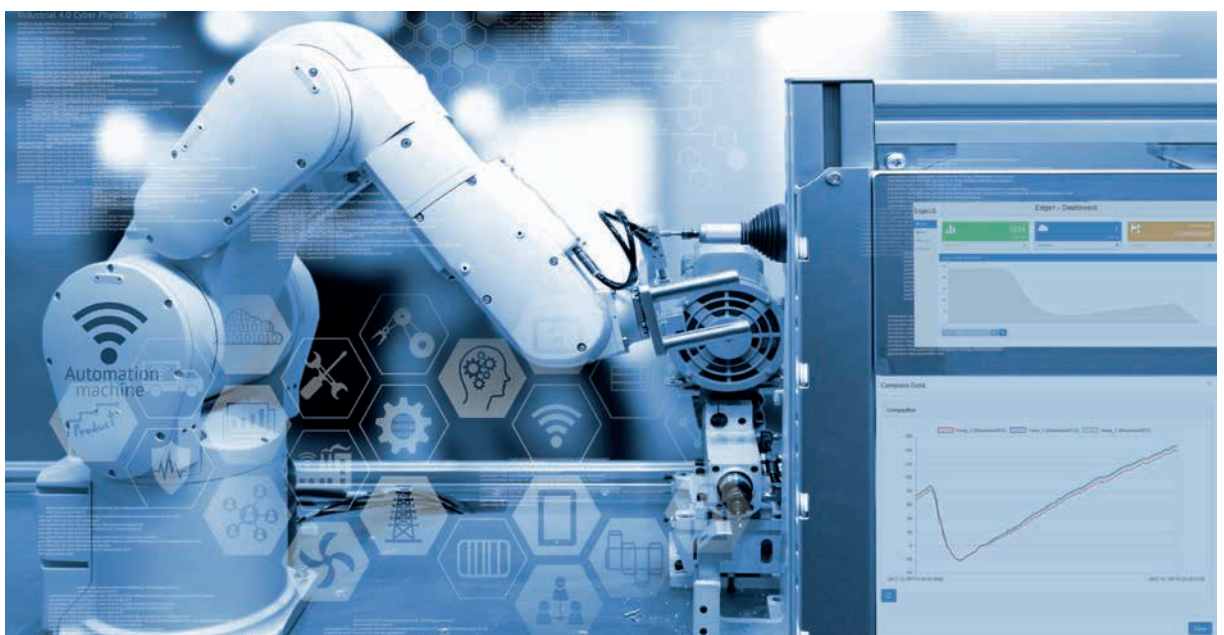
If you want to benefit from the IIoT, then you need flexible tools to collect, store and transfer mass data (Big Data). Up to now, machine data logger were used to fulfil these tasks, but the storage medium (e. g. SD card) had to be emptied on a regular basis. EdgeCS eliminates this time-consuming task because the data is stored online in a noSQL database. This allows any application to access the data easily – independent of location and entirely in line with the Internet of Things (IoT).

Originally planned as a tool for mass data collection, the new Edge Computing Suite was additionally equipped with its

own visualization. Collected data can be displayed online with just a few clicks and merged into dashboards. By the way, EdgeCS is also suitable for the collection of mass data for further processing in the Manufacturing Execution System (MES) HYDRA from MPDV.



Screenshots from EdgeCS: Visualize and compare data in real time



Edge Computing Suite – the perfect tool for a winning IIoT strategy

Manage multi-variant sequential production easily

Model production lines and processes

With MPDV's graphical DMC modeler, process engineers can model both the structure of production lines and complex production processes – without any programming knowledge. The dream of the "conductor of production" in the spirit of Industry 4.0 is now within reach.

Whereas up to now production lines had to be programmed extensively using so-called PLC-based head controls, software-based solutions such as HYDRA Dynamic Manufacturing Control (DMC) from MPDV offer more ergonomics and increased flexibility. The graphic DMC modeler enables the user to model processes and lines with a few clicks using Drag & Drop. The models are then imported into the system and interpreted in real time.

Factory Model & Manufacturing Instructions

Production lines with several workstations form the basis for the efficient production of products in batch size 1. The new graphic DMC modeler allows the individual stations of a line together with their peripherals, capabilities and dependencies to be mapped easily. We call the result "Factory Model". Both libraries and templates are available as a basis for this. The operation of the modeler is similar to that of typical programs for displaying processes and organization charts.

Based on the "Factory Model", the "Manufacturing Instructions" model all the steps required to produce the different variants of a product. The DMC Modeler supports the process engineer in this task by pre-selecting available resources at the individual workstations and by clearly displaying the defined work steps.



Simple modeling of production lines and processes with HYDRA Dynamic Manufacturing Control (DMC)

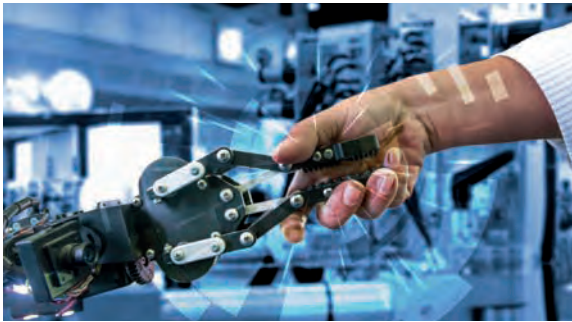
Maximum flexibility with a digital image

In combination, the "Factory Model" and "Manufacturing Instructions" determine how the different variants to be produced run through the line and which work steps must be carried out. In this context, we also speak of a digital image of the production line and its processes. Since this image is based on a software solution, changes can be implemented without great effort and, in particular, without programming knowledge. This results in versatile production in the sense of Industry 4.0 and the process engineer becomes the "conductor of production".

Workforce management in times of cobots & Co

Up-to-date personnel scheduling with MES HYDRA

Even in times of Industry 4.0, classic fields of application such as workforce management are not losing importance. In fact, the requirements on the responsible IT systems are increasing. Manufacturing companies continue to be in an extremely well prepared situation, using qualification-based personnel scheduling.



As generally known, neither robots nor their cooperative relatives, the cobots, are subject to statutory regulations. But cobots are not yet able to do every job and so manufacturing companies still need qualified and skilled workers – thankfully! Flexible personnel scheduling, which takes into account qualifications as well as pay scale specifications and shift frequency models, is the application of choice for the perfect distribution of employees to the workplaces in production.

Full advantage by perfect integration

You can reap additional benefits if you integrate a personnel scheduling tool in a Manufacturing Execution System (MES) like HYDRA by MPDV. For example, with HYDRA you can not only store personnel requirements related to the machine but assign it to specific orders or required tools. This allows you to map order-related fluctuations in requirements and stipulate the need for dedicated tool setters for individual production resources. You can also integrate personnel scheduling with HYDRA seamlessly into your detailed planning or production control. You can have scheduled employees displayed on the planning board. During the machine assignment you can also check if a particularly qualified employee is scheduled.



Up-to-date personnel scheduling with HYDRA – also in time of cobots & Co

Integrated approach

To further reduce efforts in personnel scheduling, HYDRA uses common master data for personnel, machines and order backlog. This enables the user to instantly see absence periods or stored shift models which can be used for planning purposes. The basis for this is the horizontal integration and the integrative data management in the MES HYDRA. If so requested, all HYDRA applications work as a stand-alone as well.

Detailed planning, production control and more HYDRA Shop Floor Scheduling versus APS

Increasingly, we hear about so-called APS applications. What they are in detail depends strongly on who defines the term APS and what its objectives are. Let's compare the HYDRA Shop Floor Scheduling (HLS) functions to an APS to clarify the issue.

In contrast to the clearly defined functions of an MES system or the detailed planning and production control in the MES, the APS tends to be rather uncontrolled. This begins with the term itself. There are at least two definitions for the abbreviation APS: Advanced Planning System and Advanced Planning & Scheduling.

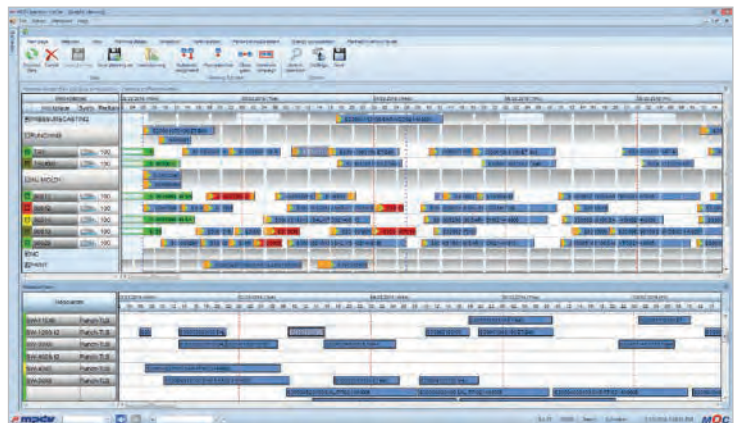
There are also different views with regard to the functional classification of the APS in the IT landscape of a company. There are providers who consider an APS to be equivalent to a shop floor scheduling tool. Some providers place an APS system directly within an ERP system, while others position the ABS above it.

When viewed objectively and in line with user requirements, the overlap of typical APS functions and functions of HYDRA Shop Floor Scheduling (HLS) can be outlined as follows:

- Synchronized planning of orders, machines and other production-related resources
- Planning against real capacities
- Simulation and optimization of planning scenarios

- Integrated availability checks (e. g. for material, tools and personnel)
- Hierarchical planning of different areas, departments and sites

Depending on the provider or definition source, additional functions and features are also assigned to an APS system that are outside the typical function scope of an MES. Experience has shown though that these functions to be less relevant for many companies. These functions include the monitoring of complete supply chains or the vendor-managed inventory.



Synchronized planning of several resources including real-time connection to HYDRA HLS



Our recommendation: Companies that want to optimize their production planning and control should focus on functions rather than system categories. It is not unusual to search for an APS, although the functions of a shop floor scheduling tool in the MES are much better suited. HYDRA HLS also offers functions an APS typically lacks, but that are essential for production control: e. g. real-time connection of machines including calculation of order progress and the inclusion into the detailed planning.

On the way to the Smart Factory Integration of production and logistics

In modern factories and especially in times of Industry 4.0, production and logistics processes can no longer be separated from each other. Too many dependencies make it clear that the two disciplines have to be considered together. In doing so, supporting IT systems must be connected to each other.

A Manufacturing Execution System (MES) in itself can perform tasks required for in-house logistics. By networking with a so-called Warehouse Management System (WMS), the existing functions can be extended and thus become even more powerful. Let's look at some MES HYDRA functions to outline facts:

WiP stocks and range coverage

MES HYDRA monitors defined stocks of material and intermediate products – WiP material – as part of the MPL (Material & Production Logistics) application. At the same time, HYDRA works with open stocks in production and has much more detailed information than an ERP system, which usually only knows stocks that are booked at the end of an order. HYDRA can also calculate the expected range of selected materials.

If HYDRA is networked with a WMS, the transparency can be increased. You can then not

only monitor stocks of specific material buffers, but merge information about storage bins in production with data from other storage locations managed in the WMS. This means, you can detect early material shortages and delays with minimal efforts or even avoid it completely. In addition to stock monitoring, the WMS also knows the exact location of the material in the warehouse, which significantly reduces the effort needed to search for shipments.

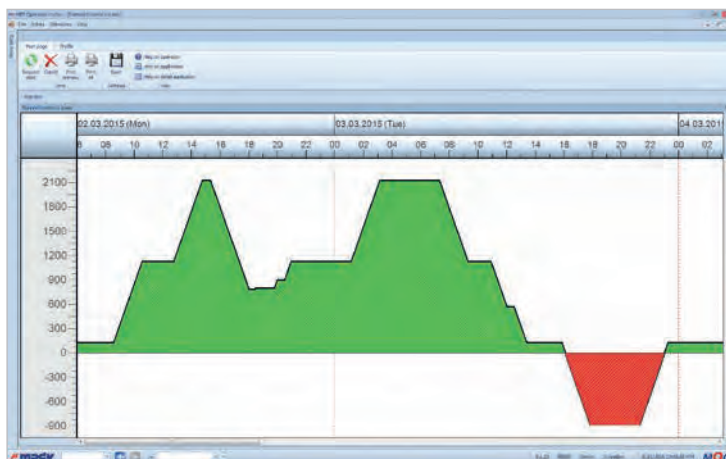
Material availability for the shop floor scheduling

If you combine HYDRA MPL with the HYDRA Shop Floor Scheduling (HLS) tool, then you can check instantly if a certain material batch is or will be available for a set date. It is also possible to track the expected stock development, taking into account the material to be produced and consumed.

This function could also be further optimized in combination with a WMS. For example, additional deliveries of certain materials could be included in stock development or the material availability check and thus improve detailed planning in the MES.

Transport orders

A relatively new addition is the function package HYDRA MPL which is a transport management tool in the shop floor. HYDRA MPL is already successfully used by some customers. With a transport management integrated into an MES,



Planned inventory levels in HYDRA

you can automatically generate transport orders if material is required for a machine or if finished material can be removed. Transportation management can also support setup of machines by automatically requesting required resources (such as tools) per transport order.

The combination with a WMS would also enable the automatic control of transport vehicles (e. g. a driverless transport system) including automatic route planning. By transferring transport orders from HYDRA, important supply processes could be generated completely automatically.

Batch management and traceability

In many cases, not only the type of material to be used is relevant, but also the material assignment to batches, lots, or serial numbers. HYDRA TRT (Tracking & Tracing) offers extensive options to control and collect material that is managed with the aid of batches, lots and serial numbers. HYDRA TRT has also functions to completely document the production process of specific articles. As a result, used material batches or parts with serial numbers can be traced back by means of a batch tree (traceability).

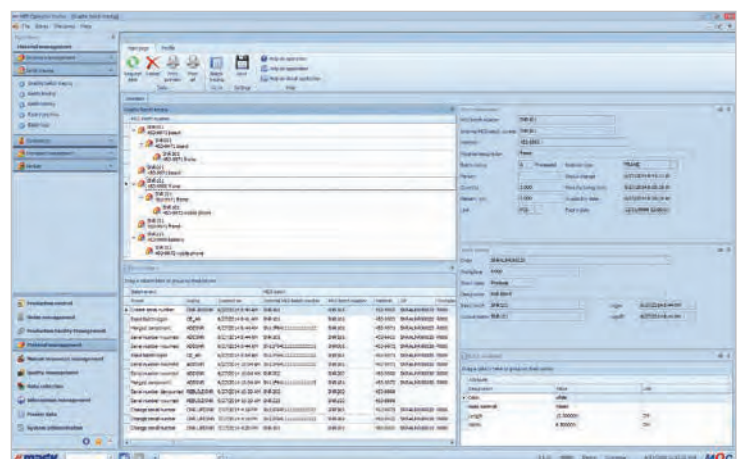
WMS is familiar with material batches and serial numbers. Networking with HYDRA would expand the management of material master data and batches in a way that an article and its components can be traced across the entire process chain, including warehousing and even contractors and suppliers.



Production and logistics are moving closer together – and so are their IT systems

Future

A standardized and user-oriented communication between the MES HYDRA and a WMS will make many processes more transparent and efficient. At the same time, such an interface is an important step on the way to the Smart Factory. Only by reducing media disruptions and a tighter networking of IT systems can you achieve complete transparency.



Batch tracing with HYDRA

Implement company-specific MES requirements **MPDV extends the MES Development Suite**

Even though MPDV's Manufacturing Execution System HYDRA provides all standard market functions, users need suitable tools to configure and customize the system to company-specific requirements. The MES Development Suite offers the user various options to do so and recently we have added another tool.

With the new Service Tester, MPDV extends the MES Development Suite (MDS) and helps developers to test the available HYDRA services and to generate code modules for their own applications with a few clicks - no matter if they are original HYDRA services or self-developed services. The Service Tester accesses the REST-based service interface that is available to HYDRA users for some time. The Service Tester offers a clear GUI including useful functions like to operate in batch mode which is used to automate tests.

MES Development Suite

More than 1000 businesses of all sizes benefit from a wide software standard of the MES

solution HYDRA. MDS offers flexibility beyond the standard, allowing customers to modify existing applications or develop their own applications for HYDRA. With the MDS, the customer's developers have the same options at their disposal that MPDV's MES experts use to implement customer-specific requirements in HYDRA.

Training courses for HYDRA developer

MPDV offers specific training focusing on MDS. The developers learn in this course all about the HYDRA architecture and also about customization options in detail. The new Service Tester is another key element that makes these training courses even more realistic.



The new Service Tester extends the MES Development Suite and supports the development of new HYDRA applications

DNC & setup data with HYDRA DNC

Setup efficiently and avoid errors

A numerous amount of parameters must be set up for modern machines. Some CNC machines even need to have complete programs uploaded. That means, it not only takes quite some time to set up a machine but also the error rate is considerable. HYDRA DNC supports production companies to reduce both - time and efforts.

In many companies, the parameters are still entered manually and the NC programs also. Here, the user must ensure that the actual and released data are transferred to the SPS. Searching for, importing or entering data and finally checking them are time-consuming processes that are also prone to errors. Help is at hand with tools like HYDRA DNC. This HYDRA tool can locally manage NC programs and also data records of setting parameter. The integration into the MES enables HYDRA DNC to reduce the number of errors. HYDRA DNC suggests a suitable and approved NC program or data records based on the upcoming operation, the article to be produced and other parameters. This takes place when the user logs on the operation at the input terminal (BDE terminal), so that the operator or setter can also save time. With an integrated editor, NC programs can be compared with earlier versions on site and changed if necessary. An updated or optimized program is then imported back to the MES for release and is automatically available next time.

The central administration of setting data records and NC programs simplifies setup



HYDRA DNC makes setup processes more efficient and increases process reliability

changeover activities. With HYDRA DNC, the saving potentials can be more than 10 minutes for each setup depending on the production layout and other general conditions.

DNC is another example of functional networking (level 4 of the Smart Factory, starting on page 4). Connecting NC data from the design department with production is an essential element to integrate engineering and manufacturing in line with Industry 4.0. In compliance with the functional networking, an interface between the MES and the PLM system in which the NC data is stored is therefore recommended.

New series of contributions: Product Review

With our product reviews we briefly present an HYDRA application including features and benefits. The articles should highlight further potential on how to optimize your production.

Reliable basis for performance-related payroll Calculate incentive wages with HYDRA

Employee motivation and the fulfillment of extensive standard wage agreements are the two main reasons for the introduction of incentive and premium wage systems. The calculation of performance-related wage components is anything but trivial and the cost of calculating them is significantly higher than for fixed salary components. HYDRA LLE carries these applications into the digital age for you.

An integrated Manufacturing Execution System (MES) such as HYDRA offers a reliable basis to correctly calculate wages consisting of personnel master data and assigned working hours, order/operating data, quality KPIs and machine data - automated and without interfaces. With this information, HYDRA LLE calculates all common salary types like piece work, premium and group pay.

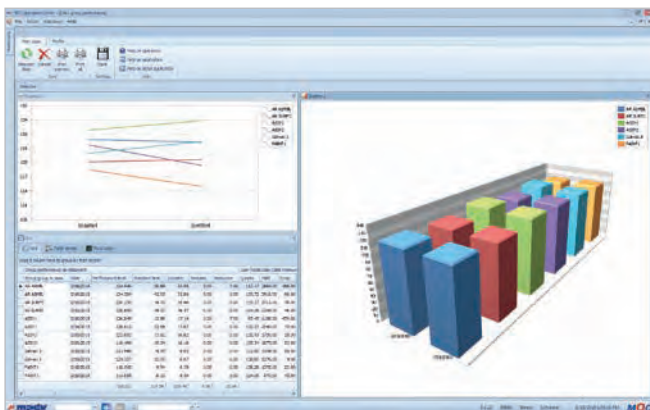
Apart from the calculation, HYDRA LLE offers the following functions and benefits:

- Integrated functions to edit data
- Tools and aids to compare collected personnel and order data
- Enter correction factors to adjust the automatically calculated results in exceptional situations (e. g. unexpected disturbances)
- Clear overview of results for employees, supervisors and HR

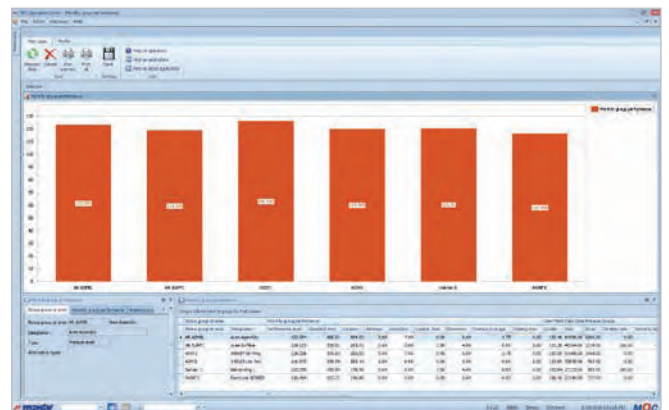
Experience has shown that the calculation of incentive wages is managed individually in every company, HYDRA LLE offers maximum flexibility in the configuration of relevant formulas and parameters. For example, the following values are used as the basis to calculate premium wages:

- Quantities produced using an output level
- Produced quality, i. e. the ratio of the produced yield to the scrap quantity
- Machine utilization to calculate premiums for machine operators
- Meeting on-time deliveries, i. e. the comparison of planned production dates and fulfillment of actual orders

Premium and incentive wages can be calculated for a single employee and also for defined premium groups. HYDRA LLE has a configurable standard interface to transfer the data to payroll accounting.



Flexible and clear overview of daily results for premium groups

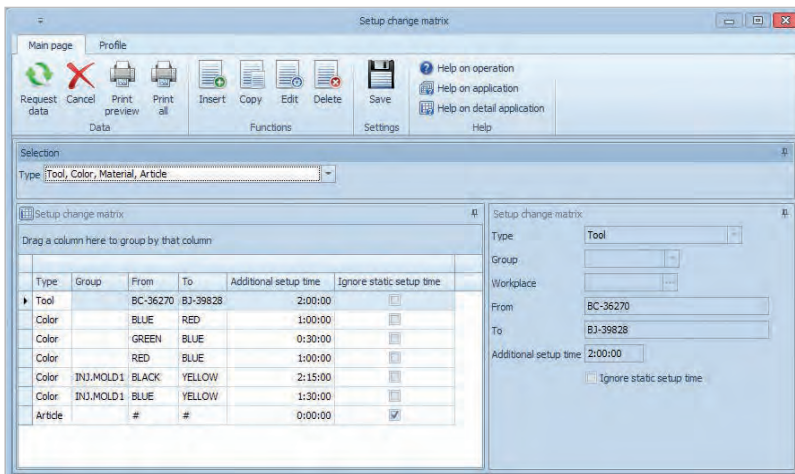


Comparison of monthly results for a selected premium group

Practical workshop HLS

Get more out of HYDRA Shop Floor Scheduling (HLS)

Experience shows that a large part of the planning actions in production planning are carried out according to fixed rules. HYDRA Shop Floor Scheduling (HLS) offers the opportunity to assign operations to workplaces automatically. Users find out in a practical HLS workshop how it all works.



You can define setup relations and include these in your automatic planning

are mapped directly in the system. KPIs enable a direct comparison and evaluation of the results of the manual and automatic planning.

After the appointment, users receive a comprehensive transcript in which the knowledge imparted and the configurations made are documented.

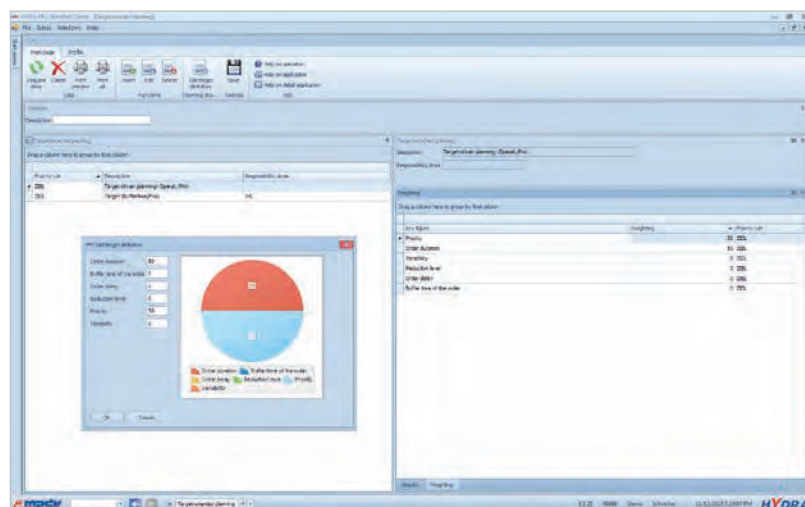
With the practical workshop "More efficient production control through automatic planning", MPDV now offers a service that deals in depth with the automatic planning functions of the HLS and is primarily aimed at HLS users.

In the one-day workshop theoretical contents around the automatic planning are conveyed.

Basics on how to schedule with the tool is presented, for instance the functionality and the effect of scheduling. In addition, configurations relating to automatic planning are explained and further detailed information and use cases are shown.

At the same time, the requirements for production planning are developed collectively and possible planning rules

With the knowledge acquired in the workshop and the configured planning rules, the participants can directly enter into the practical use of automatic planning or use it even more purposefully. Automatic planning in the HLS allows users to focus on the critical planning actions during production planning and let the automation do the rest.



Configuration of an automatic rule by setting the priority of planning-relevant parameters

Clever to the Smart Factory: We get you ready for the future! The new training program is here

MPDV has redesigned its training program. We had the MES Academy and now we go for MPDV Training & Certification. If you are interested, you can choose from more than 50 training courses and become an MES HYDRA expert.

Whether beginner, advanced or developer: Our new training program is aimed at MES HYDRA users, implementation partners and interested parties and is specially tailored to their needs. The courses offer the opportunity to learn more about the use of the system from experienced MPDV trainers, so the participant can directly benefit from their extensive know-how.

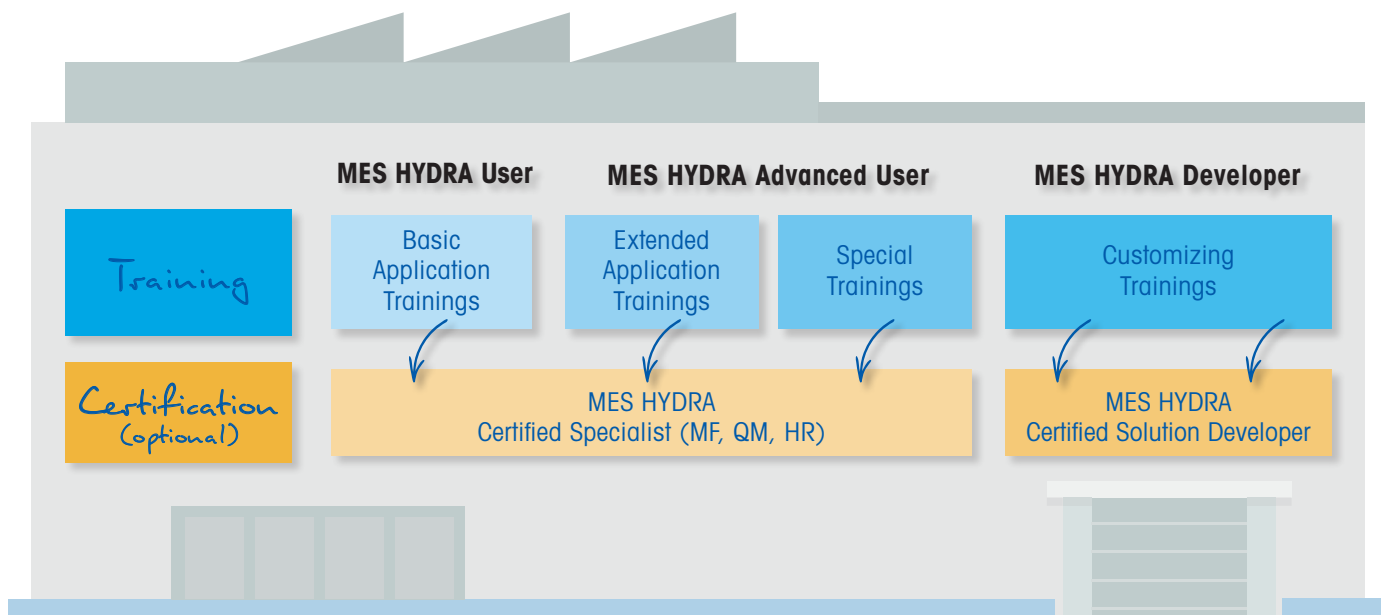
Certified training program

"We continuously change. That is why we have also put our training program to the test, restructured it and further developed its content. It was particularly important to us to distinguish more clearly between the levels beginner as "MES HYDRA User", advanced as "MES HYDRA

Advanced User" and developer as "MES HYDRA Developer" and to focus even more on the certification of the participants," says Thorsten Strebel, Vice President Products and Consulting at MPDV.

For example, participants who support the introduction or further development of HYDRA in their own company can train as "MES HYDRA Certified Specialist" or "MES HYDRA Certified Solution Developer" and receive a certificate at the end of the examination. With this new training concept MPDV is meeting the rising demand from customers in this sector who are asking more and more for a certified training program for their employees.

MPDV Training & Certification



MPDV Training & Certification – with an agenda for more HYDRA know-how

Uniform standards worldwide

MPDV offers training worldwide in Mosbach, Hamm, Munich, Singapore, Shanghai and Chicago. The training courses are held in German, English or Chinese.

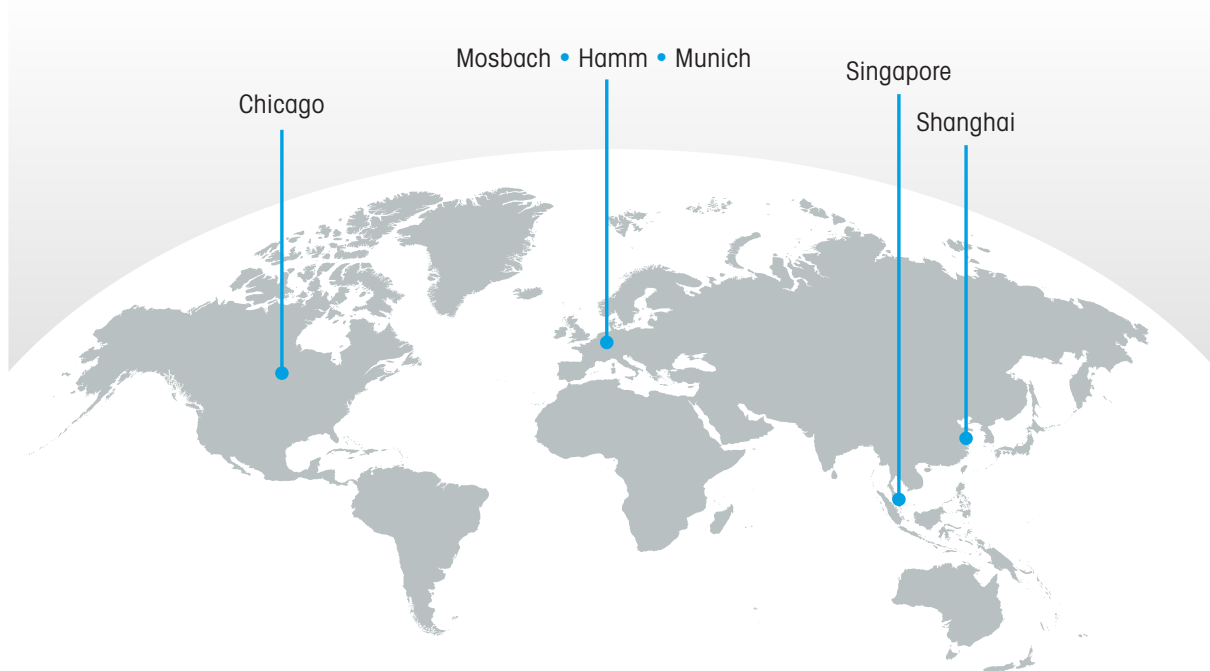
The training courses have the same standard of content and methods worldwide. "This aspect is especially important to us. After all, globally operating companies that introduce HYDRA internationally across sites must be able to count on the fact that all employees have a consistent level of qualification," adds Mr. Strebel.

The standard training program is completed by training courses that are tailored to the individual

needs of the customer. We also offer training courses at the customer's or partner's location.

Trainers contribute industry-specific knowledge

All MPDV trainers undergo internal assessment centers during their training and attend selected trainer seminars. They are perfectly prepared. They are also working as consultants and have extensive hands-on knowledge from a wide range of industries, which they skillfully pass on to their course participants. MPDV's new training program will be gradually developed over the next few years. This means, that those responsible want to take account of the constant growth and changes in the market.



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Are you interested in MPDV Training & Certification?

Go and register for a training course at trainings.mpdv.com. If you have any questions, please feel free to contact us per email at trainings@mpdv.com

Consulting in the MES environment and more Taylor-made services

In addition to the product MES HYDRA and the solution business, manufacturing companies are increasingly using the MES services offered by MPDV. In addition to the classic support before and during an MES implementation, this includes tailor-made services such as myConsultant, Best Practice Consulting and Services On Demand.



With the constantly increasing complexity in the field of production IT and consequently also of the MES, the availability of expert knowledge and competent consultants is of great importance. MPDV's service portfolio also contains services which are tailor-made - please see the following examples:

myConsultant

If you are suffering from hotlines and constantly changing contact persons, you want an expert for complex matters to whom you don't have to explain everything in detail. myConsultant offers exactly that: a central contact person who knows in the run-up what the HYDRA environment looks like and who can provide you with competent support right from the start. If needed, the consultant calls in additional experts, but remains the central contact person for the customer as well. myConsultant also

shows workable solutions for a potential extension of HYDRA in the customer's process world. The myConsultant service is used heavily by HYDRA users.

Best Practice Consulting

In the manufacturing environment, it is not always about the Manufacturing Execution System (MES) itself, but usually also about the actual processes and the opportunities to map processes in the MES. Best Practice Consulting aims to advise customers on issues that

go beyond the introduction and configuration of HYDRA. The MPDV experts draw on many years of experience with many satisfied HYDRA users.

Services On Demand

To get a consultant for a less arbitrary matter quickly, more or less "on demand" – that is not impossible. However, this requires a few simple conditions, which essentially amount to the agreement of contingents and a service flat rate. Based on that, reaction and delivery times can be defined and guaranteed.

The aim of such tailor-made services is to support HYDRA users perfectly in the implementation, operation and extension of HYDRA.

Further information: mpdv.info/services

Annual meeting of the HYDRA Users Group

Users from all over the world exchange ideas and experiences

Nearly 300 delegates attended the annual conference of the HYDRA Users Group in Hockenheim, Germany – that is more than ever before in the history of the conference. International best practice methods were also presented for the first time.



At the conference, Deputy CEO George Thomas, Interplex, explained essentials to be considered when introducing HYDRA in several locations in Asia and the USA. He came all the way from Singapore for the conference to give a keynote on how he and his team connected more than 1,700 different machines to the MES with a global HYDRA template.

In a presentation from Tomasz Schab, Kirchhoff Polska, he addressed the special challenges of piece counting which had to be solved for a reliable database for HYDRA CAQ. He outlined why the machine cycle is not equal to quantity recording, explained how data can be read directly from the control via OPC UA and reported about the user scripts for individual integration in HYDRA.

Martin Fricke from Phoenix Contact presented a number of possible cornerstones to successfully introduce HYDRA internationally. He cited good teamwork, openness to modifications and the time factor as the key influencing factors.

Networking, networking, networking

Almost 300 visitors from all over the world took part in this year's annual conference of the HYDRA Users Group. This is a new record and shows how significant the event is among users of the MES HYDRA worldwide.

The focus of the event was the exchange of experiences and the networking of the delegates. The breaks and the evening event were used intensively for technical discussions.

To learn more about HUG:
hydra-usergroup.com



International keynote by George Thomas, Interplex

Employees and customers appreciate sustainability MPDV again awarded as TOP 100 Innovator

MPDV is one of the most innovative medium-sized companies in Germany for the third time. The award as one of the TOP 100 innovators does not only mean fame and glory to the German MES supplier, but also assures employees and customers alike that the future and investments are in safe hands.



According to the TOP 100 Innovation Report, MPDV is a company "that takes innovation very serious. The difference to the average medium-sized company is significant and striking." Especially, MPDV's cooperation activities with suppliers and universities are noticeable. The user association HYDRA Users Group (HUG) plays a major part in MPDV's innovation strategy. With an invest-

ment in innovation of around 18% of the annual turnover, MPDV surpasses the average of the top 10 companies partaking in the competition.

"Being an innovation leader is not a hollow phrase to us", explains Prof. Dr. Jürgen Kletti, managing partner of MPDV, „we tap the creative potential of our employees to simplify processes, improve our performance and avoid unnecessary mistakes."

Current standard for quality management MPDV certified to ISO 9001:2015

MPDV has received the internationally recognized ISO 9001:2015 certificate. The auditors of Lloyd's Register Quality Assurance particularly praised the detailed process documentation and the graphical modeling.



It is the most widespread and important national and international standard when it comes to quality management for business: ISO 9001:2015. The quality management system at MPDV has been well established for decades and continuously developed over the years. MPDV received the prestigious certificate for the current revision ISO 9001:2015 after being audited by Lloyd's Register Quality Assurance. This is testimony to the outstanding quality management of the MES experts, which complies with the latest standards.

Complex processes simply represented

The auditors of Lloyd's Register Quality Assurance particularly praised the detailed process documentation and the graphical modeling. This means that the visual preparation of the various processes plays a decisive role in making complex workflows even more transparent. "ISO 9001:2015 has been refined and is very accommodating with its process-oriented approach. This enables us to use the standard itself effectively and profitably. We will continue to do everything in our power to further improve our quality management and align it with ISO 9001. After all, this helps us to keep our throughput times at an excellent level, which leads to even higher customer satisfaction," says Mr. Wolfhard Kletti, Managing Director MPDV.

Social commitment

MPDV supports young talents

As an integral pillar of the company philosophy, MPDV promotes associations, educational institutions and cultural activities financially and through the personal commitment of employees. Especially the promotion of young talent is of high importance to the management.



MPDV participated with an own team of children of MPDV employees at the FIRTS LEGO League competition

MPDV founded the MPDV Junior Academy and actively sponsors FIRST® LEGO® League competitions, in which students playfully solve technical problems and build their own robots from special LEGO bricks. The company is also the main

sponsor of the MPDV Mountain Bike Cup and various running competitions in which several hundred participants compete each year. The participation of employees in such events always adds to the strong team concept at MPDV.



Prof. Dr.-Ing. Jürgen Kletti, CEO of MPDV, handed over the cups to the winners of the Mountainbike Cup in Mosbach



Members of the MPDV Running Team

MPDV Classics

World stars of the classical music scene visiting

MPDV Classics took place for the seventh time. The Russian National Philharmonic with the world-famous conductor Vladimir Spivakov performed two symphonies by Tchaikovsky with the star pianist Haiou Zhang at the invitation of MPDV.



MPDV has been supporting this cultural event for many years. This is how the MES experts want to return part of their corporate success to society. The MPDV Classics have been a permanent fixture in the calendar of events for seven years, and in 2018 once again hosted real world stars from the classical music scene.

Under the supervision of the world-famous conductor Vladimir Spivakov, more than 110 musicians played two symphonies by Tchaikovsky accompanied by star pianist Haiou Zhang in Mosbach.

Since its foundation in 2003, the Russian National Philharmonic has made an international name for itself and has already played with stars such as Placido Domingo, Anna Netrebko, Joshua Bell and Natalia Gutman. The world-class orchestra is seen as a symbol of modern Russia and unites the best musicians from Moscow and Saint Petersburg.

International wunderkind

Vladimir Spivakov is an internationally renowned conductor and has appeared on stage

for more than 40 years. During this time he played with the Vienna, Berlin and New York Philharmonic as well as the Chicago, London and Amsterdam Philharmonic Orchestras. He is a virtuoso on the violin and is often called a child prodigy.

34-year-old Haiou Zhang is also an internationally acclaimed star and plays the world's largest concert halls. In 2017 he performed at the MPDV Classics and inspired young and old alike. He is considered a great talent, although he only started playing the piano at the age of nine.



"It makes me proud that once again we were able to welcome such top-class and internationally celebrated musicians to the MPDV Classics. I am very much looking forward to the concert next year," says Nathalie Kletti, member of the MPDV management board.



Optimistic outlook for the future

MPDV expanded its management board

At the beginning of the year, MPDV expanded its management board. The MES experts are responding to a steady growth and outstanding future expectations.

After an altogether successful 2017, Prof. Dr.-Ing. Jürgen Kletti, Founder and CEO of MPDV, looks to the future with great optimism: "For years, we have been recording steady, double-digit growth, not least due to the now established subject of Industry 4.0. In order to continue to grow in a targeted fashion, we have nominated three more MPDV executives to the management board."

Sales and marketing

To further strengthen the area Business Development and Sales we have appointed Nathalie Kletti as the Vice President Enterprise Development and Jürgen Petzel as Vice President

Sales to make up the six-strong management board. Here, the focus lies on the continuous development of sales for products, services and solutions and also to expand the partner management.

Products and consulting

In the future, Thorsten Strebel, Vice President Products and Consulting, will represent the interests of product development, product management and consulting services stronger in the management board. The MES experts expect this to result in strategic advantages, particularly with regard to the steady expansion of the product portfolio.



FANUC and MPDV cooperate Integration of machines, robots and production IT

FANUC and MPDV have recently signed a cooperation agreement to mutually expand their product portfolio. In times of Industry 4.0, all production resources must be consistently integrated. Production IT supports this in the form of Manufacturing Execution Systems (MES).

The Japanese company FANUC, known for its eye-catching yellow robots, and MPDV have entered into an intensive cooperation in the field of IIoT (Industrial Internet of Things). In particular, the MES system HYDRA will complement FANUC's solution portfolio. In addition to the expansion of the MPDV distribution network, both partners expect to increase their perception as experts for Industry 4.0. Initially, the cooperation will focus on the People's Republic of China. Once sufficient experience has been gained, cooperation will be extended to the rest of the world.

Lived cooperation

A joint demonstrator at FANUC's Shanghai site is now also in operation. The demonstrator comprises a production landscape of FANUC machines and robots that are monitored and visualized in real time by the MES HYDRA. The implementation in the HYDRA standard, the short implementation phase and the deep integration of the solutions of both partners indicate a high success potential. Prof. Dr.-Ing. Jürgen Kletti, CEO of MPDV explains: "For us, the cooperation with FANUC is another important building block in our strategy to become a leading global provider of Industry 4.0 solutions".



Prof. Dr.-Ing. Jürgen Kletti (third from left) and the MPDV delegation were honored by the presence of FANUC shareholder Dr. Eng Yoshiharu Inaba (second from left) during their visit to the FANUC headquarter at the base of Mount Fuji

New cooperation with CEPR

MPDV expands its activities in Russia

CEPR and MPDV have recently signed a cooperation agreement. CEPR is a Russian engineering center and supplier of European equipment, accessories and hi-tech solutions for metalworking companies. CEPR will be an important partner for MPDV in the development of the Russian market of Manufacturing Execution Systems (MES).

CEPR and MPDV have been working together for more than five years. During this time it has been possible to win many well-known Russian companies as users of the MES HYDRA. At this year's Hannover Messe, CEPR and MPDV have signed a cooperation agreement. The aim of the cooperation is to build on the previous successes and to jointly develop the Russian MES market.

focuses on networking and offers workshops so that customers can exchange their experiences, share their success stories and learn something new about the MES HYDRA from the experts.

Also this year, CEPR will present the MES HYDRA at the Metalloobrabotka 2019, the largest Russian trade fair of the metal industry.

About CEPR

CEPR is a competent engineering center and supplier of European equipment, accessories and hi-tech solutions for metalworking companies in Russia. Since 2009, CEPR has accumulated solid experience working as a partner, an exclusive representative and a competence center for a number of German manufacturers. The facilities in Moscow and Novosibirsk include company-owned warehouses, showrooms and training centers.



Signing of partnership agreement

The employees of CEPR have already familiarized with the MES HYDRA. They have attended several training courses at MPDV's headquarters in Mosbach, Germany, and are now able to implement the system themselves, to provide support or to further develop new applications.

Common action

Once a year, CEPR and MPDV organize an open house day at CEPR in Russia. Customers from all over the country are invited. The event



Rainer Deisenroth, Director Global Sales of MPDV, and Mikhail Yakovets, General Director of CEPR, look forward to a successful partnership

Industry 4.0 international

"HYDRA Training Factory" in Singapore Polytechnic

With Singapore Polytechnic (SP, www.sp.edu.sg), MPDV Asia could win yet another high ranking Institute of Higher Learning (IHL's) to operate a HYDRA Learning Factory within a sophisticated I4.0 smart factory environment.



Compared to other ASEAN-member states, Singapore drives digital transformation at all fronts: in private life, in many public sectors and particularly in the manufacturing industries that contribute 20% to Singapore's GDP. Singapore massively invests in the introduction of Industry 4.0 concepts through infrastructure improvement and – most importantly – through proper education to create mindsets for transformation.

As of today, the predominant mindset of many local manufacturers for Industry 4.0 is still exclusively focussed on investing in new machines and robots, which is certainly one of the dominant components in the entire mix. However, the integrated digital information management of the shop floor across all main information objects gains importance. Nevertheless, more educational work needs to be done.

The Singapore IHL's receive governmental directives along with subsidy budgets, to significantly invest in training of today's production stakeholders and in the digital education of today's students.

Singapore's manufacturing industry is dominated by Small- to Medium Sized Enterprises (SME's) and employs around 400,000 people. It is precisely these SME's that are addressed with the funding programs in order to take older employees along to a digital journey. As part of the Continuing Education & Training (CET) Master Plan, Singapore Polytechnic (SP) was named as one of a few selected institutions to provide the corresponding training programs.

MPDV, a well-known MES provider in Singapore, was quickly picked as a favorite to set up a "Digital I4.0 Learning Factory" at Singapore Polytechnic after an initial provider and system analysis. The initiative originated at the School of Mechanical & Aeronautical Engineering, part of the Singapore Polytechnic. This will also involve a Singapore-wide exchange of experience to exploit corresponding synergy effects.

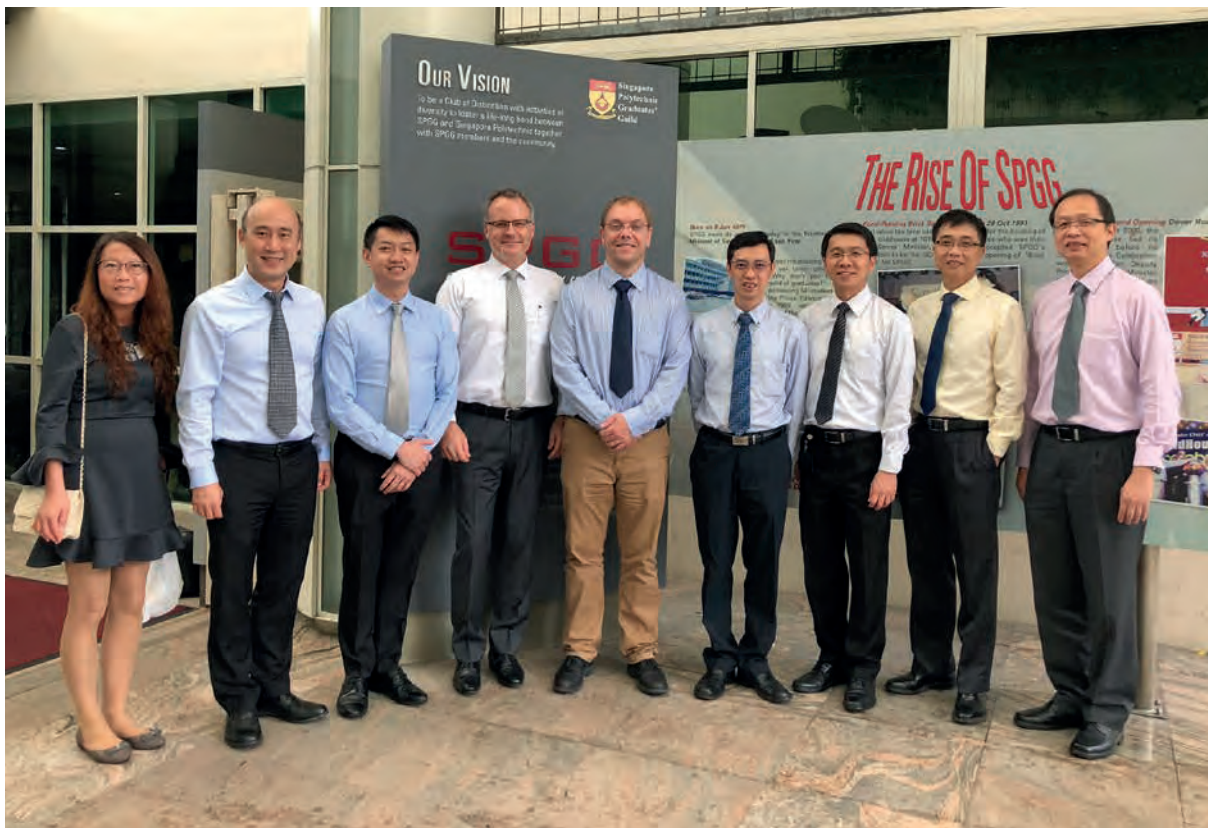
Since the summer of 2018, the MPDV Asia team and the SP project team have been in a first introductory and training phases for MES HYDRA. The aim is a go-live for the whole I4.0 Learning Factory by early 2019, operating the following HYDRA modules:



MPDV Asia consultant Jack Pang, together with the SP project team

- BDE (Production Order Data Management)
- MDE (Machine Performance Data Management)
- HLS (Shop Floor Scheduling & Finite Capacity Planning)
- PDV (Process Data Capturing)
- CAQ-FEP (Quality Data Management in Production)
- ESK (Escalations Management)
- SMA (Smart MES Applications, for tablet/ smartphone based data capturing & reporting)

When selecting the operating scenarios in the respective HYDRA Learning Factories in Singapore, importance was attached to the fact that all locations complement each other, with the focus on different areas and options to showcase the system. For example, one Polytechnic facility focuses on HYDRA material management and batch tracking, while another facility concentrates on process data acquisition and process integration.



MOU Signing Ceremony & Kick-off, in June 2018: MPDV Asia Team together with SP Management Team



“ Sascha Graef, Director Asia:

Our cooperation with SP intensifies our already-existing engagement with the Singapore education sector a lot – an important building block in our strategy to educate and enable the Singapore manufacturing market for the approach "Industry 4.0 through MES 4.0". We are proud to say "Singapore speaks HYDRA!" ”

ITAP Singapore: Hannover Messe goes Asia Great exhibition success of MPDV Asia

From 16-18. October 2018, most ASEAN manufacturers travelled to Singapore, when the first "Asia version" of Hannover Messe was held at Singapore EXPO, under the name of Industrial Transformation ASIA-PAIFIC (ITAP).



Virtually all relevant players from the manufacturing software, hardware, system integration sectors were present to showcase the latest solutions for manufacturers with "Industry 4.0 ambitions".

- 2 complete CNC machining centre setups, from Mazak and Makino, respectively
- Robotics from ABB
- Various quality data devices, gripping devices
- MES HYDRA integration for machines, process- & quality data capturing and process interlocking & control



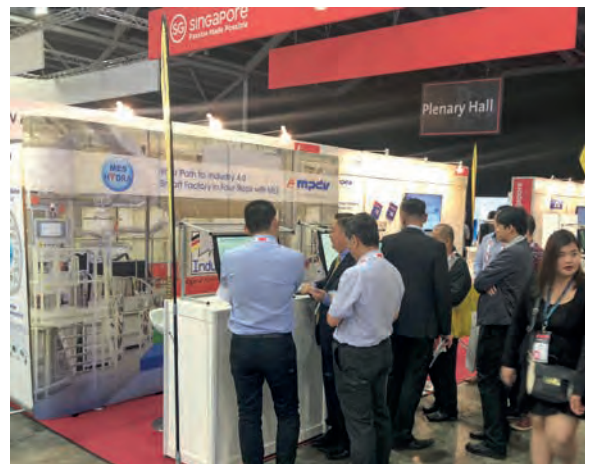
The Singapore-based subsidiary MPDV Asia Pte Ltd exhibited on 24 qm, including live system demonstration and peripheral hardware.

Concurrently, MPDV Asia also was present at a joint exhibition booth from Singapore-based system integrator ASTech Pte Ltd (www.astech.com.sg) from the industrial automation, hardware & robotics domain.

ASTech demonstrated two complete Industry 4.0 smart factory packages for the precision engineering (PE) market, with the following main components:

Machines and devices were connected via hard-wired signals to MPDV's CT-UMPS interface. Furthermore, various stations provided OPC variables for real time monitoring through LAN, which was then also transferred through Wi-Fi to MPDV Asia's booth, to showcase the wireless operation experience first-hand.

Sascha Graef, Director of MPDV Asia, concluded from the event: "We look back on many interesting discussions with manufactures that show a clear demand for Industry 4.0 solutions. The Asian Hannover Messe "ITAP" was a clear success for the region and we surely will participate again."



MPDV Asia as founding member of SiTA

Strategic alliance for Industry 4.0 turnkey solutions

Driven by Singapore-based manufacturing system integrator ASTech Pte Ltd, a new strategic alliance has been founded in October 2018 – the "Smart I4.0 Transformation Alliance", in short "SiTA". With strong support by the government agency "Enterprise Singapore" (ESG) and the industrial organization "Singapore Precision Engineering & Technology Association" (SPETA), SiTA aims to become a total Industry 4.0 turnkey solution provider package specifically for the precision engineering (PE) market – not just for Singapore, but also for other ASEAN member countries.

The entire SiTA collaboration framework comprises 12 companies – local and international brands – from the fields of machining, robotics, AGV's, auxiliary process equipment, ERP, MES, cloud hosting, documentation and even financial support assistance.

During the ITAP exhibition in Singapore, an MOU was concluded amongst the participants, serving as a joint statement for action.

MPDV contributes as a founding member with MES HYDRA as the overall digital information

management backbone and potential integration platform amongst all workstations, for production planning, production execution, data capturing and process control through physical interlinkage and interlocking with machines, robots and equipment.

In subsequent steps, SiTA will engage to further develop clear action plans and solution packages that SME's from the precision engineering field can rapidly deploy. The aim is also to achieve "standard product" recognition in Singapore and complete ASEAN.



Alliance champion Mr. Mun Kok Who, Managing Director of ASTech Pte Ltd



MOU signing by Mr. Sascha Graef, MPDV Asia Managing Director / Director Asia

Anniversary in the USA

10 years success story of MPDV in the USA

On June 7, 2018, the American MPDV subsidiary in Orland Park, IL, celebrated its 10th anniversary as the leading provider of MES solutions in North America.



The MPDV USA team and their families celebrated the milestone with a one-day excursion to Brookfield Zoo. During a BBQ picnic-like lunch, Prof. Dr.-Ing. Jürgen Kletti, CEO of the MPDV Group, cut the colorful MPDV birthday cake. Prof. Kletti solemnly declared: "Ten years ago we made an important and, as you can see,

necessary decision with the foundation of MPDV USA Inc. The success to date is definitely proof of that." When an employee asked him why he chose Chicago, Prof. Kletti replied with a wink: "Because it's the most beautiful city in the USA – and of course a great deal of industry is located here."



MPDV USA started in 2008 as a One-Man-Show in Chicago. Today, MPDV USA has 20 employees and continues to grow. This growth is based on the targeted marketing of the MES HYDRA solution by the local sales and marketing team. An extensive local and competent consulting, implementation and support team ensures the long-term success of HYDRA in the market. The MES HYDRA is by now used in over 75 production places in North America.

Dr. Stefan Lölkes, CSO of MPDV USA proudly explains: "The future prospects of the MPDV subsidiary in the USA are excellent and with our strong team we can continue to establish HYDRA as the leading MES in North America".

First customer day in North America

MPDV Customer Day & Industrial IoT Forum 2018

On June 6, 2018, MPDV customers from North and Central America met for the MPDV Customer Day & Industrial IoT Forum 2018. The event was co-hosted together with the Panduit Corporation at their headquarters in Tinley Park, IL and was attended by over 40 participants made up of customers and MPDV representatives.

All customers present had one thing in common: they use HYDRA as Manufacturing Execution System (MES) in their production facilities. They had come to network with other MES HYDRA users, exchange HYDRA knowledge and to learn about the future HYDRA roadmap. The focus was on the customers' own Industrial Internet of Things (IIoT) initiatives.

Jürgen Kletti, founder and CEO of the MPDV Group, and Nathalie Kletti, Vice President Enterprise Development, kicked-off the event with a keynote. This was followed by presentations and demonstrations by MPDV on recently released HYDRA features such as the Edge Computing Suite and

the future roadmap that showed the further development of HYDRA as a catalyst for the IIoT and Industry 4.0 initiatives. Unites States Gypsum (USG), Panduit and Yanfeng Global Automotive Interiors presented themselves at this forum. The customer talks focused on the exchange of knowledge about the implementation of HYDRA and the advantages and use of such a system in different production environments.

The day was capped off with an evening reception for dinner, drinks and networking at the Signature Room Restaurant atop Chicago's iconic 875 N. Michigan Avenue (formerly the John Hancock Building).



MES Highlights at the IMTS 2018 With MES a Smart Factory is possible

The IMTS International Manufacturing Technology Show at McCormick Place in Chicago from September 10-15, 2018 was six tradeshow days full of attendees walking the show floor looking to digitalize their production process and get the newest update on advanced manufacturing techniques like 3D printing. The show's theme of "Where Dreamers & Doers Connect" could be clearly seen from the people who attended the show: Motivated executives, directors, and plant managers of small and large manufacturing organizations combined with engineers looking for cutting edge technology."

MPDV USA Inc. was positioned ideally in the hall for advanced manufacturing software like CAD/CAM/PLM and Manufacturing Executing Systems (MES). At the MPDV USA Inc. booth where the MES HYDRA was on display many high-level executives and IT staff came actively looking for an MES with concrete project requests. The awareness of the attendees to Industry 4.0 and Smart Factory was noticeable from the questions they asked and their understanding of MES and how it would fit into their organization and IT landscape. This clear vision to become digitally supported by an MES is a big change from what MPDV saw two years ago at the IMTS. Back then, the words Digital Transformation and IIoT (Industrial Internet of Things) were merely managerial buzz words in IT with no sticking application to the organization.



Part of the MPDV USA Inc. team at the booth

News about MES HYDRA

This year, the MES experts from MPDV presented a digital shop floor approach starting with a detailed scheduling solution with advanced planning capability for machines, maintenance, personnel, and inventory. MPDV also had its OEE reporting, serial traceability and quality inspections on display which interested many attendees. MPDV USA's CSO Stefan Loelkes was excited: "This show's lead results and their quality exceeds our boldest expectations. It clearly pays back that MPDV has meanwhile established a full-blown MES competence center in the States. Also being listed as a selected vendor in the Gartner Magic Quadrant for MES systems was certainly a booster. Now, we have quite some work ahead of us, but we are of course excited to see what 2020 IMTS will bring."



Visitors getting live demos of MES HYDRA directly at the IMTS 2018 booth of MPDV USA and discussing their factories' MES requirements

HYDRA Success Story at Allgaier

Strong alliance for manufacturing excellence in the automotive industry

Allgaier is a key supplier in the automotive industry for metal parts for various well-known OEMs all over the world. In their factories in Puebla and Aguascalientes (Mexico), Allgaier up to now operated mainly on a pen & paper basis. To lift the Puebla facility and the brand new Aguascalientes factory up to cutting edge modern manufacturing, Allgaier decided to implement HYDRA MES from MPDV.

MPDV was selected among various vendors: "MPDV's MES HYDRA is a very complete and modular solution and can be applied step-by-step, this is only one of the things we really favored over other vendors" emphasizes Patrick Wolf, global HYDRA project lead and local IT Manager in Puebla. In this manner, MPDV experts supported Allgaier to finish the first few HYDRA modules in Aguascalientes to be ready for its grand opening on October 25, 2018. It was very re-assuring for Allgaier to know that MPDV has a local implementation team, and a support and training center in North America. "Our current MPDV consultant is also a Spanish native speaker, which ensures that we reach all the potential users" adds Wolf, "only if you can really pull the users with you and understand them you can make such a system successful".



Partner for mid-sized businesses

Allgaier has signed a global framework contract with MPDV and expects to introduce HYDRA to further sites worldwide after the closing of the first project phases in Mexico. "That MPDV can implement and support in multiple continents with local teams is a strong factor that makes us very attractive for multinational mid-sized businesses." emphasizes Dr. Stefan Loelkes, CSO of MPDV USA Inc. "While acting globally is well known for the big corporations, it is often overlooked that the mid-sized businesses meanwhile also nearly all have subsidiaries worldwide. They simply have to follow their big clients like the OEMs. It is imperative for our MES customers to know that MPDV as one of the top MES vendors worldwide can support them locally."



Happy faces: Patrick Wolf (left) and his Mexican colleagues just set up another HYDRA AIP terminal

MPDV at the SPS IPC Drives 2018

Automation technology and MES merge

In times of Industry 4.0 and digitization, the borders of the conventional automation pyramid disappear. This is why solutions at all levels are becoming increasingly important. MPDV demonstrated the role played by a Manufacturing Execution System (MES) at the SPS IPC Drives in Nuremberg.

At the end of November 2018, SPS IPC Drives opened its doors for three days. This specialized fair covers the entire spectrum of smart and digital automation. MPDV's MES experts addressed current topics such as OPC UA, Edge Computing or Industrial Internet of Things with integrated solutions – from sensors to ERP. HYDRA, the modular Manufacturing Execution System (MES), is used as a central information and data platform.

MPDV represented widely

During the three days, MPDV and Arend Prozessautomation presented solutions for a secure data collection and targeted analysis of information based on the MES HYDRA in hall 5. The

cooperation with Arend provides a technological interface to the automation technology. On top of this, exhibits from the MES experts were on display at the booths of Dell EMC (hall 6) and Christ Electronic Systems (hall 7).

Positive conclusion

"As expected, the interest in beneficial applications was very high. With MES HYDRA, we were able to set a clear signal for all technology providers," says Jürgen Petzel, Vice President Sales at MPDV, summing up the successful trade fair appearance. Even with a view to the upcoming Hannover Messe in April 2019, the MES experts are certain that the road to the Smart Factory leads via the application – not via the technology.



MPDV presented innovative production IT with MES HYDRA at the SPS IPC Drives 2018 in Nuremberg

Preview Hannover Messe 2019

Integrated Industry – Industrial Intelligence

The world's leading trade fair for industrial technology will open its gates on April 1st, 2019 for one week. MPDV will present latest innovations in manufacturing IT.



The difference to other exhibitors will be, that MPDV does not only focus on technology but also shows the application that could be implemented with

these innovative tools. According to the lead theme "Integrated Industry – Industrial Intelligence", next year's highlights will be solutions for analyzing and visualization of data acquired in the shop floor. Data is the basis for Industry 4.0 – but meaningful and resilient information is even more important. That is why MPDV presents new

functionality using real-time data for predicting production results.

As every year, visitors of the MPDV booth in hall 7 will see the full range of MES HYDRA applications for manufacturing companies of all sizes and industrial sectors. In addition, MPDV shows, how the Manufacturing Integration Platform (MIP) will grow into the future ecosystem of manufacturing IT.

Jürgen Petzel, Vice President Sales at MPDV, invites all manufacturing companies: "Visit us at Hannover Messe 2019 and get in touch with latest HYDRA applications that will support your way to the Smart Factory!"





More about MPDV, MES and efficiency in production

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