

# Quick Start Tutorial

## 1. Overview

### 1.1. Produmex Manufacturing

Produmex Manufacturing is an add-on for SAP Business One that extends the Production module of SAP Business One with new factor: manufacturing resources. The incorporation of this new concept required a myriad of modifications to the system forms and databases and new forms, reports and database tables.

A major strategic decision was that wherever SAP Business One has a solution for manufacturing concept, Produmex Manufacturing will re-use or extend that solution. For example, the original forms and database tables for Item Master Data, Bill of Material, Production Orders, MRP Scenarios and Recommendations have been reused and extended. The Material Resource Planning logic had to be completely rewritten, and when the user presses the Run button in the MRP Wizard screen, the Produmex Manufacturing Advanced MRP logic executed, and not the original simple MRP. The architecture of the add-on is backward compatible with the SAP Business One original simple Production Module; this make migration very simple and straightforward.

### 1.2. Business Benefits

From business perspective the major benefits the user of the add-on may get are as follows:

- The technology of manufacturing process can be defined with the operations and material requirements. The entire production process can be scheduled at the minute level. This way the company will have an exact schedule of the manufacturing resource consumption. Eventually it may come to light that the old processes were not efficient and fewer resources may produce the same results, or the same amount of resources could produce more products.
- Since the manufacturing process is scheduled the material requirements can be ordered just-in-time. That is it is not needed to purchase all materials long before the materials are actually needed. This way warehousing costs can be significantly reduced and the money needed to finance the manufacturing process could be reduced.
- Since the manufacturing resources of limited capacity are taken into consideration when planning or scheduling the process, the result will be much more realistic.
- Since the add-on is fully and completely integrated with SAP Business One, there is no gap between the manufacturing system and the enterprise information (inventory, sales, purchasing, accounting, etc) system.

## 2. Setup and Installation of the Company

### 2.1. Installing the Produmex Manufacturing Add-On

Produmex Manufacturing is packaged and distributed as a regular SAP Business One add-on with an

.ard and a self-installing .exe file. For more information about the installation process please see: [Installation Guide](#)

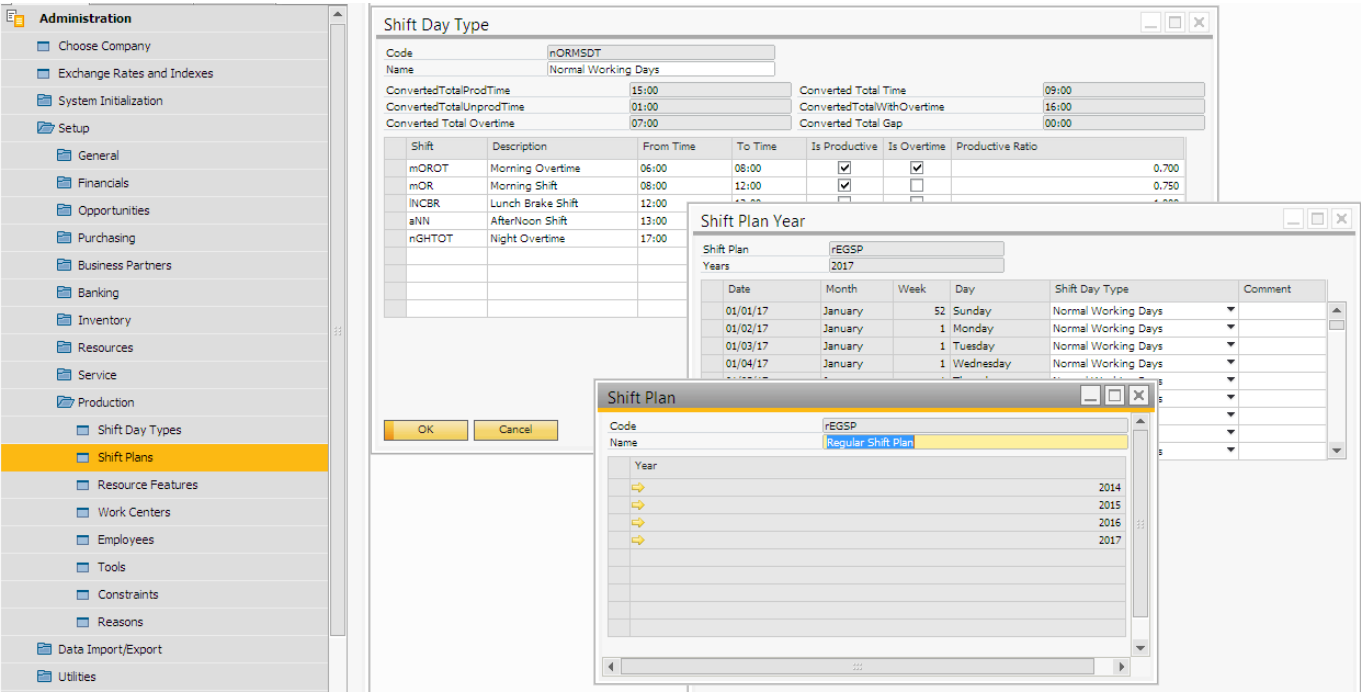
## 2.2. Setup initial data

Produmex Manufacturing extended the standard SAP production module with manufacturing resources. Work centers are the primary resources. When using the multi-dimensional allocation strategy, supplementary resources such as employees, tools and constraints can be defined as well.

Before setting up the resources, create Shift Day Types and Shift Plans.

The shift day types are used when shift plans are defined for resources. A shift day type can contain multiple shifts. It is possible to add overtime and nonproductive shifts for administrative reasons, but such shifts are never used by the resource scheduling logic. The productive ratio determines how much of a shift is used by the resource allocation logic.

On shift plans a shift day type can be assigned for each calendar day.



Then define the Resource Features. A feature in the resource context is a kind of capability a specific resource has. A resource may support multiple features. A feature is used by the resource scheduling logic to find the appropriate resource for a manufacturing operation.

Code	Name	Resource Type
aSS	Assembly	Work-Center
aSSU	Assembly Unlimited	Work-Center
cRF	Constraint	Constraint
cUT	Cutting	Work-Center
dRY	Drying	Work-Center
eRF	Employee Resource Feature	Employee
pNT	Painting	Work-Center
pNTDRY	Painting and Drying	Work-Center
qUA	Quality Checking	Work-Center
TRF	Tool Resource Feature	Tool
wLD	Welding	Work-Center

Buttons: OK, Cancel, Resources, Cost Amounts

Then define Work Centers. A work center is an individual production area or sub-process of an overall manufacturing process. It is a section of a production facility where all tasks associated with a particular process (such as assembling, painting, welding) are performed. A work center may represent a single machine, a group of machines, a single person, a group of persons.

The job scheduler will only take into account 'Active' work centers. The assigned shift plan defines the working schedule of the work center.

Work centers must support at least one feature. Features can be switched off individually with the 'Is Active' checkbox. With the 'Job Time Scale' setting the efficiency of the work center regarding the feature can be set.

Code: wPD  
Name: SX Painter and Dryer Machine  
Active: ☒  
Unlimited: ☐

ShiftPlan: pNTSP  
Profit Center:   
Bin Location: 01-SYSTEM-BIN-LOCATION

Resource Features

Feature	Feature Name	Is Active	Setup Time Scale	Job Time Scale	Teardown Time Scale
dRY	Drying	<input checked="" type="checkbox"/>	1.000	1.000	1.000
pNT	Painting	<input checked="" type="checkbox"/>	1.000	1.000	1.000
pNTDRY	Painting and Drying	<input checked="" type="checkbox"/>	1.000	1.000	1.000

Buttons: OK, Cancel, Allocations

When using the multi-dimensional allocation strategy, you can define Employees, Tools and Constraints too.

Administration

Choose Company

Exchange Rates and Indexes

System Initialization

Setup

General

Financials

Opportunities

Purchasing

Business Partners

Banking

Inventory

Resources

Service

Production

Shift Day Types

Shift Plans

Resource Features

Work Centers

Employees

Tools

Constraints

Reasons

Data Import/Export

Utilities

Employee

Code1

NameDoe, John

Active☒

ShiftPlanrEGSP

Profit Center

Bin Location01-SYSTEM-BIN-LOCATION

Employee ID1Doe, John

Feature	Feature Name	Is Active	Setup Time Scale	Job Time Scale	Teardown Time Scale
eRF	Employee Resource Feature	<input checked="" type="checkbox"/>	1.000	1.000	1.000

Tool

CodetMH

NameMachine

Active☒

ShiftPlanrEGSP

Profit Center

Bin Location01-WV2-W2-S2

Quantity2.000

Feature	Feature Name	Is Active	Setup Time Scale	Job Time Scale	Teardown Time Scale
tRF	Tool Resource Feature	<input checked="" type="checkbox"/>	0.000	0.000	0.000

Constraint

CodecCO

NameConstraint

Active☒

ShiftPlanrEGSP

Profit Center

Bin Location01-SYSTEM-BIN-LOCATION

Quantity1.000

Feature	Feature Name	Is Active	Setup Time Scale	Job Time Scale	Teardown Time Scale
cRF	Constraint	<input checked="" type="checkbox"/>	1.000	1.000	1.000

OKCancelAllocations

Resources can be linked to the BoM/production order with operations. Operations are special items that represent manufacturing processes.

First create a [Manufacturing Operation](#). When a manufacturing operation is created, an 'Operation' item is automatically added. The parameters of the operation can be set on the Item Master Data and the Manufacturing Operations form. The operation will be more meaningful in the context of a Bill of Material (BoM) or Production Order. All the parameters (except Is Outsourceable) for an operation can be redefined in a BoM or Production Order.

An operation has a number of parameters, the most important of which is the 'Job Time'. The 'Job Time' defines the resource capacity the operation requires. The setup, job and teardown times consume resource capacity while the before, safety and after times do not consume capacity but are taken into account when calculating the beginning of the jobs in the sequence of operations. The job time for some operation cannot be defined for a single unit; the 'Time Base' is the number of the units of the operation the job time refers to.

The second most important parameter of an operation is the Work Center Feature. For each operation a Work Center Feature must be selected. This parameter is used extensively by the job scheduler; when the scheduler tries to find work center capacities for an operation, it will search for work centers that have the selected feature for the operation. It is possible to define a preferred work center. When the 'Is Mandatory Work Center' checkbox is checked, the job scheduling logic will always allocate the operation on the preferred work center. When using the multi-dimensional allocation, supplementary resources can be defined for the operation on the grid.

If an operation is a parallel operation, it means that it can be performed by multiple work centers at the same time if there are enough resource capacities available. Operation break types define

whether more than one allocation for an operation is allowed or not.

As mentioned earlier operations are items from the perspective of SAP Business One, and some of their parameters can be defined in the item Master Data form. An operation item is never an inventory item. If the operation is outsourceable the item is set as 'Purchased' item.



Operations are used extensively in production Bill-of-Materials. The standard SAP Business One BoMs are extended by Produmex Manufacturing add-on with operation items.

The role of an item can be indicated with row types. A row in a BoM may be of type:

- Material (Purchased and own-manufactured items are differentiated with row icons)
- Operation
- By-Product (A material with negative quantity)
- Unfinished Product (For [Outsourcing](#).)
- Unfinished Material (For [Outsourcing](#).)
- Phantom (Virtual item in SAP Business One.)
- Cost (Any non-inventory item can be defined as 'Cost')

The sequence of materials and operations are important: materials required for an operation should come above (from top down) the operation.

Milestones connect the operations with the belonging materials. The issue method of an operation should always be 'Backflush'. Items with 'Manual' issue type can be set with the following Milestones:

- *Depends on Begin*: The item will be issued when a Start Job is reported for the subsequent operation.
- *Depends on Every*: The item will be issued/received at every PDC booking for the subsequent operation where a quantity is booked.
- *Depends on End*: The item will be issued/received at every complete job booking for the subsequent operation.

We recommend to only use the 'Depends on End' milestone type if the base quantity of the material is 1 and only 'Completed' job bookings are used.

The quantity of an operation is the same as the job time. The initial parameters of an operation are copied from the manufacturing operation, and these parameters may be customized for the BoM. The operation details form can be opened by clicking the row image icon.

Bill of Materials (Resource List)

Product No.

Product Description

BOM Type

Production Std Cost

Planned Average Production Size

X Quantity

Warehouse

Price List

Distr. Rule

Project

BiID

Calculation Base Quantity

Is Auto Roll

Milestone Type

Operation Granularity

Recipe Version

Rejected Warehouse

Timestamp

#	Row Type	R...	Type	No.	Description	Quantity	UoM N...	Warehouse	Issue Method	Milestone Type	Production Std...	Total Production...	Price List
1	Material	Item	mM1001	Painted Bike Fr	1	pcs	01	Manual	Depends On Begin		\$ 0.00	\$ 0.00	Selling Price
2	Material	Item	m3	Chain	1	pcs	01	Manual	Depends On Begin		\$ 0.00	\$ 0.00	Selling Price
3	Material	Item	m4	Wheel	2	pcs	01	Manual	Depends On Begin		\$ 0.00	\$ 0.00	Selling Price
4	Operation	Item	oPAS	Bike Assembly	180	min	01	Backflush	Milestone		\$ 0.00	\$ 0.00	Selling Price
5	Cost	Item	cOST1	Project Manag	1		01	Backflush			\$ 0.00	\$ 0.00	Selling Price
6	Unfinished Pr...	Item	uP1001-0	Red Bike (Basic	-1	pcs	01	Backflush	Depends On End		\$ 0.00	\$ 0.00	Selling Price
7	Unfinished Ma...	Item	uP1001-0	Red Bike (Basic	1	pcs	01	Manual	Depends On Begin		\$ 0.00	\$ 0.00	Selling Price
8	Operation	Item	oPQA	Quality Assur	3	min	01	Backflush	Milestone		\$ 0.00	\$ 0.00	Selling Price
9	Material	Item	m5	Bell	1	pcs	01	Manual	Depends On Begin		\$ 0.00	\$ 0.00	Selling Price
10	Material	Item	m6	Screw 8mm (N	1	pair	01	Manual	Depends On Begin		\$ 0.00	\$ 0.00	Selling Price
11	Operation	Item	oPBI	Bell Installation	5	min	01	Backflush	Milestone		\$ 0.00	\$ 0.00	Selling Price
12	Cost	Item	cOST2	Energy	1		01	Backflush			\$ 0.00	\$ 0.00	Selling Price
13													Price List 01

OK

Cancel

Product Price

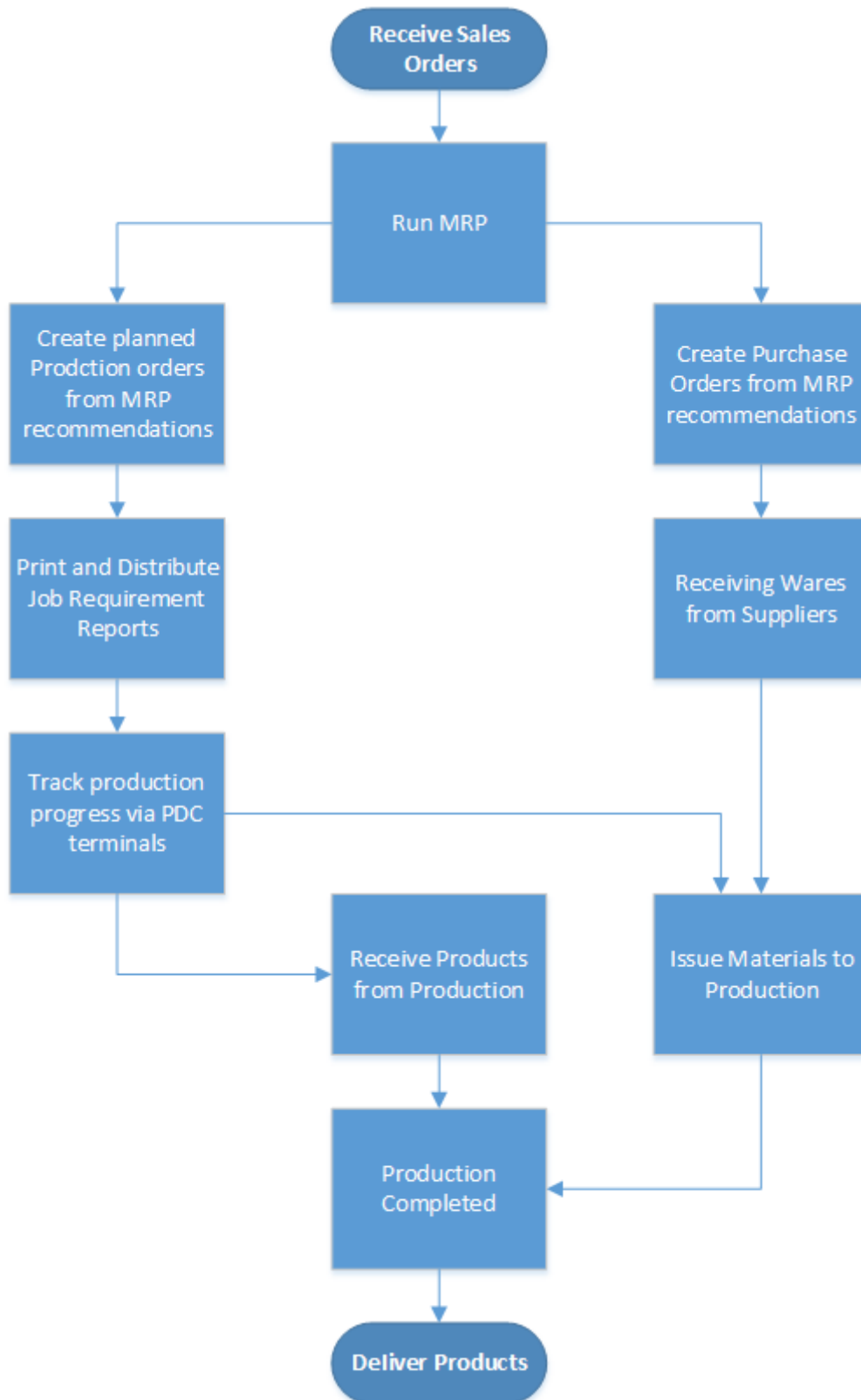
To calculate the estimated price of a product based on the Bill of Materials, configure the [Cost Calculation](#) settings.

### 2.3. Install initial data

In most cases when SAP Business One is installed for a company, the company has already had some computerized information system. Therefore, typically the first job for a SAP Business One installation project is to migrate or import the startup data for the company database of SAP Business One. The tools that may help in this job are Test Script Executor and Test Script Creator. Download the Test Script Executor and the Test Script Creator from: [TxTestScriptCreator.zip](#)

For more information about how to use the Test Script executor for installing initial data please see: [Test Script Executor](#)

## 3. Everyday Work - Business Process



### 3.1. Receiving Sales Orders and Sales Quotations

#### 3.1.1. Receiving Sales Orders

The requirements for the manufacturing process in most businesses are driven by sales orders. The Sales Order form is extended by Produmex Manufacturing with a new field 'MRP Date'. The MRP Date calculated by the planning logic of Produmex Manufacturing is the earliest possible date to

accomplish/fulfill the sales order.

*Please note: Only the Bill of Materials of the product is considered during the MRP Date calculation. The Bill of Materials of lower level assembly materials are not considered during the calculation.*

Sales Order

Customer

bBC

Big Bike Mart

Contact Person

Customer Ref. No.

Local Currency

No.

Primary

515

Status

Open

Posting Date

02/02/17

Delivery Date

02/08/17

Document Date

02/02/17

Contents

Logistics

Accounting

Attachments

Item/Service Type

Item

Summary Type

No Summary

#	Item No.	Quantity	Unit Price	Disc...	Total (LC)	Del. Date	Delivery Time	Ready For Deliv...	Ready For De...	Manual Planning
1	p1001-1	10	\$ 482.01	0.000	\$ 4,820.10	02/08/17	3:30PM	02/07/17	10:00AM	No
2	mM1001	5	\$ 300.00	0.000	\$ 1,500.00	02/08/17	3:30PM	02/07/17	12:15PM	Yes
3				0.000		02/08/17				No

Sales Employee

-No Sales Employee-

Owner

Remarks

Total Before Discount

\$ 6,320.10

Discount

%

Rounding

\$ 0.00

Tax

Total

\$ 6,320.10

MRP Date

Update

Cancel

Copy From

Copy To

Produmex Manufacturing supports just-in-time manufacturing; a new 'Delivery Time' column is added to the items matrix, which is the time of date of the 'Delivery Date' (a standard SAP Business One field). Since Production Orders extended by Produmex Manufacturing support 'Due Time', the recommendations created by MRP support 'Due Time' as well.

In a number of cases the 'Delivery Date' and 'Delivery Time' is the time when the customer wants the products on her premises. In such a case if the shipping time is significant, the manufacturing should accomplish the production before shipping. This is where the 'Ready for Delivery' and 'Ready for Delivery Time' fields are important: if they are defined, the MRP logic uses them as the expected due date and time for the Production (or Purchase) Order Recommendations.

In some situations some of the Sales Order lines should be ignored by the MRP. If the 'Manual Planning' flag is set to 'Yes', the MRP ignores this and the fulfillment of the sales order line should be managed manually. This setting allows the combined running of the MRP and the MTO.



### 3.1.2. Receiving Sales Quotations

The earliest fulfillment date can also be calculated for Sales Quotations. The form is extended by Produmex Manufacturing with a new '*MRP Date*' field. Click on the button next to the MRP Date field. Starting from the current date, the planning logic of Produmex Manufacturing will calculate the earliest possible date to fulfill the sales quotation.

*Please note: Only the Bill of Materials of the product is considered during the MRP Date calculation. The Bill of Materials of lower level assembly materials are not considered during the calculation.*

If the '*Advanced MTO Recommendation*' option is enabled on the [MTO tab](#) of Produmex Manufacturing settings, a '*Sales Quotation Simulation Parameters*' form will open.



On this form a separate [MTO](#) scenario can be created for the sales quotation. It is possible to adjust the scenario name and select additional MRP scenarios to include in the allocation simulation. The type of the scenarios that can be included is defined by the '*Sales Quotation Simulation Type filter*' setting on the [MTO tab](#) of Produmex Manufacturing settings.

Click on the '*Calculate*' button to calculate the earliest MRP Begin Date/Time and MRP End Date/Time for the sales quotation lines. The 'MRP Mark' column determines which lines are taken into account in the simulation:

- If the 'MRP Mark' is set to 'No' for each line, every sales quotation line will be taken into account.
- If there is at least one line with enabled 'MRP Mark', only lines where the 'MRP Mark' is set to 'Yes' will be taken into account.

These fields will be populated with the begin/due date/time of the order recommendation of the item created by the [MTO](#).

To also see the simulation results on the [Job Scheduling Control Panel](#), click on the '*Show*' button.

## 3.2. Detect Requirements

### 3.2.1. Advanced MRP

Material Resource Planning (MRP) is the tool in SAP Business One to find the purchasing and production requirements driven by sales orders, advance/reserve invoices, forecasts and inventory level requirements.

In SAP Business One MRP can be run with a number of parameters; the parameters and the purchasing and production recommendations are saved in scenarios. Produmex Manufacturing simply extends the scenario concept of SAP Business One.



When the Run button is pressed on the MRP Wizard screen, the advanced MRP logic of Produmex

Manufacturing is executed suppressing the built-in simple MRP logic of SAP Business One. The advanced MRP logic of Produmex Manufacturing uses exactly the same parameters of a scenario as SAP Business One, but the algorithm is much more complex because it takes the available resource capacities into account.

The results of the advanced MRP are displayed in an overview matrix. When the buttons are clicked a form is shown that explains the driving factors behind that recommendation.



If there are requirements that cannot be fulfilled on time, a list of error is displayed after MRP has completed running. In many cases the reason of the error is that the MRP cannot find available capacity for the operation of a production order recommendation. Click on the red x to see the detailed explanation.



The problematic figures are displayed in red on the overview matrix. The pegging information window shows the production or purchase order recommendation.

### 3.2.2. Manage MRP scheduling on a graphic board

To see the simulated resource allocations for the production orders recommended by the MRP, open the [Job Scheduling Control Panel](#). Click on the 'Query' button. Check 'MRP recommendations' as a Data Source and select the MRP scenario from the dropdown list.



### 3.2.3. Make To Order

Produmex Manufacturing also supports procurement planning strictly based on production orders and incoming sales orders. With [Make To Order](#) planning a separate MRP scenario can be created for the triggering production/sales order. Production and purchase orders created from MTO recommendations will be linked to the top order.

In order to take into account an item during the MTO planning, set the '*MTO Planning*' UDF to 'Yes' on the Item Master Data.

Initiate the MTO from the right click menu of the top order.

On the opening 'Top Order Picker' form select the top order line. It is possible to combine more than one orders in one MTO scenario. Click on the 'Load Top Orders' button to load every order that can be included in the MTO scenario. Select the orders with the 'Selected' checkbox then click on the 'Add' button to add the new MTO scenario.

### 3.2.4. Combine MRP and MTO

Manufacturing companies that produce complex and customizable products might want to run MRP and MTO simultaneously. Produmex Manufacturing supports the combined use of MRP and MTO.

To plan the procurement of an element with MTO only, enable the '*Skip MTO from Normal MRP*' option on the [MTO tab of Produmex Manufacturing settings](#). Every item with the 'MTO planning' option set to 'Yes' will be excluded from the MRP run.

To exclude certain sales order lines from the MRP run, set the 'Manual Planning' field of the line to 'Yes' on the sales order.

## 3.3. Creating Production and Purchase Orders from Recommendations

Order recommendations created by the Produmex Advanced MRP and MTO are saved into the same database as used by the SAP Business One's original simple MRP logic. This way the standard Order Recommendation form extended by the Produmex Manufacturing add-on is used to review the recommendations for a scenario. From this form the user may create both production orders and purchase orders.

Order Recommendation

Planning Horizon

02/07/17 - 02/27/17

Calculated At

02/07/17 3:02PM

Find Item No.

	Create	Order Type	Item Number	Item Description	Quantity	UoM Code	UoM...	MRP ...	MRP ...	MRP Order Mu...	MRP ...	MRP Lead Time
1	<input type="checkbox"/>	Production Order	⇒ p1001-1	Red Bike	10	Manual	pcs	Make		10,000	5,000	
2	<input type="checkbox"/>	Production Order	⇒ p1001-1	Red Bike	10	Manual	pcs	Make		10,000	5,000	
3	<input type="checkbox"/>	Production Order	⇒ mM1001	Painted Bike Frame	10	Manual	pcs	Make		1,000	5,000	
4	<input type="checkbox"/>	Production Order	⇒ mM1001	Painted Bike Frame	10	Manual	pcs	Make		1,000	5,000	
5	<input type="checkbox"/>	Production Order	⇒ mM1101	Raw Bike Framework	10	Manual	pcs	Make		1,000	5,000	
6	<input type="checkbox"/>	Production Order	⇒ mM1101	Raw Bike Framework	10	Manual	pcs	Make		1,000	5,000	
7	<input type="checkbox"/>	Purchase Request	⇒ m3	Chain	20	Manual	pcs	Buy		5,000	5,000	2
8	<input type="checkbox"/>	Purchase Request	⇒ m4	Wheel	40	Manual	pcs	Buy		2,000	10,000	2
9	<input type="checkbox"/>	Purchase Request	⇒ m5	Bell	15	Manual	pcs	Buy		5,000	5,000	3
10	<input type="checkbox"/>	Purchase Request	⇒ m5	Bell	5	Manual	pcs	Buy		5,000	5,000	3
11	<input type="checkbox"/>	Purchase Request	⇒ m6	Screw 8mm (Nut +	20	Manual	pair	Buy		10,000	10,000	3

←

...

→

←

OK

Cancel

After the production orders have been created from the recommendations, they are created in 'Planned' status initially. The production order can be modified in any manner.

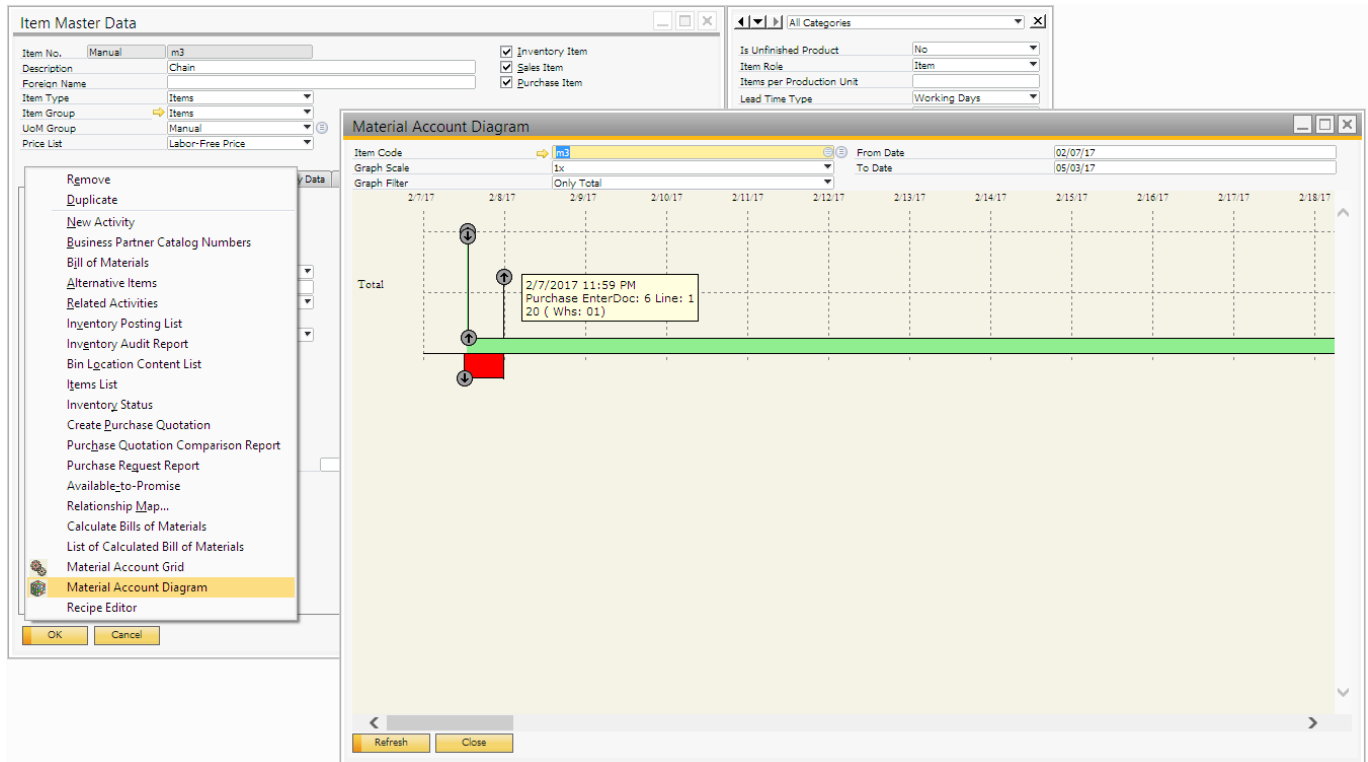
For planned production orders only temporary allocations are made. Permanent allocations will only be created after the production order has been released.

As mentioned earlier, Produmex Manufacturing extended the production order 'Due Date' with a time component. With the 'Due Time' UDF the production planning is detailed at the time-of-day level.

### 3.4. Detect missing components

At this point the components needed for the production may be missing. The Missing Parts Report shows the components that are not on stock for the planned or released manufacturing, and this way they need special attention.

To see the material flow of a given item, open the Material Account Grid/Diagram from the right-click menu of the Item Master Data.



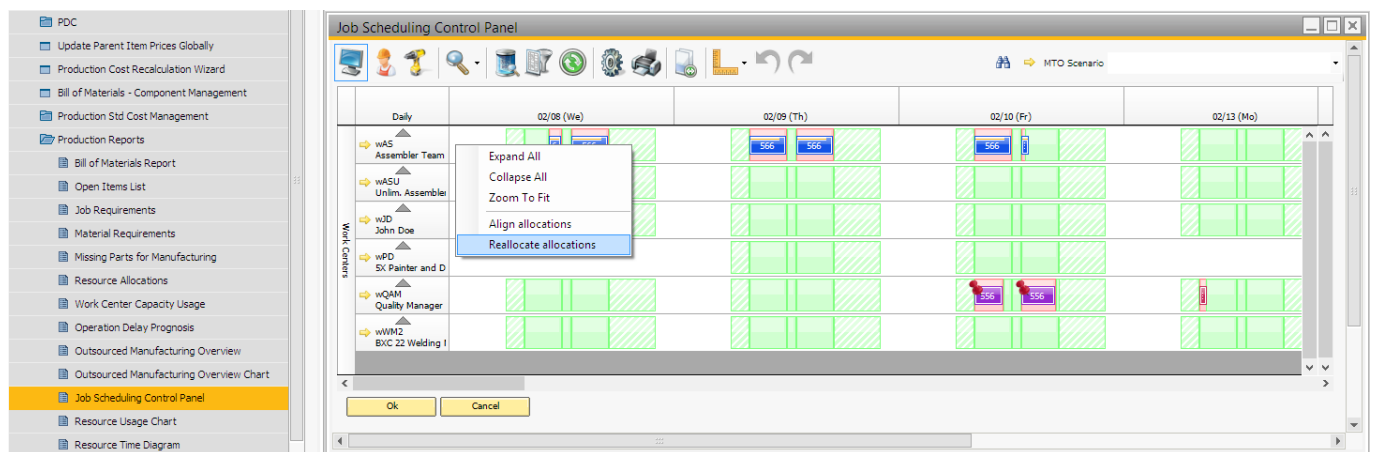
When the mouse cursor is moved over the circled arrow icons, a bubble shows details about that transaction; if the icon is clicked the appropriate production, purchase, etc. order form is opened. The up arrow shows incoming, the down arrow outgoing inventory transactions.

When all the purchased components are on stock the production can be started.

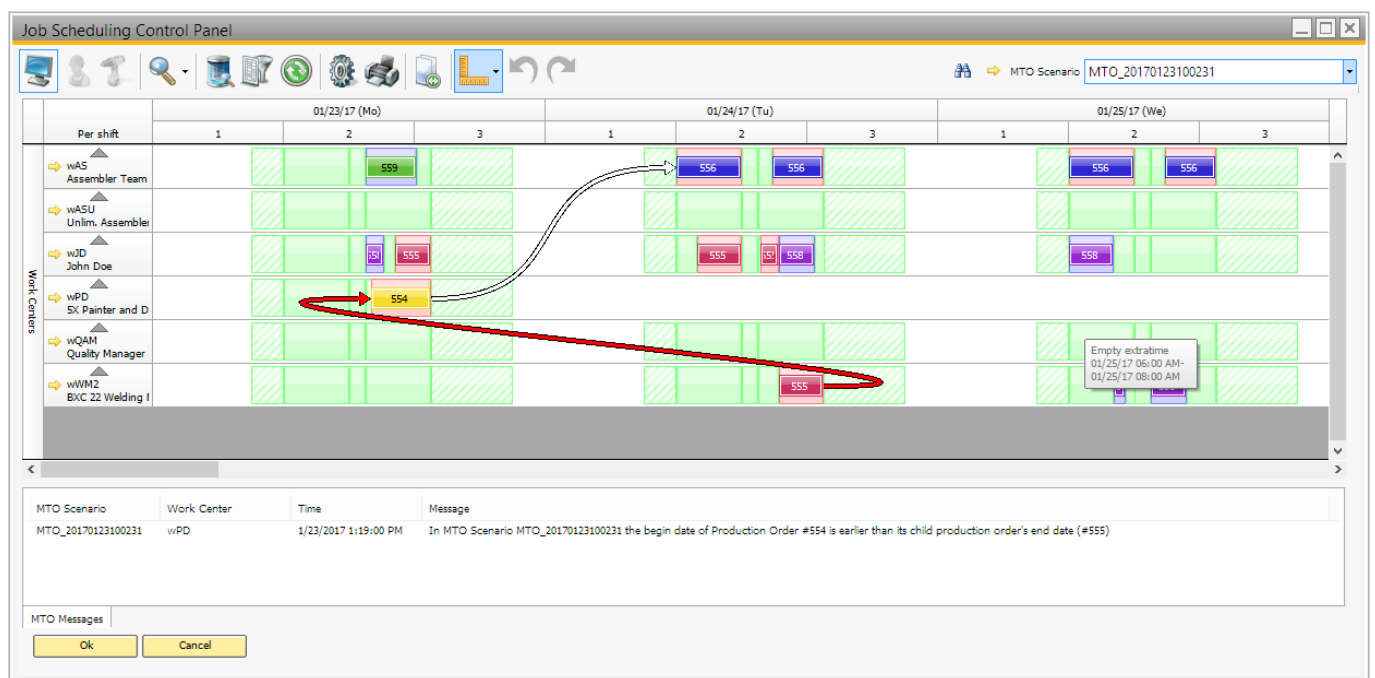
### 3.5. Manage scheduling

For the operations of production order recommendations and planned production orders, no actual resource capacities have been allocated. In the case of such orders, the resource allocations are only temporarily made as a simulation. Permanent allocations are only created when a production order is released.

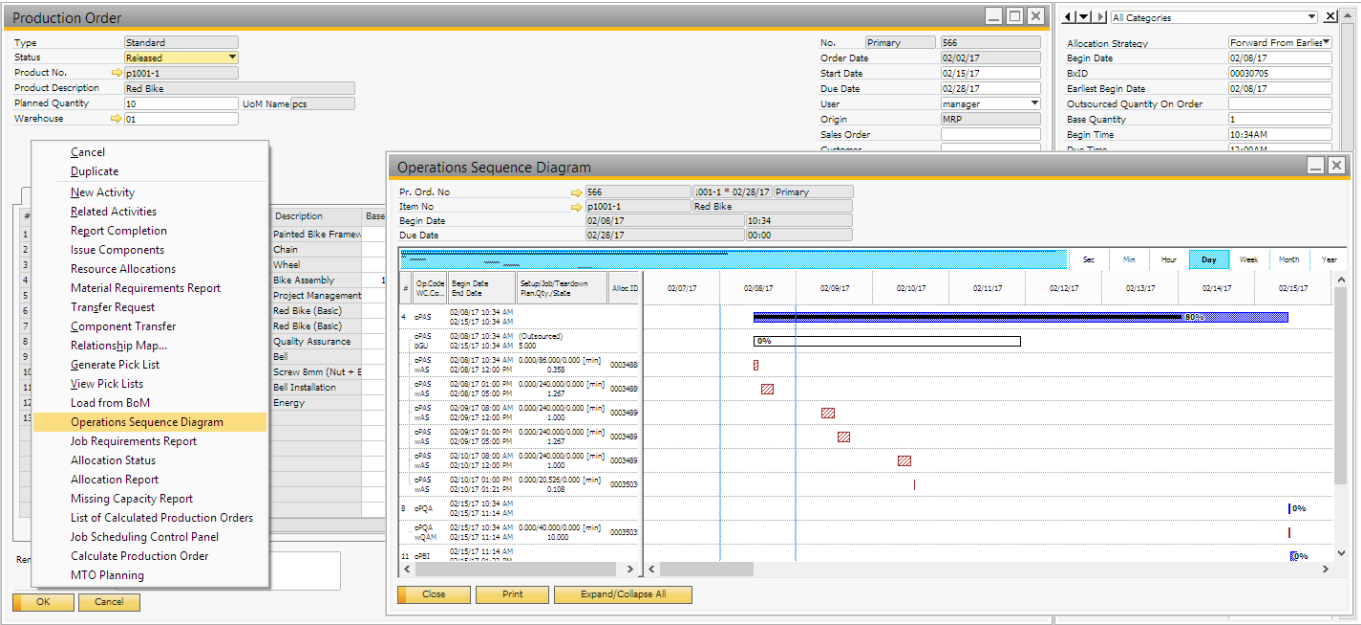
On the [Job Scheduling Control Panel](#) not just the allocations for recommendations but the simulated allocations for planned production orders and the temporarily allocations for released orders can be monitored. To reschedule an operation, simply drag it and replace it on a free slot. To reschedule every allocation for a resource, use the semi-automatic rescheduling functions.



The Job Scheduling Control Panel has special functions for MTO scenarios. If a scenario is highlighted, the sequence of the operations is indicated with arrows. When the system detects discrepancy, an MTO message is shown and the discrepancy is marked with a red arrow.



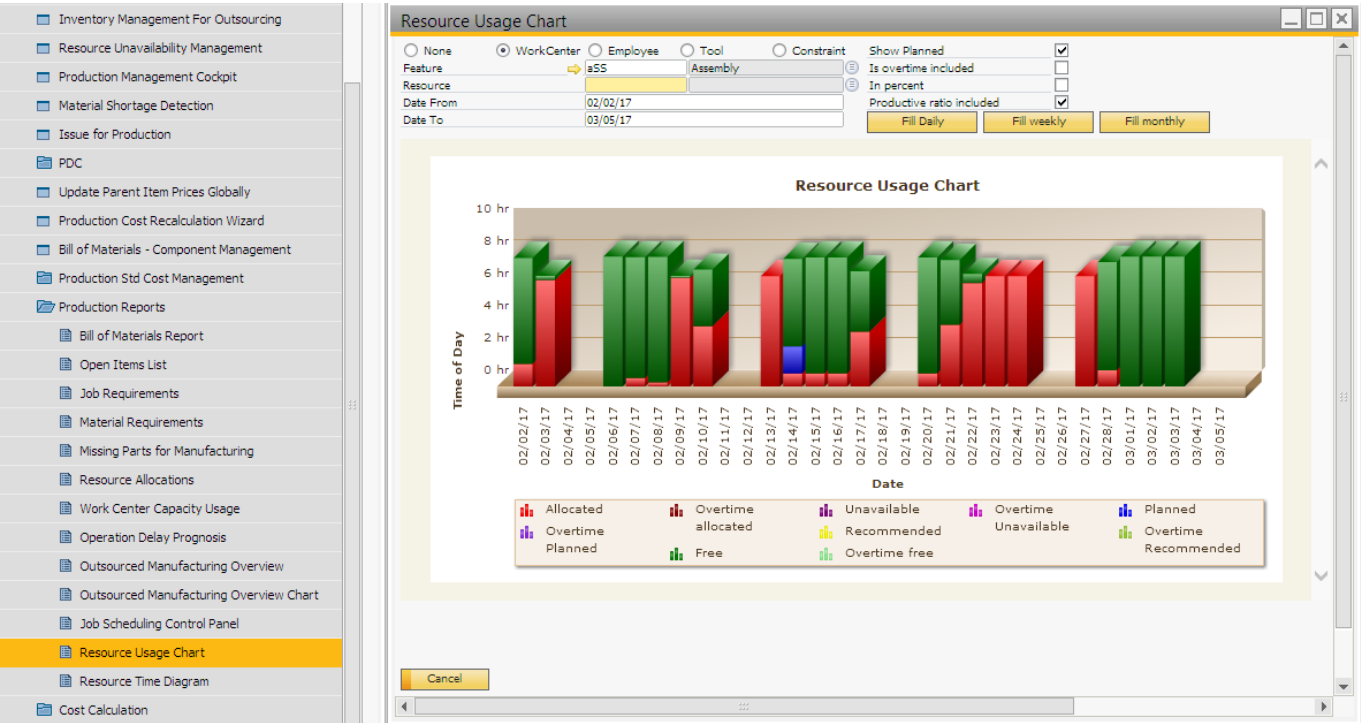
To review the operation sequence of only one production order, open the Operation sequence diagram from the right-click menu of the order. On the diagram resource allocation are displayed in separate lines with the completion percentage.



One of the goals of a manufacturing company is to optimize the usage of resources.

The Resource Usage Chart may be used even with planned or recommended production orders. Keep in mind that resource capacities are allocated for the operations in production orders based on the resource feature settings.

When no work center is selected, the combined usage of all work centers of the company is shown. The available capacities of the resources are determined by the associated shift model.



Produmex Manufacturing also offers a [Production Management Cockpit](#). On this cockpit production orders can be released, closed or rescheduled in groups. To release multiple production orders, select the lines of the production orders then click on the 'Change Selected' button. Select the new status from the dropdown menu. After pressing 'Update' recalculate the production orders.

When a production order has been released, the scheduling logic of the Produmex Manufacturing add-on finds resource capacities for the operations and a number of reports are available including the Resource Allocations report.

The allocations for a selected resource, resource feature, product, production order or time period can also be viewed on a grid. Open the Resource Allocations form.

To see the capacity usage of a given work center, open the Work Center Capacity Usage form. On the 'Allocation Rate' field the work center usage percentage for the given work center with the selected parameters is shown.



- Material Shortage Detection
- Issue for Production
- PDC
- Update Parent Item Prices Globally
- Production Cost Recalculation Wizard
- Bill of Materials - Component Management
- Production Std Cost Management
- Production Reports
  - Bill of Materials Report
  - Open Items List
  - Job Requirements
  - Material Requirements
  - Missing Parts for Manufacturing
  - Resource Allocations
  - Work Center Capacity Usage**
  - Operation Delay Prognosis
  - Outsourced Manufacturing Overview
  - Outsourced Manufacturing Overview Chart
  - Job Scheduling Control Panel
  - Resource Usage Chart
  - Resource Time Diagram
- Cost Calculation

### Work Center Capacity Usage

Work Center:  Assembler Team
 Date From: 
Date To:

Feature: 
Productive: 
Capacity UoM:

Overtime: 
Period: 
Show Shifts: ☒

Resource	Work Center Name	Shift	Shift Description	From Date	To Date	Total Capacity	Allocated Capacity	Productive Ratio	Allo...
wAS	Assembler Team	mOROT	Morning Overtime	02/08/17	02/08/17	120.000	0.000	0.700	
wAS	Assembler Team	mOR	Morning Shift	02/08/17	02/08/17	154.000	0.000	0.750	
wAS	Assembler Team	mOR	Morning Shift	02/08/17	02/08/17	86.000	86.000	0.750	
wAS	Assembler Team	aNN	Afternoon Shift	02/08/17	02/08/17	240.000	240.000	0.950	
wAS	Assembler Team	nGHTOT	Night Overtime	02/08/17	02/08/17	300.000	0.000	0.600	
wAS	Assembler Team	mOROT	Morning Overtime	02/09/17	02/09/17	120.000	0.000	0.700	
wAS	Assembler Team	mOR	Morning Shift	02/09/17	02/09/17	240.000	240.000	0.750	
wAS	Assembler Team	aNN	Afternoon Shift	02/09/17	02/09/17	240.000	240.000	0.950	
wAS	Assembler Team	nGHTOT	Night Overtime	02/09/17	02/09/17	300.000	0.000	0.600	
wAS	Assembler Team	mOROT	Morning Overtime	02/10/17	02/10/17	120.000	0.000	0.700	
wAS	Assembler Team	mOR	Morning Shift	02/10/17	02/10/17	240.000	240.000	0.750	
wAS	Assembler Team	aNN	Afternoon Shift	02/10/17	02/10/17	21.000	21.000	0.950	
wAS	Assembler Team	aNN	Afternoon Shift	02/10/17	02/10/17	219.000	0.000	0.950	
wAS	Assembler Team	nGHTOT	Night Overtime	02/10/17	02/10/17	300.000	0.000	0.600	

Allocation Rate:

### 3.6. Create outsourcing orders

After the production order has been released, purchase quotations and purchase orders can be created for the outsourced operations on the [Production Order Operations Details](#) form.

For more information about the Outsourcing please see: [Outsourced Manufacturing](#)

### Production Order Operation Details - [DocNum: 569, Line: 9]

Operation Code: 
Operation Name:

Before Time:  min
 Safety Time:  min
 Setup Time:  min
 Job Time:  min
 Teardown Time:  min
 After Time:  min
 Time Base: 
 Planned Quantity: 
 Completed Quantity: 
 Rejected Quantity:

Operation Break: 
Operation Time UoM:

Is Parallel Operation: ☐
Is Overlapping Operation: ☐
Max Parallel Operations: 
Overlapping Quantity: 
Allocation Window: 
Min Job Quantity: 
Message:

Is Pinned: ☐
Pinned Start Date: 
Pinned Start Time:

Resource Requirements
 Dates
 Outsourcing
 PDC Bookings
 Documentation
 Cost Amounts
 Parameters

Is Outsourced: ☒
Outsourcing Lead Time:  Days
 In House Quantity: 
 Outsourcing UoM: 
 Items Per Outsourcing Unit: 
 In House Ratio:

Supplier Code	Supplier Name	Planned Qty.	Supp. Ratio	Quantity To Order	Qty. On Order	Qty. Received	Quantity Quoted
bGU	Bike Gurus	2.500	0.500	0.00	2.500	0.000	0.000

Document Type	Pu.Ord.No	Pu.Ord.ID	Pu.Quot.No	Pu.Quot.ID	Supplier	Supplier Name	Qty. On Order	Qty. Received	Pu.Ord. Due Date	Purchase OrderID	Pu.Ord.Canceled	Pu.Or...
Purchase Order	506	7			bGU	Bike Gurus	2.500	0.000	02/08/17	00034025	<input type="checkbox"/>	Open

### 3.7. Print production reports

Before starting the production on the shopfloor, print the Requirements Reports for the operations and materials. The Job/Material Requirements Report is meant to be distributed to the workers who do the jobs. These reports are a kind of daily work orders for the workers. The [production data collection](#) is done with the help of these reports.

The screenshot shows the 'Job Requirements Report Parameters' dialog box. The 'Inc. Material Requirements' checkbox is checked. The 'Select Report Layout' dialog box is open, showing 'Job Requirements (base)' as the selected layout. The 'Print' button is highlighted.

Define the parameters of the report. To print the material requirements among the job requirements, check the 'Inc. Material Requirements' checkbox. After pressing the 'Print' button, the printing is directed to the default printer. To print the report in PDF file, check the 'Preview before Print' checkbox. The report is built with Crystal Reports and can be [customized](#).

Operation: oPAS - Bike Assembly		Operation ID: 00030709
Work Center: OP: oPAS	Begin Date&Time: 02/08/17 10:34 AM	Production Order: 566 / 4
	Before Time: 0.00 [min]	Product Code: p1001-1 - Red Bike
	After Time: 0.00 [min]	
	mM1001 Painted Bike Framework 10.00	
	00030706 m3 Chain 10.00	
	00030707 m4 Wheel 20.00	
	00030708	
	Allocation ID: 00034888	67-3
	Start Date&Time: 02/08/17 10:34 AM	End Date&Time: 02/08/17 12:00 PM
	Setup Time: 0.00 [min]	Teardown Time: 0.00 [min]
Quantity: 0.36	Identification Code: 67-3-wAS	
Job Time: 86.00 [min]	Total Duration: 86.00 [min]	
Feature: aSS - Assembly		

## 3.8. Production on the shopfloor

### 3.8.1. Personal Time Management

Produxmex Manufacturing can be extended with an employee [attendance data collecting](#) solution. At the beginning and end of their shift, employees can login/logout on a terminal. This transaction is

recorded in SAP Business One in real time which allows to monitor arrivals and leaves directly from the office.

TEST\_WMSMF

12/20/16 10:18 AM

Server: 17.05.31007.18920  
Client: 17.05.31007

Personal Time Management (00:29)

Employee

●

F12

John Doe

History

Login (, 12/20/16 10:17 AM)

Reason

LB (Lunch Break)

F11

F12

Login

Logout

Log

Main Menu

On the [office module of PTM](#) monthly and ad-hoc attendance reports can be generated.

Sales - A/R

Purchasing - A/P

Business Partners

Banking

Inventory

Resources

Production

MRP

Service

Human Resources

Employee Master Data

Attendance Journal Administration

Time Sheet

Human Resources Reports

Attendance Journal Reports

Attendance Time Account Report

Attendance List

Attendance Work Log

Attendance Journal Error Report

Reports

Attendance Time Account Report

Employee 2 Morrison, Fred

Date From 01/01/17

EmployeeID	Employee Name	Attendance Plan	Total Planned	Total Actual	Total Calculated	Total Difference	Day	Date	State	Plan In	Plan Out	Plan Break	Plan Duration
2	Morrison, Fred		135:00	60:16	60:16	-74:44	Su	01/01/17	Weekend				
							Mo	01/02/17					
							Tu	01/03/17					
							We	01/04/17					
		nORMSDT					Th	01/05/17		06:00	22:00	01:00	15:00
		nORMSDT					Fr	01/06/17		06:00	22:00	01:00	15:00
							Sa	01/07/17	Weekend				
							Su	01/08/17	Weekend				
							Mo	01/09/17					
							Tu	01/10/17					
							We	01/11/17					
		nORMSDT					Th	01/12/17		06:00	22:00	01:00	15:00
		nORMSDT					Fr	01/13/17		06:00	22:00	01:00	15:00
							Sa	01/14/17	Weekend				
							Su	01/15/17	Weekend				
							Mo	01/16/17					
							Tu	01/17/17					
							We	01/18/17					
		nORMSDT					Th	01/19/17		06:00	22:00	01:00	15:00
		nORMSDT					Fr	01/20/17		06:00	22:00	01:00	15:00
							Sa	01/21/17	Weekend				
							Su	01/22/17	Weekend				

Refresh Cancel

3.8.2. Production Data Collection

[Production Data Collection](#) is when the workers report back to the system how their work is progressing.

With the standard PDC application employees first have to start the setup/job then they can report partial/full completion. The duration of the operation is measured in real time and cannot be modified. With the simple job function employees can report the operation duration, setup and job completion in one step.

**Mobile PDC**

**TEST\_WMSMF (PMX\_BUDTOSH2) - John Doe**

12/21/16 02:10 PM

Server: 17.05.31007.18920  
Client: 17.05.31007

Running Jobs (00:30)

Operation

☒
**Job**

**6-1 (oPCU - Cutting)**

02:07 PM

☐
**Job**

**5-10 (oPBI - Bell Installation)**

01:58 PM

#505 mM1101 (Raw Bike Framework)  
Open: 1 Planned: 1 Workcenter: wJD

12/21/16  
Start Job

#504 p1001-1 (Red Bike)  
Open: 0 Planned: 1 Workcenter: wAS

12/21/16  
Start Job

Start F1

Stop F2

Partial F3

Admin F4

Logout Esc

According to the milestone settings of the production order lines and the production order, material consumption and product and by-product completion can be reported during the PDC booking. The appropriate material issue or product receipt inventory transactions will be committed as well.

**Mobile PDC**

**TEST\_WMSMF (PMX\_BUDTOSH2) - John Doe**

12/20/16 02:26 PM

Server: 17.05.31007.18920  
Client: 17.05.31007

Materials (00:30)

Production Order

#501 p1001-1 (Red Bike)

Operation

2-3 (oPAS - Bike Assembly)

Item

Quantity

Add F9

Update F10

mM1001

Painted Bike Framework

30 of 30 pcs  
Warehouse: 01

m3

Chain

30 of 30 pcs  
Warehouse: 01

m4

Wheel

60 of 60 pcs  
Warehouse: 01

Done F1

Cancel Esc

Serial / Batch F2

Unplanned work center unavailability or machine failure can be reported with the Workcenter Journal and Workcenter Ticket functions.

TEST\_WMSMF (PMX\_BUDTOSH2) - John Doe

Server: 17.05.31007.18920  
Client: 17.05.31007

Workcenter Ticket Entry (00:30)

Information

John Doe - 12/22/16 03:46 PM

Work Center

wPD (5X Painter and Dryer Machine)

Comment

Entry Type

Accident

BearningFailure

Cancel

Done

On the PDC office terminal, PDC bookings can be monitored, canceled or created.

PDC Bookings Administration

Employee ID

Identification Code

Work Center

Operation Code

Item Code

Pr. Ord. No. From

Pr. Ord. No. To

Pr. Ord. Op. ID From

Pr. Ord. Op. ID To

Date, Time From

Date, Time To

Errors Only

Hide Undone

Code	Posting Code	Posting Date	Posting Time	Inv. Proc. State	Inv. Proc. Error	Inv. Proc. Date	Inv. Proc. Time	Compl. Qty.	Rej. Qty.	Mach. Duration	Pers. Duration	Main Product Code	Pr-Ord.No	Pr-Ord.Op.ID	Emp. ID	Emp. N...
00013725	Start Job	01/03/17	16:29	Processed		01/03/17	16:29	0.000	0.000	0.000	0.000	mM2001	529	00013681	1	Doe, John
00013726	Completed Job	01/03/17	16:36	Processed		01/03/17	16:39	1.000	0.000	18.000	18.000	mM	529	00013678	1	Doe, John
00013727	Start Job	01/04/17	10:38	Processed		01/04/17	10:38	0.000	0.000	0.000	0.000	Item01	520	00012009	1	Doe, John
00013728	Completed Job	01/04/17	10:39	Processed		01/04/17	10:39	0.000	0.000	1.000	1.000	Item01	520	00012009	1	Doe, John
00013789	Start Setup	01/04/17	10:40	Processed		01/04/17	10:44	0.000	0.000	0.000	0.000	Item01	530	00013732	1	Doe, John
00013790	Completed Setup	01/04/17	10:45	Processed		01/04/17	10:45	0.000	0.000	5.000	5.000	Item01	530	00013732	1	Doe, John
00013791	Start Job	01/04/17	10:46	Processed		01/04/17	10:46	0.000	0.000	0.000	0.000	Item01	530	00013732	1	Doe, John
00013792	Problem	01/04/17	11:03	Processed		01/04/17	11:04	0.000	0.000	0.000	0.000	Item01	530	00013732	1	Doe, John

Mat.ID

Mat.Code

Mat.Name

Mat.Type

Used Qty.

Bin Location Name

Op.Prod.ID

Prod. Code

Prod. Name

Prod. Type

Compl. Qty.

Rej. Qty.

Bin Location Name

Parameter Name

Name

Parameter Value

Comment

Related

Radio Inv. Tr.

Modify

Set to Unprocessed

Undo

Close

Many manufacturing companies do not need the full-fledged data collection terminal. Instead, they could do very well with the much simpler PDC Bookings Office Terminal. In this scenario, the production data is collected (mostly) on paper, and the data is entered at the end of the day by an office assistant.

- PDC
- PDC Bookings Office Terminal**
- PDC Sheet Generator
- PDC Administration
- Simple PDC Shop-Floor Wizard
- Managing Rejected Batched PDC Transactions
- Update Parent Item Prices Globally
- Production Cost Recalculation Wizard
- Bill of Materials - Component Management
- Production Std Cost Management
- Production Reports
- Cost Calculation

### PDC Bookings Office Terminal

Auto-Update Rows ☐

Inserted	Emp. ID	Emp. Name	Alloc. Code	Posting Date	Posting Time	Posting Code	Reason Name	Compl. Qty.	Rej. Qty.	Mach. Duration	Pers. Duration	Time UoM
<input type="checkbox"/>	1	Doe, John	00034868	02/08/17	12:45	Partial Setup		0.000	0.000	10.000	10.000	min
<input type="checkbox"/>	2	Morrison, Fred	00034869	02/08/17	13:01	Completed Job		2.000	0.000	20.000	17.000	min
<input type="checkbox"/>								0.000	0.000	0.000	0.000	

Update
Cancel

### 3.8.3. Quality Control

The early detection of defects reduces product risk and helps to identify delay in an early stage. With the **Quality Control** function the appointed inspector can report quality assurance data for own-manufactured and outsourced products.


**Mobile PDC**


**TEST\_WMSMF (PMX\_BUDTOSH2) - John Doe**

12/22/16 01:07 PM

Server: 17.05.31007.18920  
Client: 17.05.31007

Check Results (00:30)

Operation

12-10 (oPBI - Bell Installation - 511)

Work Center

wAS (Assembler Team)

Employee

2 (Fred Morrison)

Quantity

0/0/0

0	IsApproved	Y (OK)
0	WeldThickness	40
0	SurfaceQuality	5
0	ApprovalComment	Approved

Checked Quantity

1

Set Value

Good

Rejected

Repairable

Cancel

To appoint an inspector, add the Employee Quality Control Role defined on [Produmex Manufacturing settings](#) as the Role for employee.

To setup quality control parameters, enable the 'Use Operation Parameters' option on [Produmex Manufacturing settings](#). Define the parameter types on the Operation Parameter Types UDW. Link the quality control parameters to an operation on the Operation Details form.

Produmex Manufacturing Settings

General

SQL

Logs

Reports

MRP

PDC

Prod.Order

Master Data

MTO

Thin Client

Thin Client 2

Food

Scheduled Real

Worker can modify bookings

Approver can modify bookings

Global idle timeout (seconds)

Global screen timeout (seconds)

Employee approver role

Employee Workshop Monitor Role

Employee Quality Control Role

Workcenter Admin Role

Enable PDC

Enable PTM

Enable QC

Enable Workshop Monitor

Enable Workcenter Journal

Enable Workcenter Tickets

Enable Legacy Mode in PDC

Pre-fill planned material quantities

Pre-fill planned by-product quantities

Pre-fill the bin locations quantities with available quantities

Skip material quantities screen

Skip by-product quantities screen

Skip material serial/batch quantities screen

Skip product serial/batch quantities screen

Logout after PDC bookings

Enable Partial Book & Stay

Can insert new materials into production orders

Login Is Password Protected

Only Job Bookings On Running Jobs Screen

Force enter product serial/batch numbers and quantities

0

0

Approver

Workshop Monitor

QC Inspector

Employee Master Data

First Name

John

Middle Name

Surname

Doe

Job Title

Position

Department

Branch

Manager

User Code

Sales Employee

-No Sales Employ

Cost Centre

Employee No.

1

Ext. Employee No.

JD

Active Employee

Office Phone

Ext.

Mobile Phone

Pager

Home Phone

Fax

E-Mail

Linked Supplier

Address

Membership

Administration

Personal

Finance

Remarks

Attachments

Roles

#

Role

1

Approver

2

QC Inspector

3

Workshop Monitor

4

Set Role as Default

Teams

#

Team

Team Role

1

Member

Update

Cancel

Update

Cancel

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