DDMRP World 2019
MANN+HUMMEL
Our Journey with DDMRP in Speyer

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AGENDA

I. MANN + HUMMEL
II. PLANT SPEYER
III. ROADMAP TO DDMRP
IV. MAKE IT HAPPEN
V. FIRST RESULTS
VI. WE NEED TO CONTINUE
I. MANN+HUMMEL
SEPARATE THE USEFUL FROM THE HARMFUL

Leadership in Filtration

Transportation
Industrial Solutions
Automotive Solutions

Life Sciences + Environment
Intelligent Air Solutions
Water Solutions
I. MANN+HUMMEL
OUR FUTURE IS GREEN

- Founded in 1941
- 21,000 Employees
- 3,000 patents and applications
- 80 locations worldwide in 5 continents
- 73,000 different products
- 3.95 billion € sales
- 26 filters per second
- Top 50 patent applicants in Germany
- 80 top patent applicants in Germany
## II. PLANT SPEYER
**LOW VOLUME – HIGH MIX**

### Facts:
- **Number of employees:** 475
- **Total area:** 88,025 m²
- **Developable area:** 26,650 m²

### Complexity:
- **Inbound:**
  - 50,000 materials and components
  - 10,000 finished products
- **Outbound:**
  - 89,000 positions p. a.
  - 171,000 consignments p. a.
  - 25 trucks per day

### Storage:
- **Inbound:**
  - 8,350 pal. places in plant
  - 7,500 pal. places in fully automat. high rack
  - 6,900 pal. places in xt. warehouses
- **Outbound:**
  - 28,000 goods receipt p. a.
  - 500 consignments per day
  - 21 trucks per day
II. PLANT SPEYER
LOW VOLUME – HIGH MIX
### III. ROADMAP TO DDMRP

**CHALLENGING TARGETS – EXPECT WHAT YOU INSPECT**

<table>
<thead>
<tr>
<th>Inventories</th>
<th>Stockouts</th>
<th>Market Lead Time</th>
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<tr>
<td>-20%</td>
<td>-50%</td>
<td>-80%</td>
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- **Inventories**
  - Inventory reduction for DDMRP planned materials.

- **Stockouts**
  - Increase availability of DDMRP planned materials by reducing stock-out-events.

- **Market Lead Time**
  - Reduction of lead time for DDMRP planned materials by decoupling and buffering.
III. ROADMAP TO DDMRP
OUR EVOLUTION – STEP BY STEP

February 2017
Start pilot project purchasing components for one production line

November 2017
GoLive MTS/MTO control with DDMRP in MATERIAL PLANNING of finished products

December 2017
Investigation of integrated solution in SAP evaluation of solutions of SAP and others.

March 2018
Start of project with SAP ECC DDMRP solution without any additional interfaces for DDMRP method directly in SAP Core

June 2018
Successful pilot project completion preparation of lessons learned about DDMRP project

July 2018
Start implementation SAP ECC DDMRP implementation in plant Speyer for planning and procurement of components

DDMRP in SAP Core
III. ROADMAP TO DDMRP
IMPLEMENTATION IN SAP CORE

Start of implementation
July 2018

GoLive I
DDMRP basic process

Nov 2018

March 2019

GoLive II
DDMRP advanced process

Apr 2019

Ramp Up SAP Solution
Update of Release 2019

May 2019

September 2019

Planning of 500 material numbers with DDMRP
Orders and delivery schedule

Current status

End of project
November 2019

DDMRP delivery schedule forecast

Introduction of function extension
IV. MAKE IT HAPPEN
EXTENDED TOOLS IN SAP

- MRP-Monitor
- Stocking Level Monitor
- Advanced MD04
- Simulations Safety
- Stock and DDP Buffers
- Replenishment
- Leadtime Monitor
- Customized MRP-type

Basic
DDMRP process

Advanced
DDMRP optimization

- Exception Monitor
- Inventory Controlling
- Cockpit
- Material Simulation
- Cockpit
- Service Level Cockpit
IV. MAKE IT HAPPEN
POWER IS NOTHING WITHOUT CONTROL

Daily Management

Order Requirement

Exceptions (review buffer status)

Daily Inventory Tracking

SQDC
- Safety, quality, delivery and cost
- Procurement and production planning

SAP Advanced MD04
- Check ordering suggestions
- Implement ordering requirements

SAP Exception Monitor
- Reason? Short time customer disposition, delays, ...
- Solution and measure? Raise and prefer orderings

Visualization
- Stock development
- Overstock
- Goods in receipt
- Service level
IV. MAKE IT HAPPEN
OUR MONTHLY BUSINESS – MATERIAL MASTER VIEW

All DDMRP material data are maintained on a separate SAP CS view.
IV. MAKE IT HAPPEN
OUR MONTHLY/WEEKLY BUSINESS – Simulations Safety Stock and DDP Buffers

DDMRP Simulation Cockpit
- Monthly automatic buffer calculation with SAP Job
- Possibility to simulate all DDMRP parameters for new buffer sizing (lead time and variability factor, order cycle, MOQ, lead time, etc.)
- Cause for green zone
- Graphic display and comparison
Functionality DDMRP with scheduling agreement

If the Netflow is under TOY - Top of yellow, the system generates a delivery schedule automatically at the end of the Decoupled Lead Time.

After this the system takes the current Netflow and the ADU and simulates the next delivery schedule as a preview for the supplier.
Daily DDMRP ordering process

SAP generates ordering suggestions automatically and the user has to convert them into orders.
**IV. MAKE IT HAPPEN**

**OUR DAILY BUSINESS – EXCEPTION MONITOR**

### Daily control buffer status

What is the buffer size of the available stock?

- **Red** safety zone
- **Yellow** in order (transit)
- **Green** good stock
- **Blue** overstock

→ Next steps and measures!
V. FIRST RESULTS
CURRENT STATUS

Inventories
-20%
Inventory reduction for DDMRP planned materials.

Stockouts
-92%
Increase availability of DDMRP planned materials by reducing stock-out-events.

Market Lead Time
-50%
Reduction of lead time for DDMRP planned materials by decoupling and buffering.
VI. WE NEED TO CONTINUE
NEXT STEPS

November 2019
- Implementation M+H requirements and first positive effects

December 2019 – January 2020
- SAP integration in production planning and scheduling

February 2020
- Start DDMRP introduction for SEMI and FINISH-parts

December 2020
- Consistent DDMRP planning of all BOM levels
Thank you for your attention. Questions?