HAAGA-HELIA
University of Applied Sciences

RT 4 Exercise, Group Work

Final Report

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Contents

1 Introduction

This report is based on the course SAP R/3 Business application and business processes, during this autumn semester.

It includes the basic idea about ERP SYSTEM AND SAP ECC with a list of modules in SAP System Including SD and MM Modules. The report also includes hand on practical exercise about how Logistics process is from customer order to billing using SAP ECC. The process starts from customer order and proceed to order delivery. More details are listed in the document

1.1 Enterprise Resource Planning (ERP) and ERP-System SAP ECC:

1.1.1 What are ERP Systems and SAP ECC?

Enterprise Resource Planning (ERP) is an integrated suite of software applications which handles the Logistics, Human Resources, Financials, Distribution, Inventory, Shipping, Manufacturing, And Invoicing in a very large business organisations. The SAP NetWeaver as a technological base of a system is used to harmonise all data and processes or activities of an organization into a system uniformly. A typical ERP system will use multiple components of computer software and hardware to achieve the integration. A key factor of most ERP systems is that it uses a single database to store data for the various system modules.

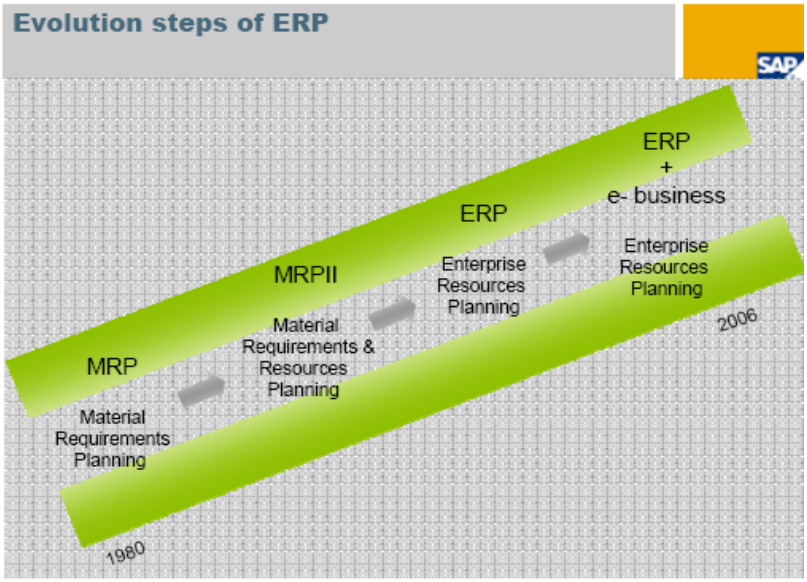
The ERP is such that data are gathered and processed in an organization in a single system. This innovation in turn helps enterprises to either take or gain full control of their entire organisations administrations and operations thereby resulting in profit maximisation and efficient co-operation. [1][1.1]

1.1.2 What is ERP

Enterprise Resource Planning (ERP) is the planning of how business resources (Materials, Employees, Customers etc.) are acquired and moved from one state to another, a process by which a company (often a manufacturer) manages and integrates the important parts of its business i.e. integrating areas such as Planning, Purchasing, Inventory, Sales, Marketing, Finance, Human Resources, etc so as to function as one system despite different departments using different specialized systems (www.answers.com, www. en.wikipedia.org).

SAP ERP is a system designed by SAP AG (a major European Software Enterprise Company) before, it was known as MRP (Materials Requirements Planning) and later on it changed its name to MRPII (Materials

Requirements And Resource Planning), then ERP, now its ERP + e-business as simplified diagrammatically below [2].



Since SAP AG targets business software requirements of midsize to large size organisations in all industries and sectors, it has four specialised individual solutions that support key functional areas in Finance, Human Capital Management, Operations and Corporate Services working along SAP ERP (www. en.wikipedia.org , Kai Nylén Presentations).[2.1]

1.1.3 Why ERP and SAP ECC?

1.1.3.1 Standardised Business Processes

With ERP you have a generalised and well defined or designed business processes and application. This implies fewer business processes to be supported, and changes in traditional functioning. The advantages from huge tasks are operational efficiency and rigid interconnectivity between various departments, groups or functions of different companies.

1.1.3.2 Improve Productivity

With ERP system, all aspects of an organization can work in harmony instead of every single system needing to be compatible with each other. For large organizations, increased productivity and less types of software are a result.

1.1.3.3 A Common Data Repository

In an ERP system, everyone uses the same data. This reduces data duplication and redundancy and makes data transparent and easy to compare.

1.1.3.4 Security Purpose

When thinking about company resources security, which involves access rights, consider this information;

Some security features are included within an ERP system to protect against both outsider crime, such as industrial espionage, and insider crime, such as embezzlement. A data-tampering scenario might involve a frustrated employee intentionally modifying prices below the break-even point in order to attempt to take down the company, or other sabotage. ERP systems typically provide functionality for implementing internal controls to prevent actions of this kind. ERP vendors are also moving toward better integration with other kinds of information security tools.

ERP Systems are designed to provide business benefits in sales and distribution, manufacturing, costing, field service, and accounting. Surveys of U.S and Swedish manufacturing firms show that ERP benefits include timely information, increased interaction across the enterprise and improved order management.

In sales, increased efficiency leads to the ability to provide lower quotes, reduced lead times, and improve overall responsiveness to customers needs. In manufacturing, concurrent engineering means faster product design and production. In field service, data on customer service histories and parts under warranty are available. Suppliers are paid more rapidly because accounts payable systems are responsive and accurate. Above all, the level of operations excellence through the business is optimized, from customer order through distribution and service.

Tangible benefits of ERP systems are lower inventory levels, improved on-time delivery, and decreased financial closing cycles. In addition to hard dollar savings, such as reduced procurement costs and increased manufacturing throughput, ERP systems provides also soft-dollar profit, including increased sales and revenues, improved margins, and improved productivity. In addition, ERP systems are a foundation for e-Business applications because they provide the back-office functions that enable customers to place and track orders via the web.[3]

1.1.4 SAP Structure

SAP ERP itself is not single software but rather, it is a flexible structure and can consist of various different models, the system can represent a complex enterprise structure through the linking of organisational units the whole structure of an entire enterprise can be integrated.

The enterprise structure design is one of the most important processes in an SAP ERP implementation because the structure designed in the SAP system has to accommodate all business scenarios and enterprise requirements

for current and future needs as it consists of various different modules. These modules are covering the typical divisions in an organisation. Each module handles specific business tasks on its own, but is of course linked to others.

1.2 SD AND MM-MODULES AND THEIR ORGANISATIONAL STRUCTURES

1.2.1 Sales and Distribution (SD)

The SAP sales and distribution is part of the logistics module that support your customers, starting from quotations, sales order and all the way towards billing the customer. It is tightly integrated with the MM and PP functional modules. It allows companies to input their customer sales price, check for open orders and forecast etc. The most important basic functional features in the SD module are:
Pricing, Availability, Credit Management, Material Determination, Output Determination, Text Processing, Text Determination, Account Determination, Top of Form and Bottom of Form.

1.2.2 Material Management (MM)

SAP MM is the material management module of SAP ERP. Materials management includes a set of tasks that are performed in order to make materials available for production as and when needed, and to monitor the availability of materials.

Picture: SAP R/3 system.

The above picture explains the three tie system of the SAP R/3 and the different kinds of applications.

The day-to-day material management functions and processes of business operations are supported by the Material Management component of the R/3 system.

These tasks occur when the Inventory Management (MM-IM) application component is in use. The main functionality of MM includes are Purchasing, Inventory Management, Valuation And Assignment, Batch Management And Classification.

Activities in Production Planning and Control with Production Orders

- Picking
- Access material availability overview
- Access missing parts information system

1.2.3 SAP SD and Its Organisation Structure

SAP SD belongs to Logistics menu from SAP R/3. SD menu provides several submenus as following:

Master Data:

Provides information about Business Partner, Products, Conditions, Output, Agreements and Other Information's.

1.2.3.1 SD Configuration

The Company Code is an organizational unit used in accounting. It is used to structure a business organisation from a financial accounting perspective.

Credit Control Area is an organizational unit that specifies and checks a credit limit for customers. A credit control area can include one or more company codes. It is not possible to assign a company code to more than one credit control area. Within a credit control area, the credit limits must be specified in the same currency.

Sales Organisation is an organization unit responsible for the sale of certain products or services. Sales organisation is assigned to company code to ensure all the sales made through this Sales Organisation are accounted for in the assigned Company Code.

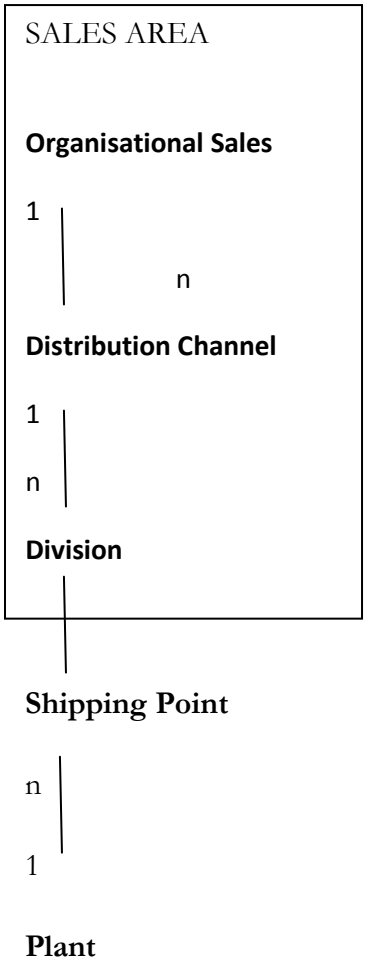
Distribution Channel is the way, in which Products or Services get in touch with Customers. Distribution Channel is assigned to Sales Organisation to ensure that a Sales Organisation can supply materials to customers through this Distribution Channel.

Division is a way of grouping products, materials or services. Division is assigned to sales organization.

Setting up **Sales Area**: All the sales are made from a particular sales area. For creating a sales order, sales area is mandatory.

Shipping point is an organisational unit, which is responsible for shipping materials to customers. Assignment shipping point to Plants means that goods from different Plants can be dispatched from different Shipping Point. [4].

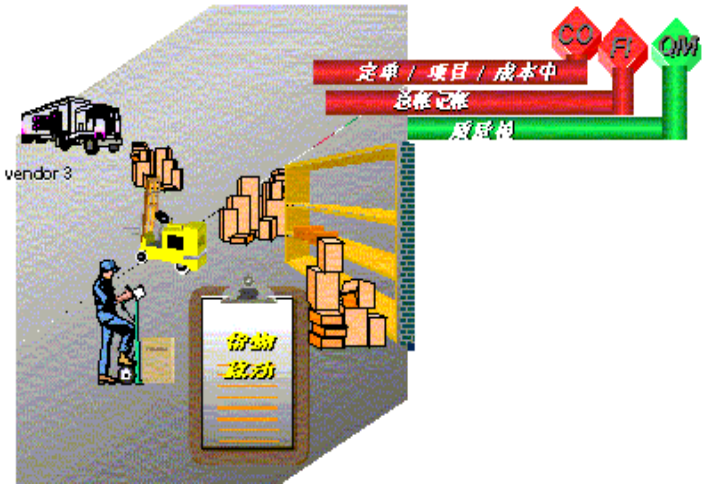
1.2.3.2 Organisation Structure



1.2.4 SAP MM and Its Organisational Structure

SAP MM is a module of SAP ERP that is used for procurement handling and inventory management. It covers the following topics in detail: Procedure Process, Master Data (Material & Vendor Master) , Inventory Management, Valuation of Material & Account Determination , Material Requirement Planning , Invoice Verification , Reporting related to the above activities and first of all, material management, people receive orders from production people and send the Request for Quotation to the vendor based on the requirements.

After that the vendor will send the quotation with prices to customers. If customers agree with terms of agreements, they will send Purchase Order to the Vendor. Materials will be sent to the company, after accounting people pay the invoice and the invoice be verified by Material Management people. After production, QM (Quality Management) people will check the quality and everything regarding to the production. If they accept, then the materials will go to sales people for selling the material from the plant.



Procedure cycle:

1. Material Requirement (Manual or through MRP/CBP)
2. Checking availability of Material
3. Selection of Vendor
4. Negotiation (Price & Other Condition)
5. Issuing the Purchase Order to Vendor
6. Follow up with Vendor
7. Goods Receipts
8. Goods Issue to Indenting Department
9. Invoice Verifications
10. Consignment Purchase
11. Contract release order

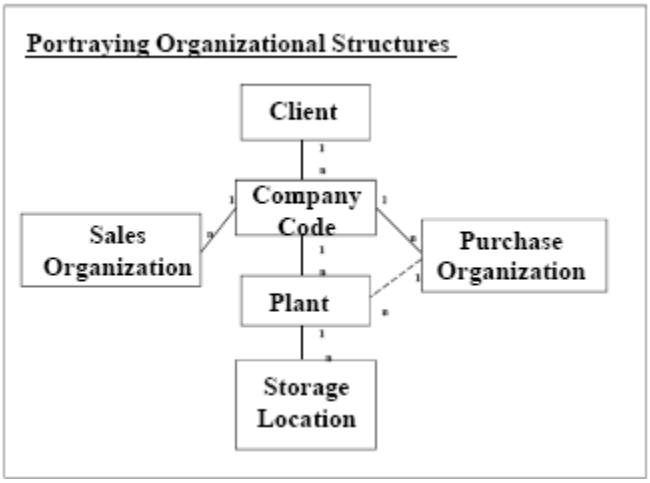
The system checks and keeps up-to-date data and plan very well so as to meet the requirements of the customer at any point in time.

Inventory levels are always known by the system and therefore give hints to the scheduling department to get ready and available goods to satisfy the customer's demands.

The system evaluates material and tests them to meet the standards of the customers before delivery and also eliminates the returns and duplications in supply.

Invoice verifications are done so accurately by the system and eliminate errors and the burdensome job of under supply and over supply of goods and services.

1.2.4.1 Organisational Structures



Example -There are many operational groups or processes in a company. Every company is made up of the structures such as the purchasing, the accounting, sales and distribution etc. These operational groups needs to be integrated or communicated so as to run their business smoothly. In view of these some software packages are designed to ensure the smoothness of the communication processes within the companies. SAP R/3 system is an example of these types of softwares.

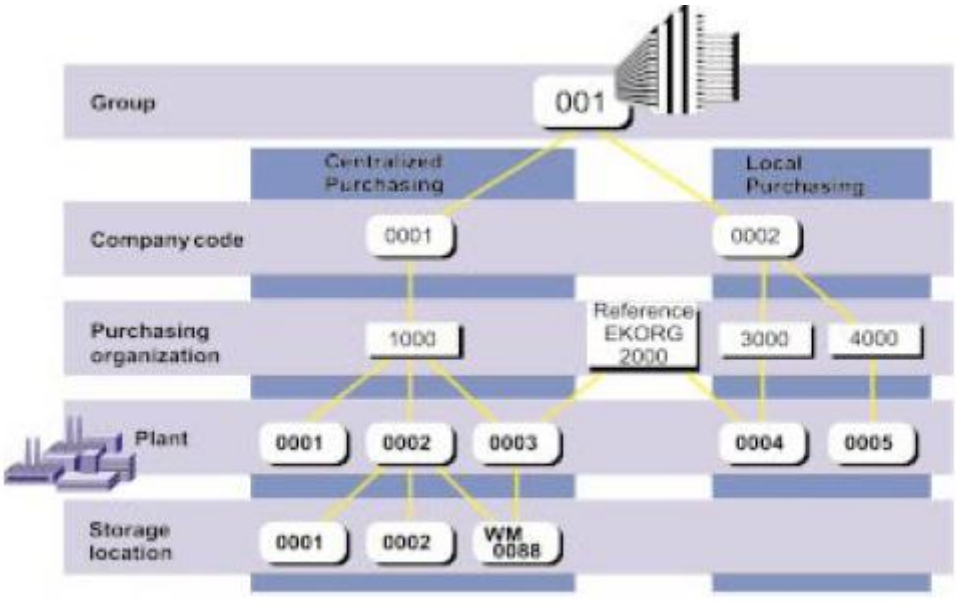


Figure. Organisational Units in Material Management

Figure above explains the Organisational Units of the Material Management in the SAP R/3 system.

Materials and services are procured by the Purchasing organisation of department. It is the duty of purchasing department to organise everything concerning purchases in the company. This is done by the help of the R/3 system.[2.1.2]

For the purpose of external reporting, a set of accounts are drawn by the company code which is the smallest on the organisational units.

Recording of transactions and generating all supporting documents for legally-required financial statements such as balance sheets and profit and loss statement is done by the plant organisational unit. This is the central operating unit concerned with the production and planning or a combination of locations with materials stocks, known as storage locations.[5]

1.2.5 **Procedure Cycle –Component Description**

1.2.5.1 MRP

With MM SAP company acquires basis for material requirements planning which depends on consumption data. With this data procurement proposals can be done for reorder point or forecasting.

1.2.5.2 Purchasing

Purchasing process is easier (optimised) with usage of MM application. Purchase requisitions or purchase orders and long term purchase agreement can be generated. At purchasing it is decided if orders can be placed using existing quotations or do we need to issue Requests for Quotations. Purchasing orders can even be created automatically by using available data. System also provides information for Vendor evaluation purposes, Vendor selection, Volumes (regarding a material or a vendor), Monitoring ordering activities;
Buyers and material planners can also gain information about: Stock levels, Stock availability (in terms of location and time), Vendors, Purchase organisations histories Delivery dates, Open-order quantities;

1.2.5.3 Vendor Management

In SAP vendors are considered as Business Partners, are legal and natural people with whom you have a business relationship. Customers and vendors are business partners with whom you have a relationship involving the transfer of goods and services. Vendors have a variety of functions, referred to as partners' functions, in connection with your company. Partner functions define rights and responsibilities of each partner type in a business transaction. Different vendors might carry out one or more partner functions. That is why you can assign a business partner a number of partner functions. Data on business partners are managed in master

records. Data on partner functions are stored in these master records, and used in Financial Accounting and Logistics.

1.2.5.4 Inventory management

Inventory management deals with management of material stocks on quantity and value. At the same time, it deals with the planning of material, goods movements and proof of goods movements. The Delivery is entered Inventory Management and as a goods receipt, it is stored as a stock at storage location level in a plant, until it is delivered to customers or used in another purpose. Material can be stored as unrestricted stock (for consumption purpose, quality stock, and block stock. Inventory Management consists of following components:

1. Goods Receipt/Issue
2. Transfer Posting
3. Stock Transfer Orders
4. Consumption
5. Physical Inventory
6. Inventory Tracking
7. Stock Status

INVOICE VERIFICATION includes the following components:

1. Invoice Verification
2. Credit Memo
3. Subsequent Debit/Credit
4. Material Valuation
5. Financial Accounting documents for all Stock, Purchases and Tax accounts involved
6. Procurement Process Complete

SAP R/3 is an integrated system, so all components of MM such as Material Requiring Planning, Inventory Management, and Invoice Verification are directly linked to each other. Any transactions of Inventory Management will have an impact on other components.

1.2.5.5 Goods Receipt

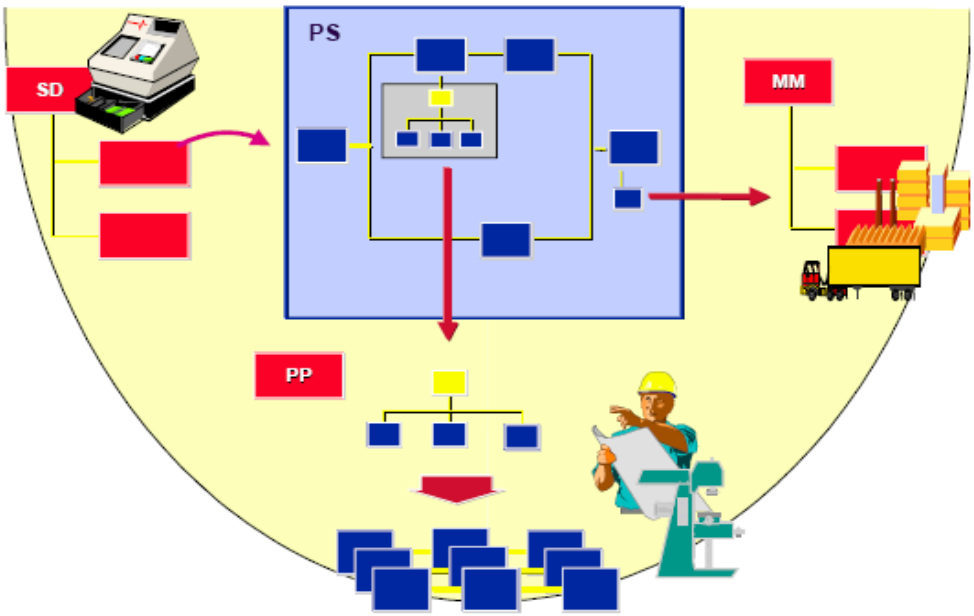
When making goods receipt, data is taken from Purchase Order. System takes care for under-deliveries and over-deliveries. System also changes quantities in stock if material moves anywhere (this is done automatically).

1.2.5.6 Warehouse Management

In this part of MM we administer and define warehouse structures. Structures can be split into different physical or logical units like high-rack and block storage areas. Defined strategies are used in system to indicate where goods can be placed in storage from where they are to be taken or where will be order-picking place.

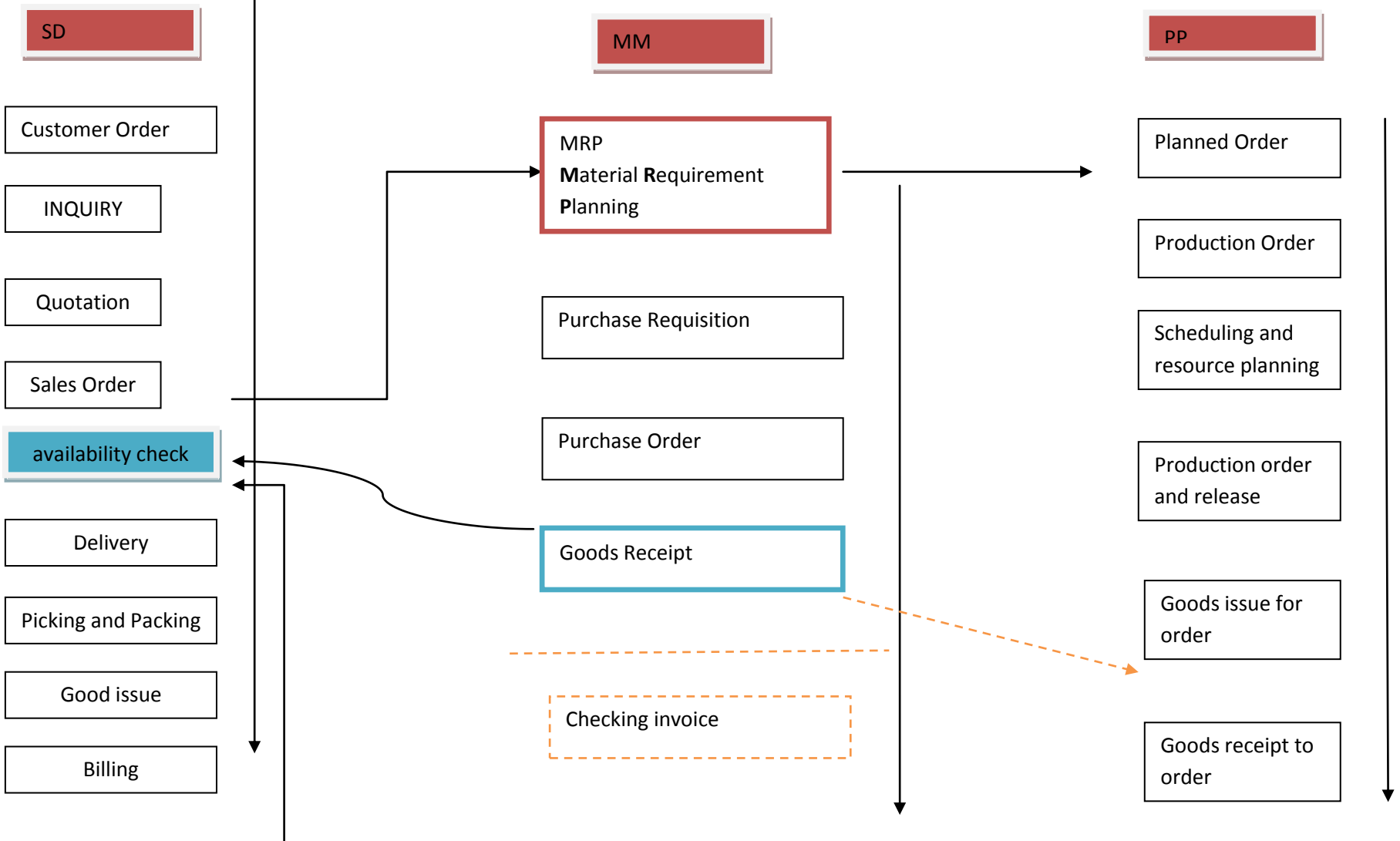
1.2.6 **Integration of Sales and Distribution and Material Management**

Figure below described by SAP AG shows "Material forms a link from a project to Sales, Materials Management (Purchasing and Inventory Management), and Production Planning and Control."



2 Customer Order – Customer Delivery Process

1.1 Process Map



1.2 Departments

PRODUCTION	STORAGE	DELIVERY	PURCHASE	PRODUCTION PLANNING	FINANCE	SALES
PRODUCTION ORDER RELEASE	PICKING AND PACKING	DELIVERY	MRP	PLANNED ORDER	GOODS RECEIPT	CUSTOMER ORDER
GOODS ISSUE FOR ORDER	GOODS RECEIPT TO ORDER	GOODS ISSUE	PURCHASE REQUISITION	PRODUCTION ORDER	BILLING	AVAILABILITY CHECK
			PURCHASE ORDER	SCHEDULING AND RESURCE PLANNING		

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In process map we are following actions in company when customer orders service or product from company.

In this case we have three different departments and specific way how actions follow each other after customer order. First department SD (Sales and Distribution), second MM (Material Management), third PP (Production Planning). These three departments are connected in specific cases. We can simulate three events from process map above. Each action (like Customer Order) is explained only once because actions do not differ from event to event.

First event: Customer orders product. We split (Customer Order) in three parts which we think they occur. First customer does inquiry and gets information about product and he decides that he will buy it. Customer then tells to clerk what he wants and clerk quotes customer's needs (at this point quotation is made). Clerk then makes Sales Order which is sent to system. All this actions are made in Sales department.

From our point of view clerk also makes availability check because he can tell customer if they have product on stock or we need to purchase or manufacture it. This is also made in sales department.

In our first event shop has product in stock so product is allowed to be processed. This is job of delivery in Delivery department.

After delivery sends delivery number of product into picking, Picking and Packing can start. This means product is packed and prepared for customer. This action occurs in Storage department.

In Delivery department they order to issue goods (product). This is in delivery department because this is a logistic action which contains ordering truck, time and address where product must be sent. That is why we think Goods Issue fits more in Delivery department than storage.

After issuing goods company receives payment for their products, this action is processed in Finance department and it is called Billing.

If happens that customer forgets or don't whishes to pay company starts dunning process. First tries to remind customer about payment and if that is not enough company may take lawsuit against customer. Eventually company should receive payment (Post incoming payment)

Second event: Same as at first event Customer makes a Customer Order which continues with availability checking but in this case shop doesn't have product in stock so it has to run so called MRP (Material Requirement Planning). This happens in Purchase department where employees check what products have to be ordered.

In Purchase department Purchasing Requisition is formed. In this document are listed all products that are not in stock at the moment but we have demand for them. Purchase Requisition becomes Purchasing Order when Purchase department send this document to supplier.

Company receives goods receipt which is processed in Finance department because in this action company pays for bought goods. Goods go from supplier to our stock and this is managed by Storage department.

Availability check is run again because selling person checks if goods are in stock. After acquisition of product we assume they are in stock so process can continue to delivery, picking and packing, goods issue, billing and if necessary dunning and post incoming payment.

Third event: In the last event our customer buys a product which consists of 2 materials. We need to purchase this products and assembly them to the final product, this is then sold and delivered to the customer.

Customer Order again comes to Sales department and after making availability check company notices they don't have products in stock.

So we need to assembly the product, through MRP run we find out that the therefore needed products also out of stock and we need to purchase them.

Purchase department makes Purchase Requisition and later on Purchase Order. Company pays for goods and gets Goods Receipt.

Now company has the components to make new product.

Simultaneously to the MRP run the production process is planned in production planning. In Production planning department Planned order is formed. In this order company makes document how many products they will make at time (there might be many Customer Orders so plant have to make more products) and in which plant product will be made.

After Planned order Production planning department makes document in form that is understandable to production and this is Production Order.

Production planning department then makes Scheduling and Resource Planning in which is calculated how much components will be used for this bulk of products and how long will take to do this.

Production Order Release is send to Production department because where final product is made or assembled. After production order is released production can start.

As soon as Production department finishes its work they do action Goods Issue for Order where they send goods into stock.

Storage department then confirms acquisition of new made product by Goods Receipt to Order action.

Availability check is run again and this time goods are in stock so it can proceed to Delivery, Picking and packing, Goods Issue, Billing and if necessary Dunning and Post incoming Payment.

3 **ExercisesRT 3a**

Customer order A is delivered to customer as amount of components from stock, which customer itself will assemble.

We used the following organizational units during this exercise:

Company code:	1000
Plant	1200
Sales Organization	1000

Distribution Channel	10
Division	00
Storage Location	0002
Purchasing Org.	1000
Purchasing Group	007

3.1.1 Creating New Material By Copying An Existing Material

We created a new material **PT13** like mentioned in the instructions.

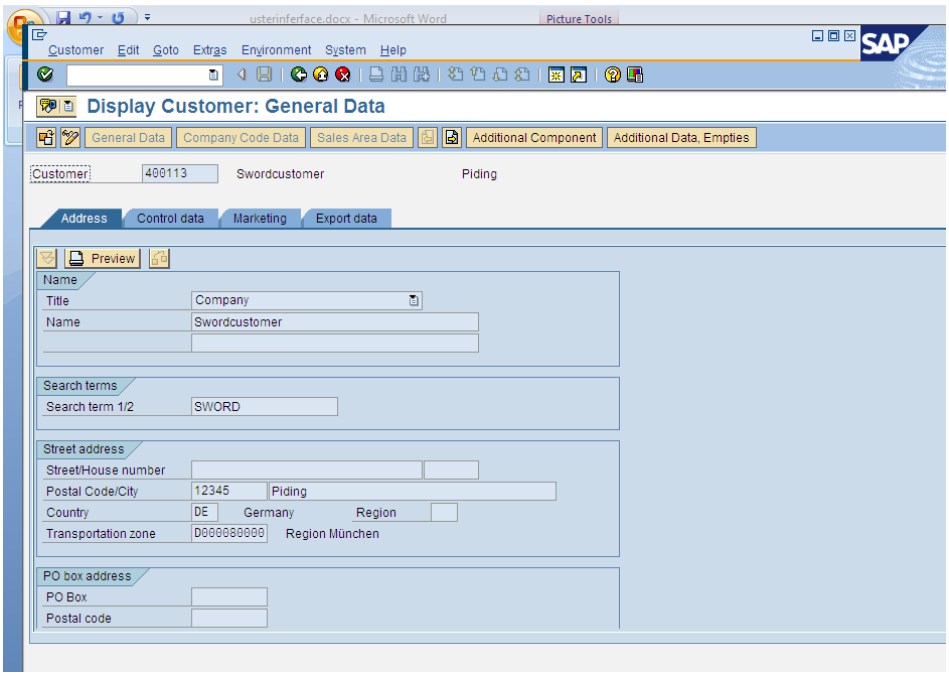
The material is used as starting point since no material there cannot be any transaction since we are dealing with Order delivery process.

3.1.2 Customer Creation

We created a customer like mentioned in the instructions:

Customer ID: 400113

And the data shown in the picture below.



A customer might be a physical person or a company making product order(s) whose data will be needed and stored into system for delivery and billing process.

3.1.3 Maintaining Material Prices

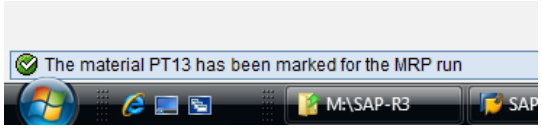
We added the material price of 100€ to our material PT13. The standard price for this material is now 100€.

3.1.4 Customer Material Discount Creation

We added a material discount of 5€ to our material PT 13 for **condition K005**. When we sell our product with **condition K005** the customer will get a 5€ discount.

3.1.5 Maintain the Material to MRP (Material Requirement Planning)

We added our Material (PT13) to MRP. We can now automatically buy through MRP.



Material requirement planning is a production planning and inventory control system used to ensure materials and products are available for production and delivery to customers.

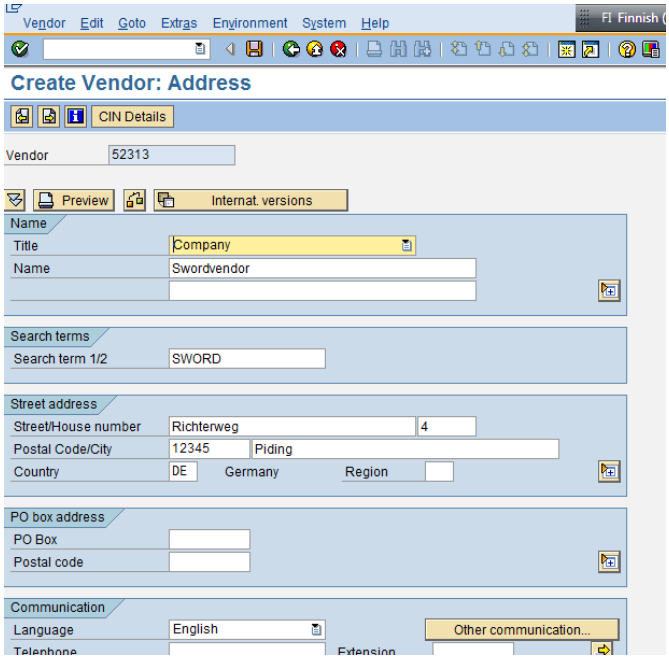
3.1.6 Create Vendor:

A vendor person or a company making where we can obtain materials and services. His data will be needed and stored into the system the purchasing and logistic process.

We created our vendor like the exercise described.

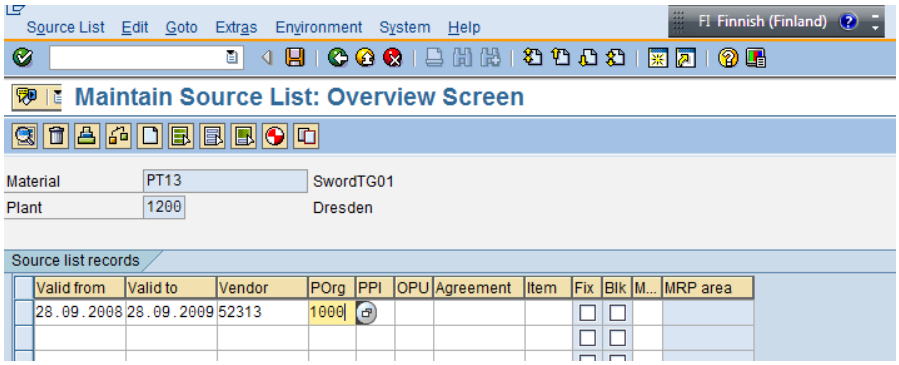
Vendor ID: 52313

And the data shown in the picture below.



3.1.7 **Define vendor to be source of our material**

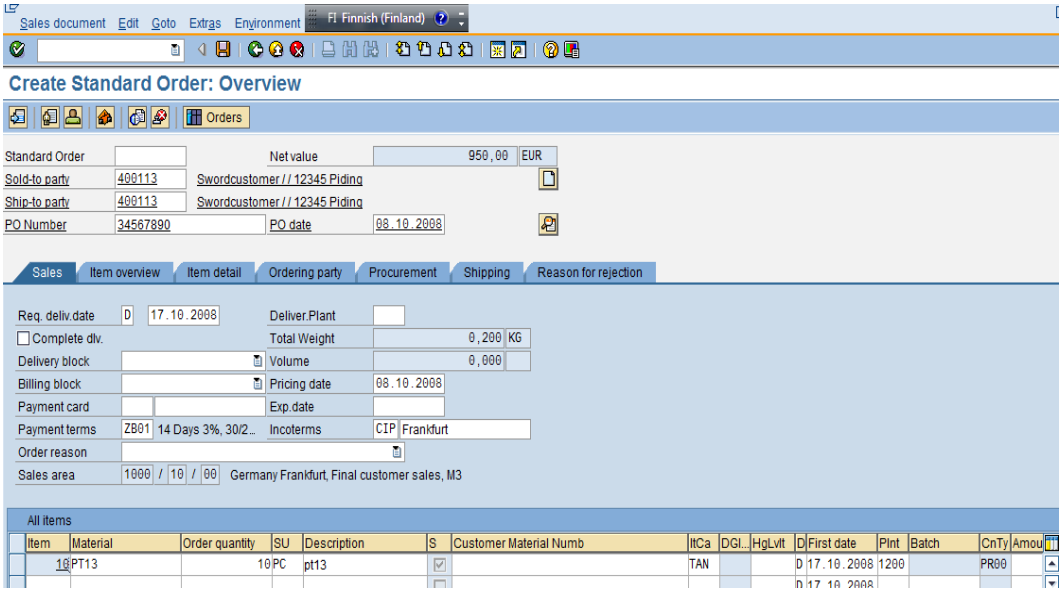
We linked our Material PT13 with our vendor: 52313 'Swordvendor'. So when we need to purchase this material, we know that this sells it.



At this point we are finished with the creation of the master data. It's necessary for the process because during the process we will deal with this data.

3.1.8 **Creation of sales order**

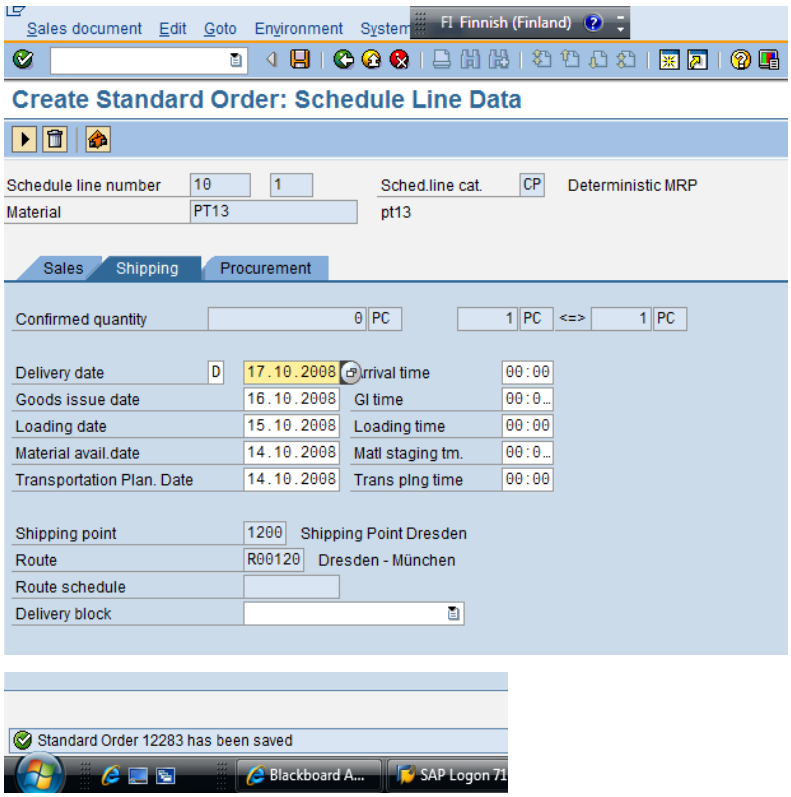
We sold 10pcs of PT13 to our customer Swordcustomer 400113.



Net value: 950€ because of 5€ discount per piece.

The availability check says that there is no material in stock. So there is a need to order this material.

Proposed dates by the system:



The order number given by the system:

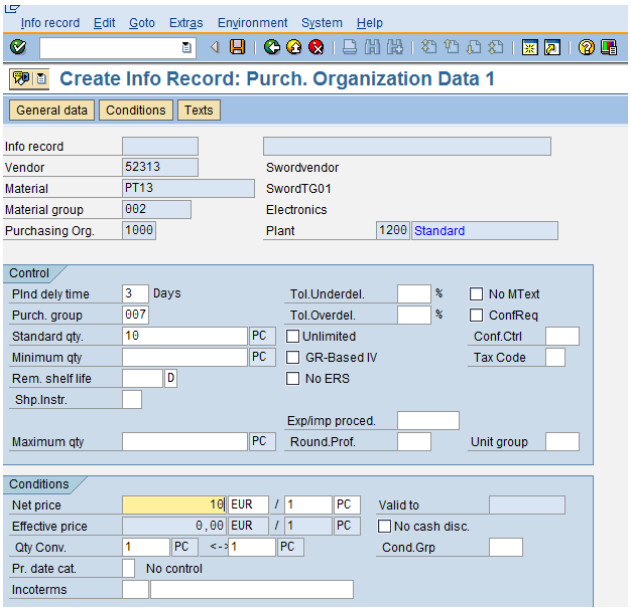
12283

The Sales order number is stored into system in order to associate it to a given customer to be able to handle billing and controlling payments processes as well as controlling the stock by knowing which product belong to which order and also saves all the other information which related to the order.

3.1.9 **Defining The Purchase Price**

This could have been done before we sold the product right after linking the vendor to the product.

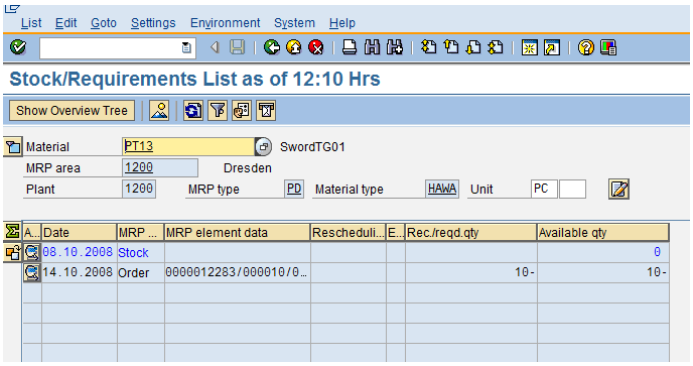
We defined the net price of our material PT13, including the standard quantity, the purchasing group and the planed delay time.



These are the conditions for buying PT13 from the vendor 52313.

3.1.10 **Checking The Stock**

Transaction code: md04



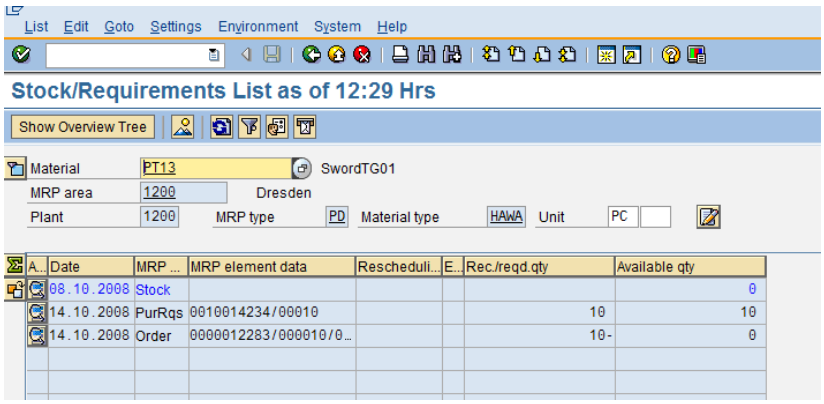
This picture shows us the stock situation where as you can see we have a material (PT13) which does not have any quantity in our stock. On the 14th October minus 10 items will be on stock because on this date the material is needed to satisfy the customer order: 12283.

3.1.11 **Creating Purchase Request Through MRP**

Transaction code: md02

We initialize a MRP purchase request (automatic mode), for our material PT13 in plant 1200.

3.1.12 **Checking The Stock**



We still have 0 pcs on stock. But the Purchase Request of Chapter 11 is added to the Stock/Requirement list of PT13, which should provide us with 10 pcs. And so the available quantity of PT13 should be 0 on the 14th October not -10 like the last time we checked the stock.

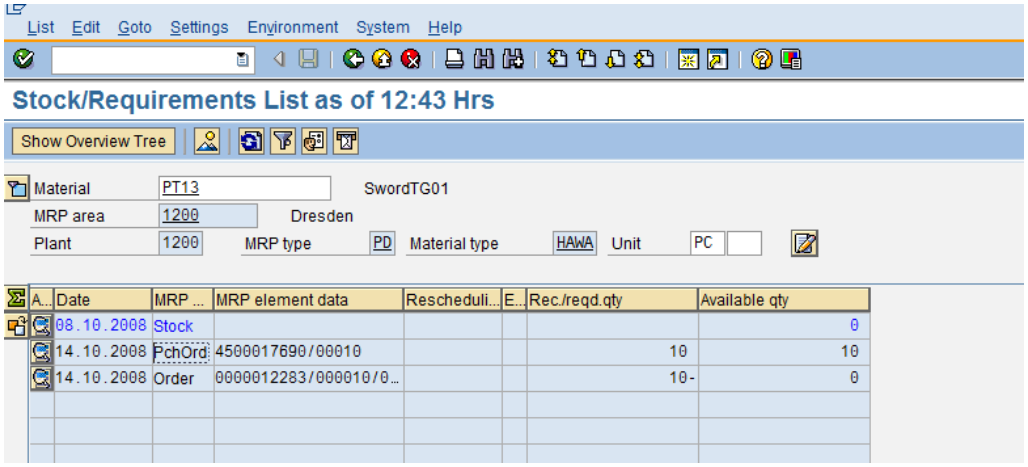
3.1.13 Form Purchase Request To Purchase Order

We transformed the purchase request created in the chapter 11 into an order, like in the instructions mentioned. This means we will buy this material, in the future this material will be delivered to our customer.

Purchase order nr. 450017690 (system generated unique number to identify the purchase).

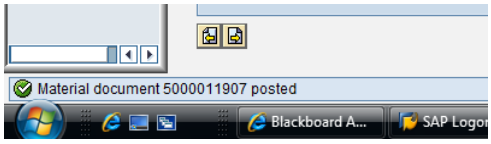
3.1.14 How The Stock Status Has Changed:

The Purchase Request changed the purchase requisition to a purchase order.



3.1.15 Receipt Of The Vendor Delivery To Stock

Transaction code: migo



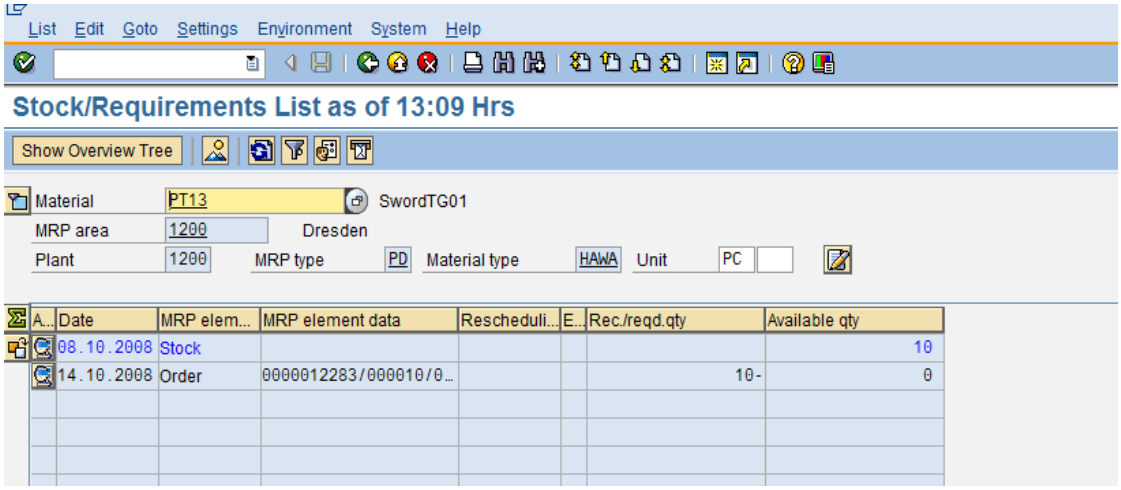
We received the goods, which we ordered in the last chapter, purchase order: 4500017690

Material document nr: 500011907

This document proves that we received the goods and stored them in Storage location 0002 (Fertigwarenlager).

3.1.16 Checking The Stock

Transaction code: md04



When we compare the last and this stock checking outcome, we see that the purchase order disappeared. Therefore the available quantity is now 10pcs. That is correct because we receipt the goods in the last chapter and these goods are now in stock.

On the 14th October the stock amount should be 0, because of the customer order.

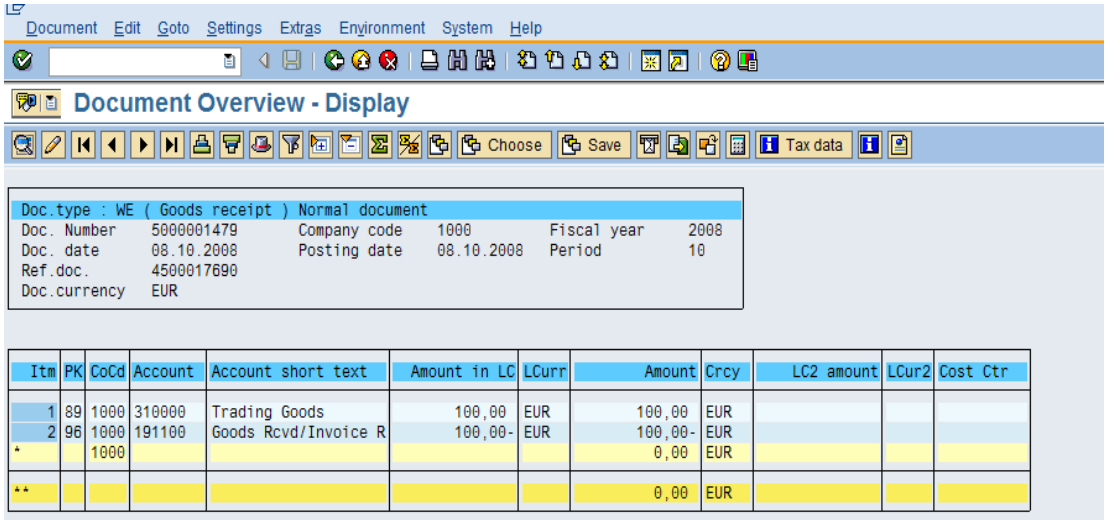
3.1.17 **Control Of The Created Document**

Transaction code: mb03

Beneath we can see the entries created for financial accounting. The received goods worth 100€ (10pcs per 10€ = 100€) and we also received an invoice over 100€ regarding received goods.

Trading goods:

Account nr: 310000 €: 100,00



3.1.18 **Delivery Of Sales Order To The Customer:**

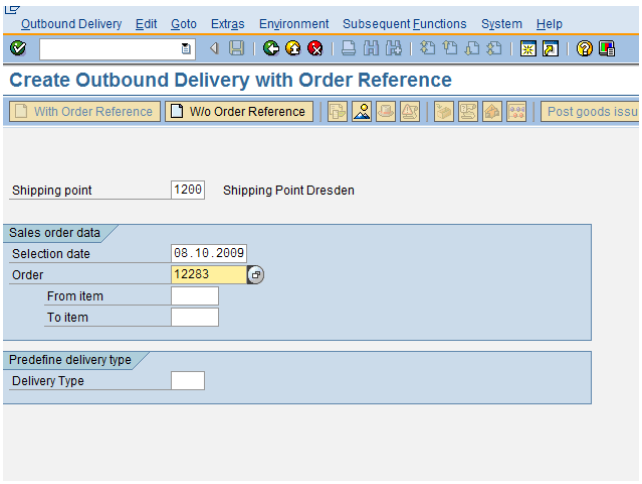
Transaction code: vl01n

First perform item availability check for the sales order number mentioned below, if this is successful, activate complete delivery.

Through the **availability check** we know that the need material is in stock and we can send it to the customer.

Sales order nr: 12883

3.1.19 **Create Outbound Delivery With Order Reference**



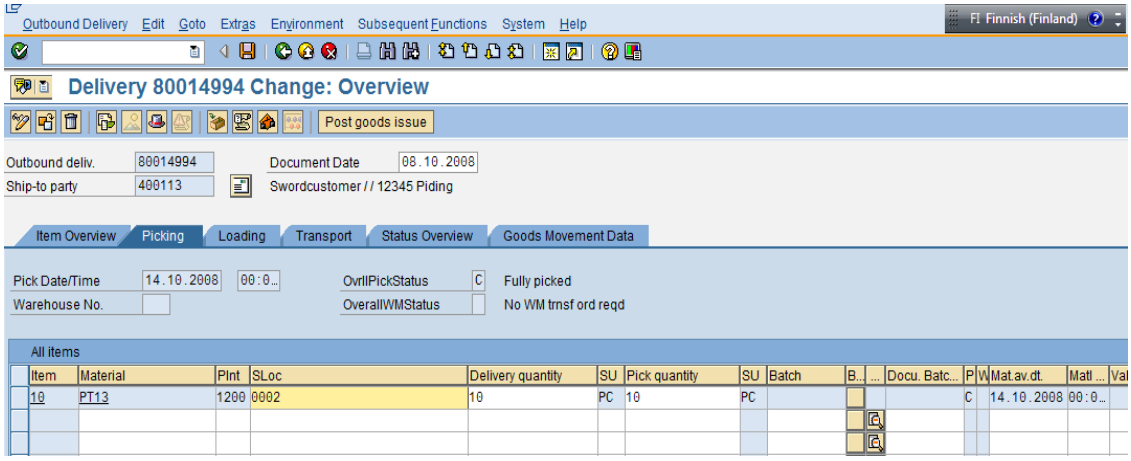
We create an outbound delivery linked to the customer order. This means we organize the transport of the order to the customer. The delivery is saved with the delivery number mentioned below.

Delivery nr: 80014994

3.1.20 **Picking For The Delivery & Post Goods Issue**

Transaction code: vl02n

Define stock location 002 and quantity 10 of PT13.



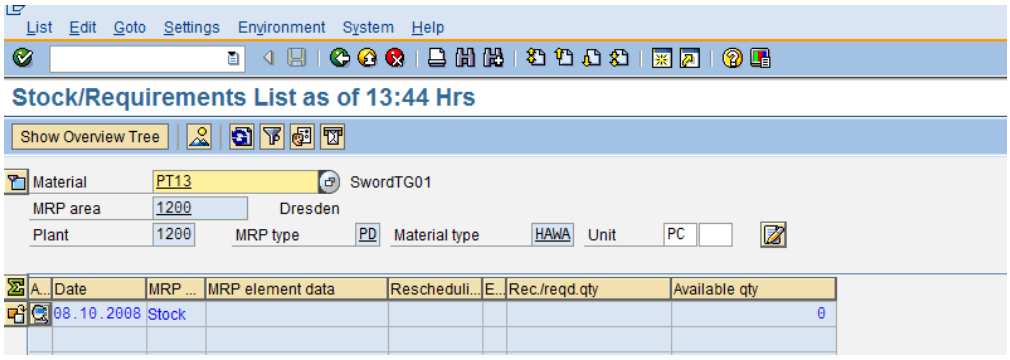
We pick the needed material PT13 for the order from the correct stock location in the right plant release the picked delivery from stock through pressing **Post goods issue**.

This means that we release the picked delivery from the stock.

The system confirms that delivery has been saved.

Number of delivery is of course the same: 80014994

3.1.21 **Checking The Stock**



Naturally the stock level is now 0 and the order disappeared because we carried it out.

So we had 10 units in stock and delivered 10 to our customer, our stock level is obviously 0 in the end.

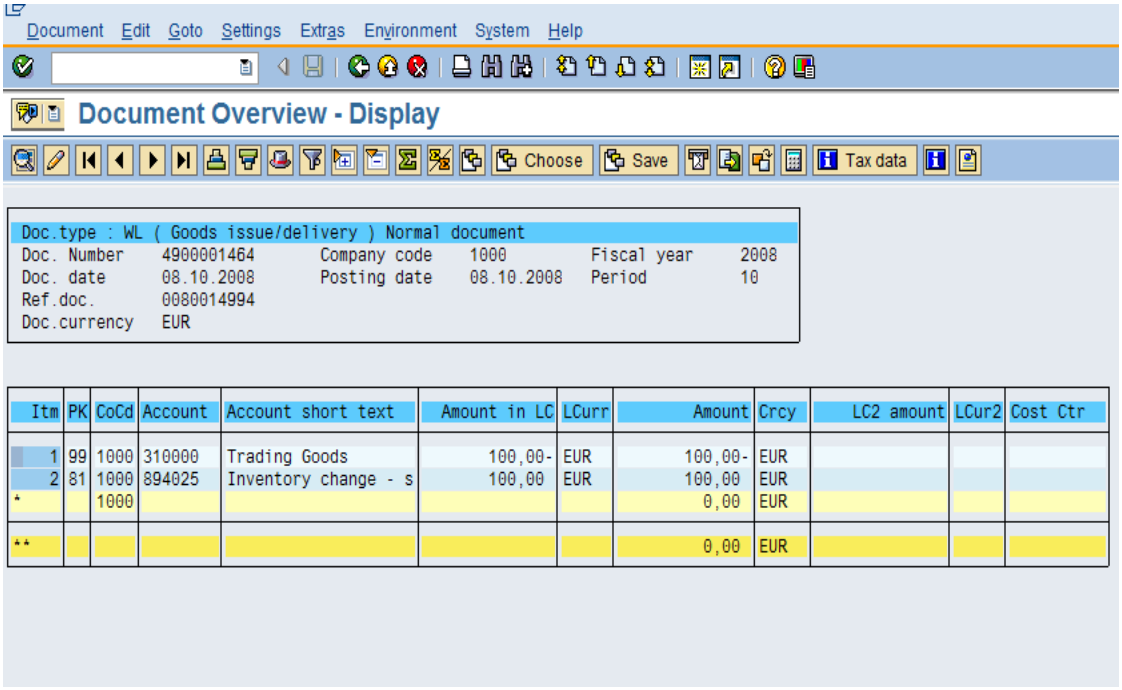
3.1.22 **Sales Order 'Document Flow'**

Transaction code: va03

Inspection of the sales order document flow.

Change in inventory:

Account nr: 894025 € 100,00



Itm	PK	CoCd	Account	Account short text	Amount in LC	LCurr	Amount	Crcy	LC2 amount	LCur2	Cost Ctr
1	99	1000	310000	Trading Goods	100,00-	EUR	100,00-	EUR			
2	81	1000	894025	Inventory change - s	100,00	EUR	100,00	EUR			
*		1000					0,00	EUR			
**							0,00	EUR			

3.1.23 **Billing The Customer**

Transaction code: vf01

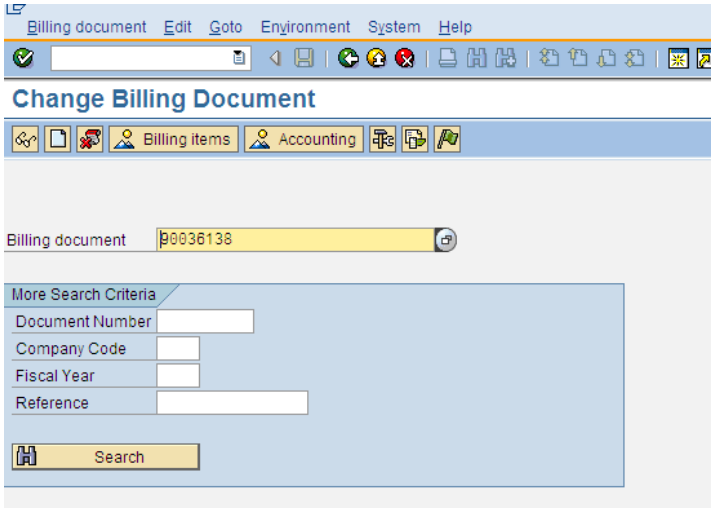
Since the material ordered has been delivered, we are now ready to send the bill to our customer.

We created an invoice for customer 'swordcustomer' for the recently shipped goods.

Billing document nr: 90036138

3.1.24 **Realising The Bill (Invoice) For Accounting**

Transaction code: vf01



We forward the bill to the accounting department. This department is responsible for the payment process.

Billing document number: 90036138

The green flag releases the bill to accounting.

3.1.25 Sales Order 'Document Flow'

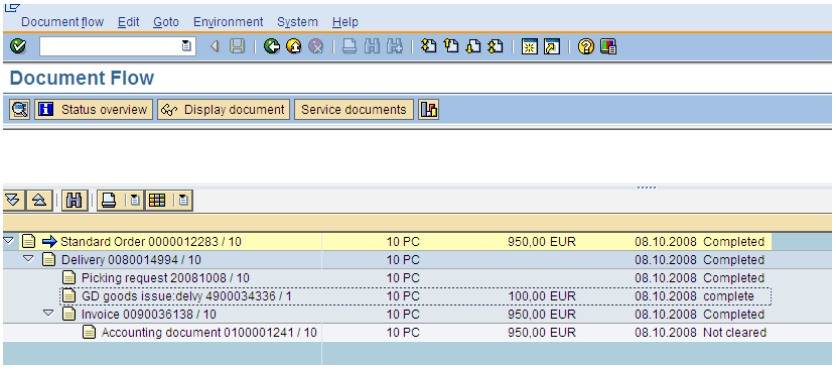
Transaction code: va03

In end we checked Sales order document flow. We were able to see all documents created by the order.

Sales order: 12283

Examine every document. Which documents can be entered with 'Display document'?

Every document can be entered, except: Picking request



3.2 **RT 3b**

Customer order B is delivered to customer as assembled.

In this exercise we sell an assembled product PH13 consisting of PT13 and PI13 and deliver it to the customer. As the stock is empty we buy products/material and assembly them to PH13. We also create the necessary Master Data.

We used the following organizational units during this exercise:

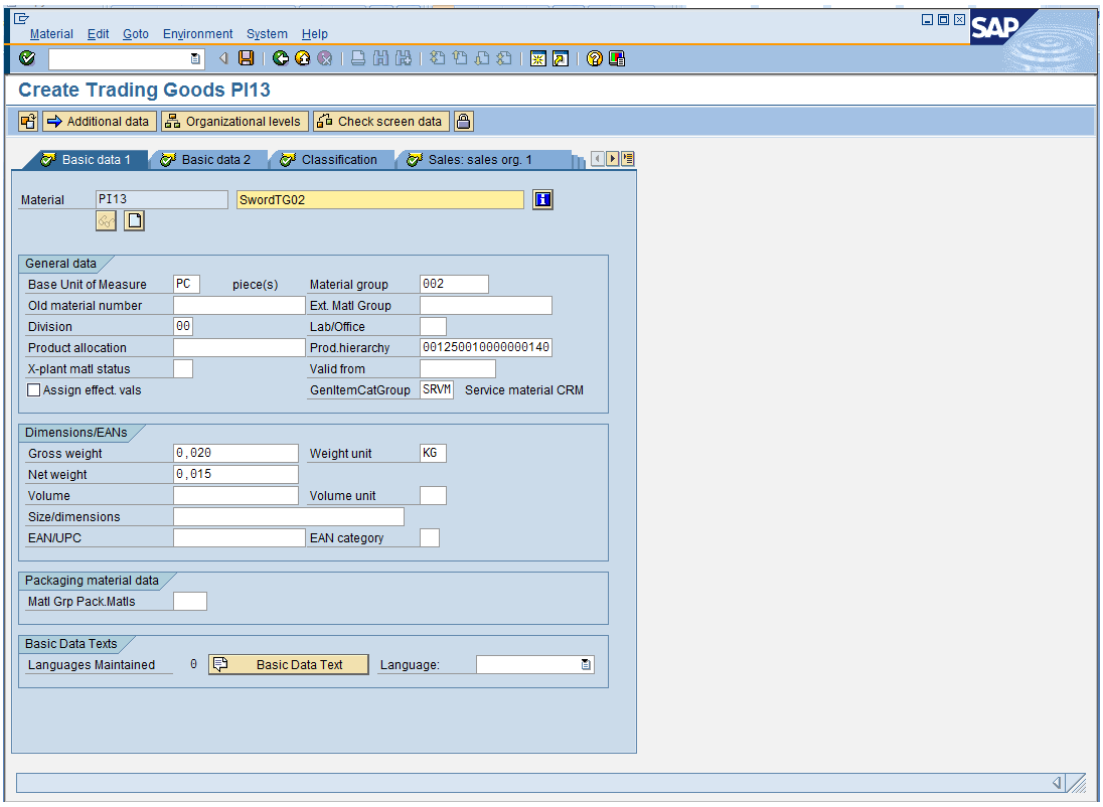
Company code:	1000
Plant	1200
Sales Organization	1000
Distribution Channel	10
Division	00
Storage Location	0002
Purchasing Org.	1000
Purchasing Group	007

3.2.1 **Create BOM**

3.2.1.1 Create Material PI13

Transaction code: mmh1

We create the material PI13 like mentioned in the instructions and RT3a.



Change for PT13 and PI13 the 'Backflush' value to 1. Available in the MRP2 register card.

3.2.1.2 Create Main Material PH13

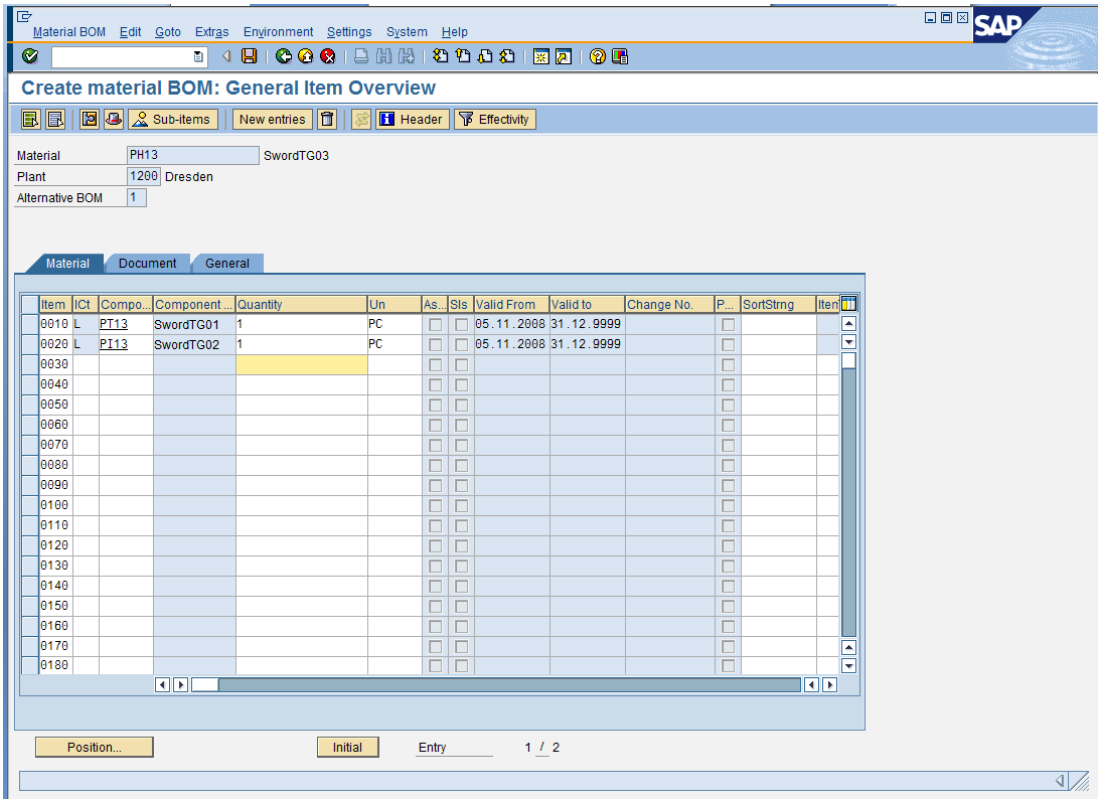
Transaction code: mmf1

We create the product PH13 using KTC98 as a reference material.

3.2.1.3 Create BOM

Transaction code: cs01

We add PI13 and PT14 to PH13. So PH13 consists of these 2 products.

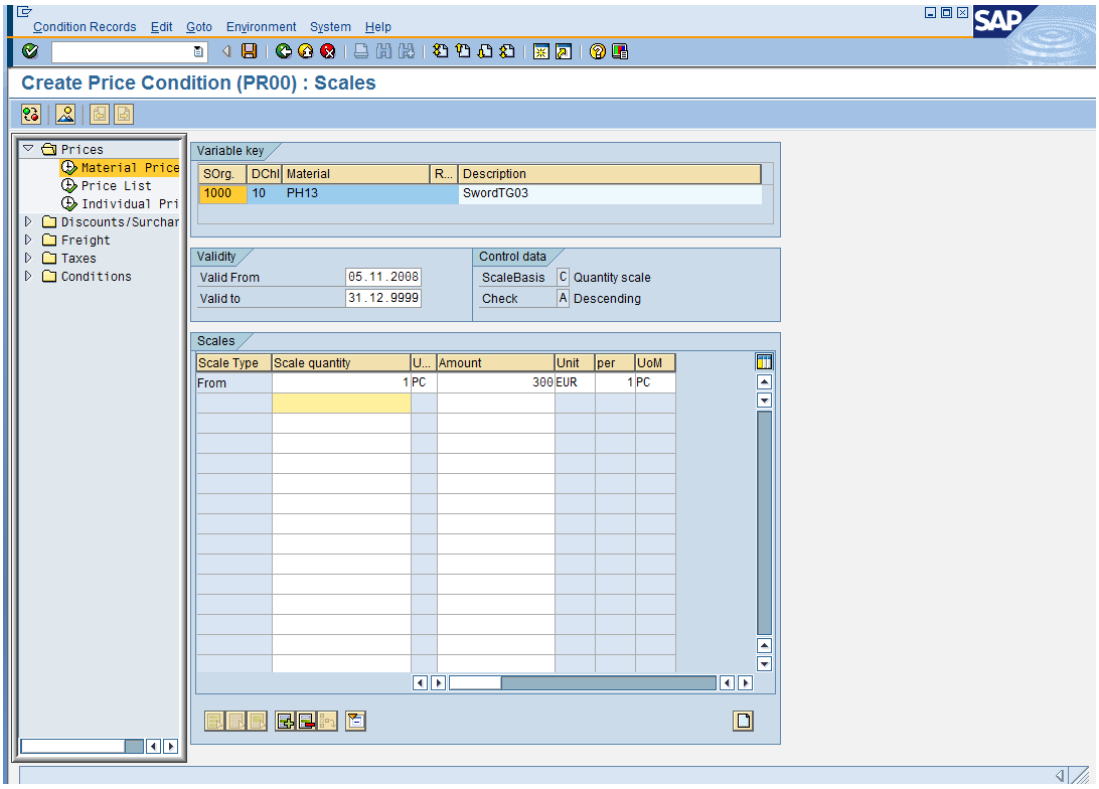


And we maintain the material price to PH13.

Transaction code: vk31

Price 300€ per piece (This is the standard sales price for the product)

Scale quantity: 1



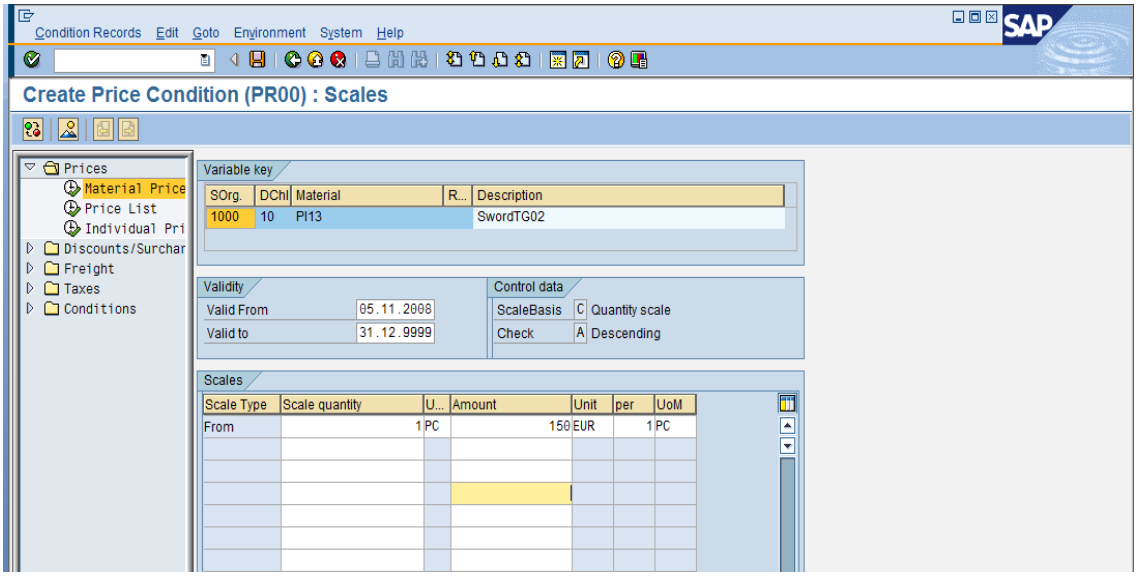
3.2.1.4 Maintain Material Price And Define Purchase Price To PI13

Maintain material price to PI13.

Transaction code: vk31

Price 150€ per unit (This is the standard sales price of the material).

Scale quantity: 1



3.2.1.5 Defining The Purchasing Price Of PI13

Transaction code: me11

Maintain purchase price to PI13

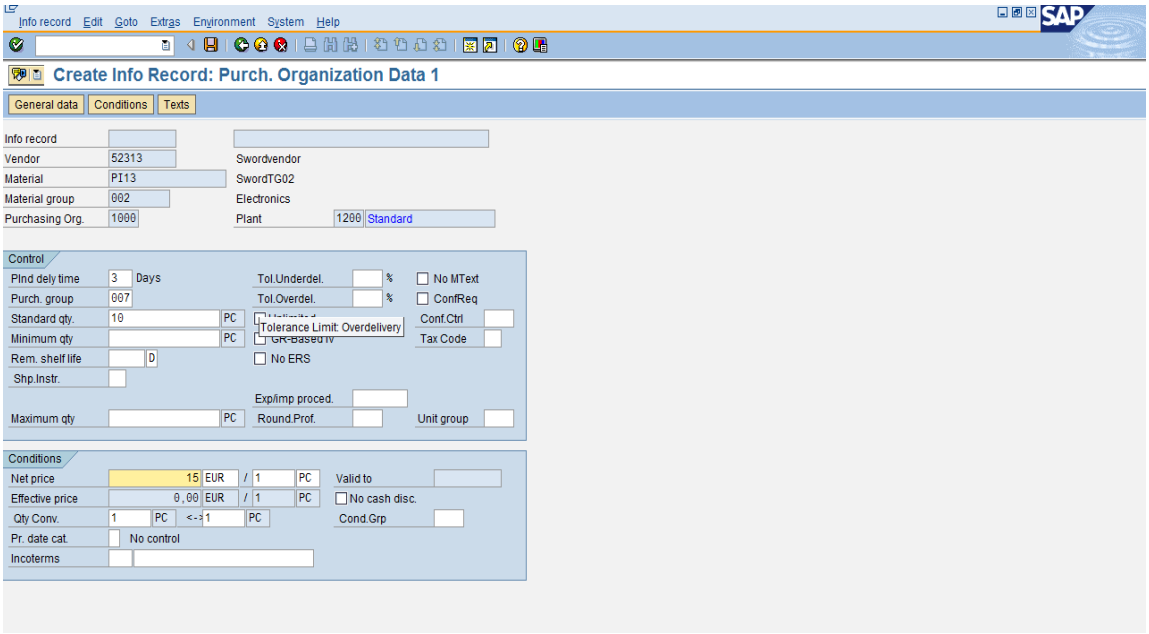
Vendor: 52313

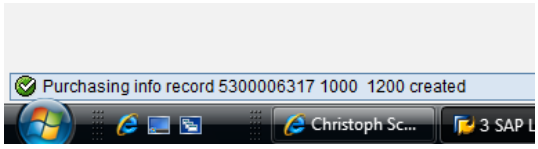
Purch. org.: 1000

Plant: 1200

We define the purchase price for PI13 with 15€

So we get our material for 15€ per unit from our vendor 52313 'Swordvender'.





Purchasing info successfully created.

3.2.1.6 Maintain Main Product PH13 and material PI13 to MRP

We add PH13 and PI13 to MPR!

Transaction code: md20

Use:

MRP area: 1200

Plant: 1200

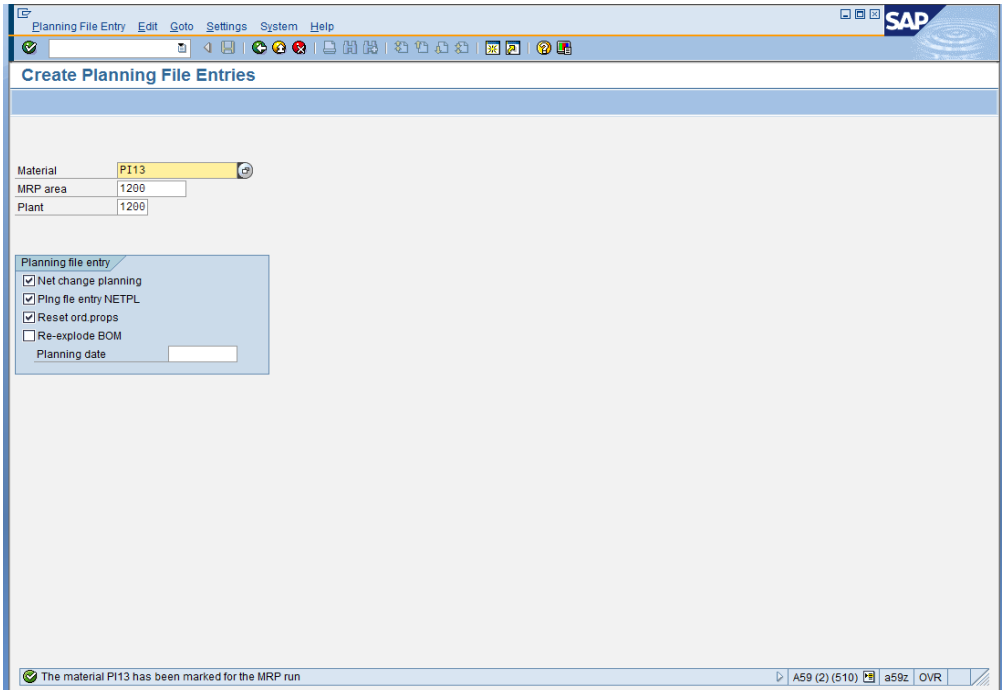
Check the following boxes:

Net change planning

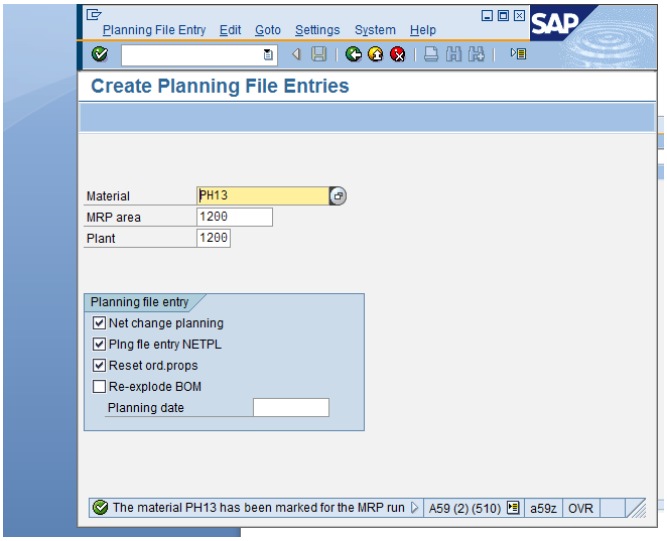
Plng fle entry NETPL

Reset ord.props

PI13:



PH13:



PT13 is already added to MRP (Exercise RT3a).

When these materials are needed, we can order them automatically through MRP. As we linked PI13 & PT13 to PH13 the system will also check stock level and order if necessary PI13 & PT13 when only PH13 is needed.

3.2.2 **Create Scheduling And Resource Planning:**

In this chapter we define the assembling process for our product. We derive it from DPC4000. Our Product PH13 already consist of PI13 and PT13, we combined them in chapter 1.3.

Transaction code: ca01

Enter
Material: PH13
Plant: 1200

Press COPY-From button

Select Routing:

In the following window enter:
Material: DPC4000
Plant: 1200

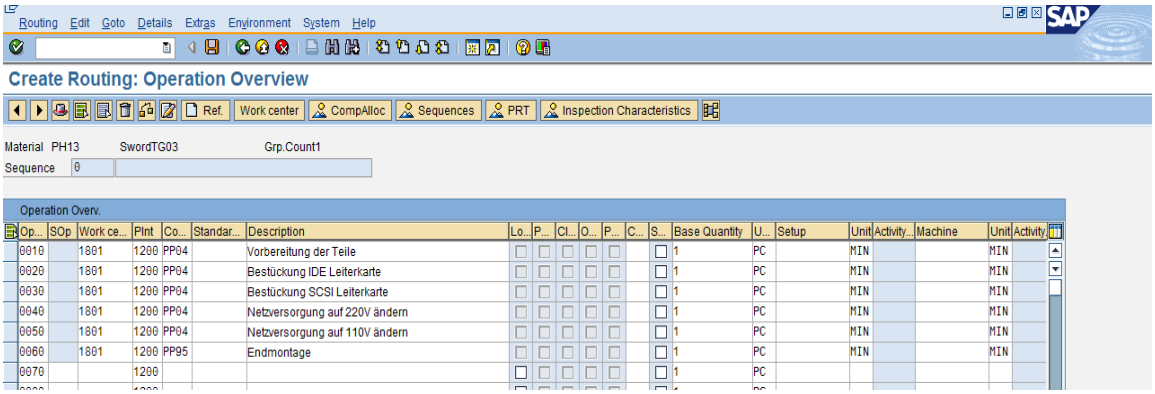
It means we use the process of DPC400 to manufacture our PH13.

Press Enter.

In the following window enter under General Data

Status: 4

In the next step we had to go through the production operations. The outcome you can see in the following screen.

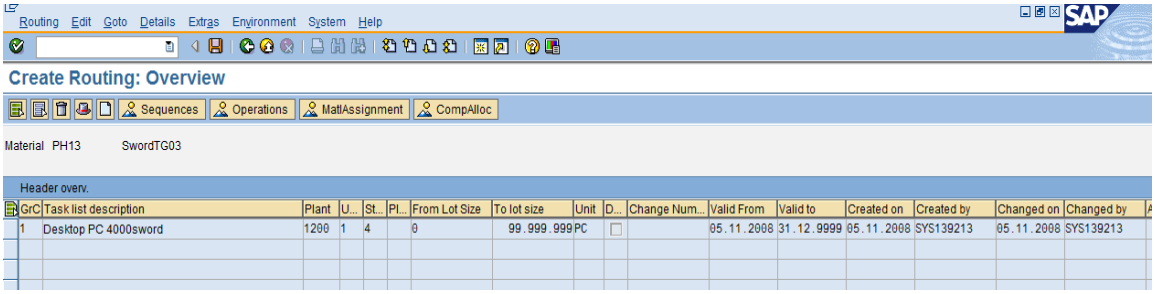


Operation 10 (1): is used to prepare the parts

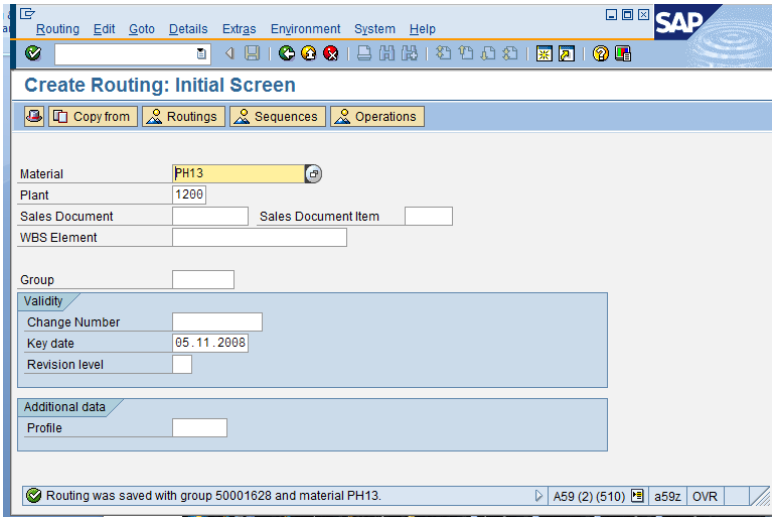
↓

Operation 60 (6): final assembling

Our product PH13:



Save the scheduling and resource planning!



Finished creation of master-data.

3.2.3 Test Production Process

3.2.3.1 Create Sales – PH13

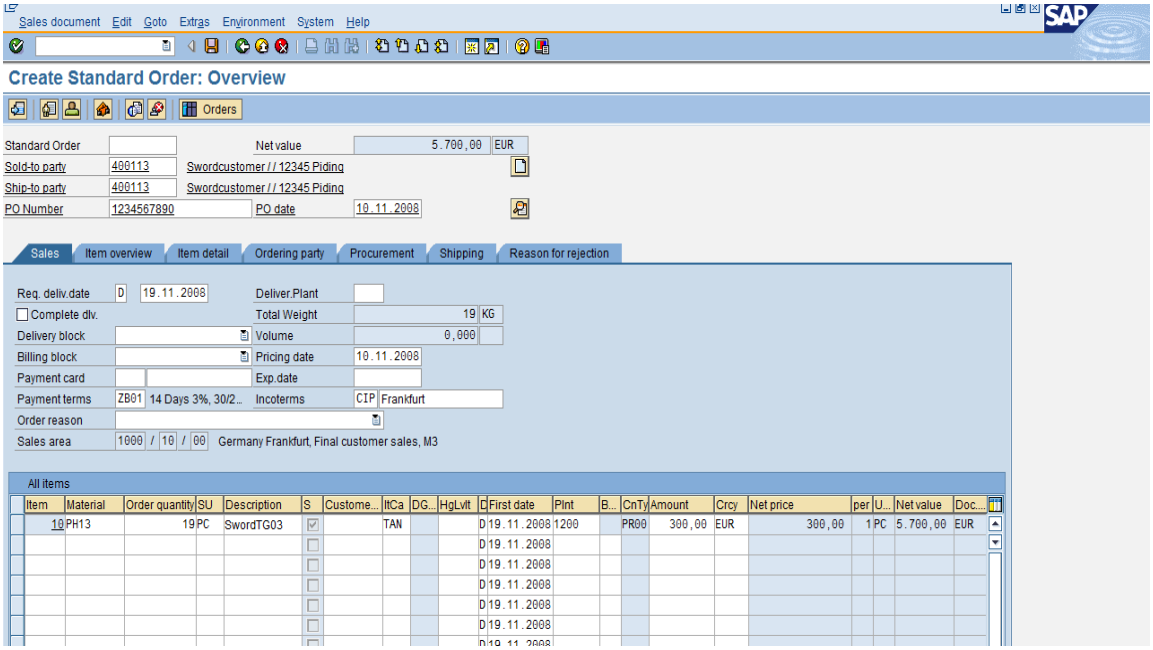
Transaction code: va01

We create a sales order of 19 pcs (300€ per piece) of PH 13 and sell them our Customer.

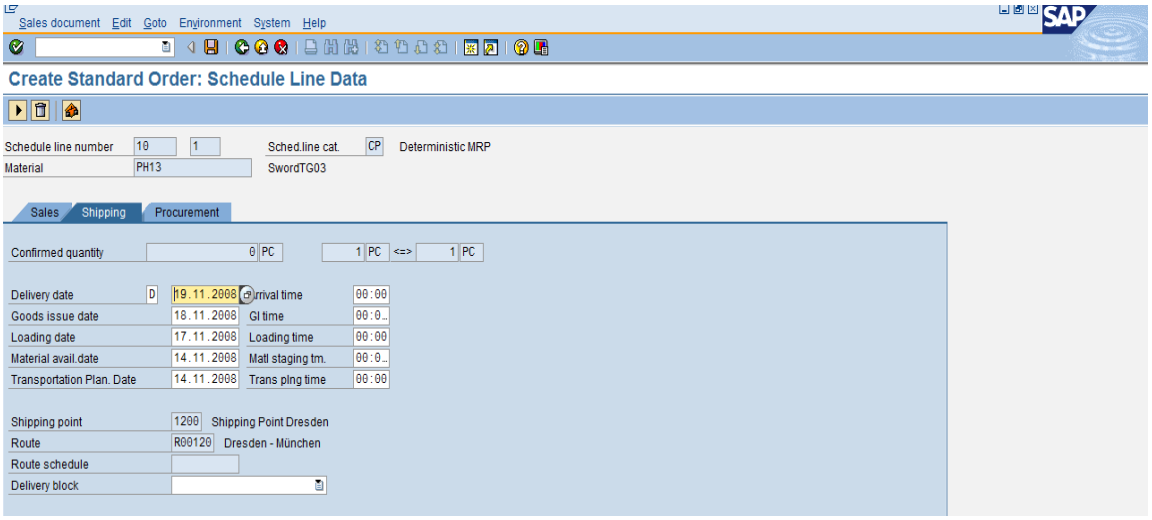
Customer: 400113 'Swordcustomer'

Type: OR 'Standard order'

Organizational data: like mentioned in the beginning of the report.



No PH13 items are in stock, so in the future (19.11.2008 required delivery date) there will be missing 19 pcs. So we will order them through MRP.



According to the schedule the material for PH13 (PT13 & PI13) has to be ready at least on the 14.11.2008, so that the delivery can be done in the planed time.

The order number given by the system for this order: 12426

When we check now our stockpile, we see that there are at the moment 0 pcs of PH13 in stock. And at 14.11.2008 there will be -19 in stock (customer order 12426).

3.2.3.2 Start MRP for ordered main product PH13

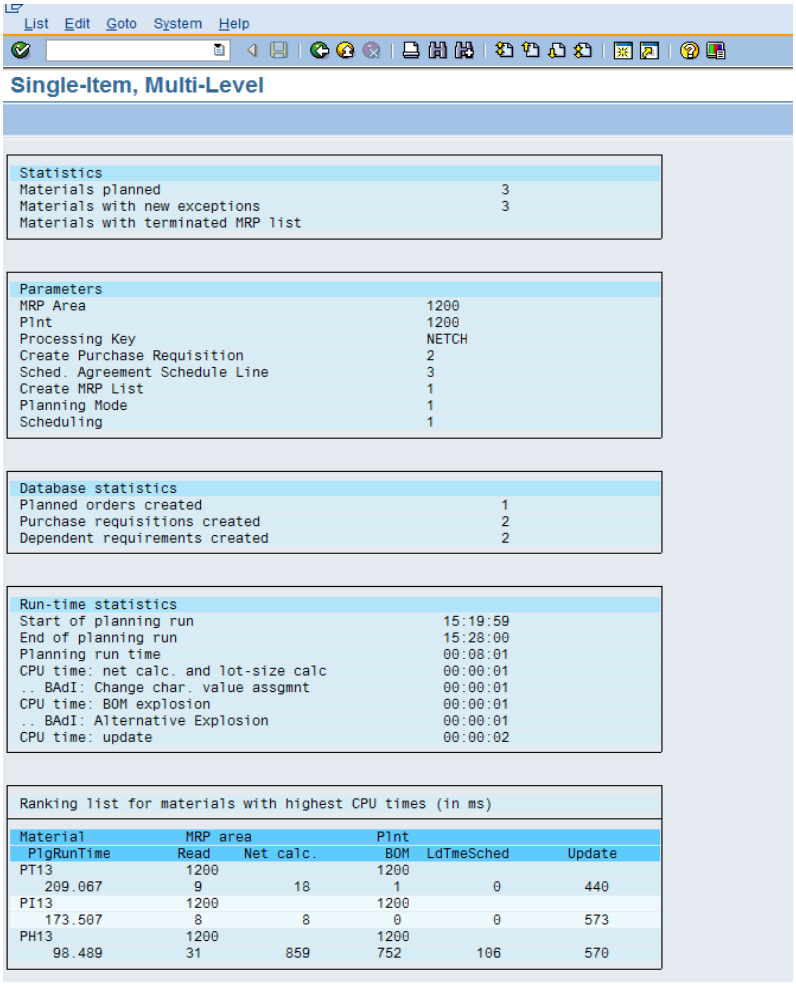
3.2.3.2.1 Process MRP Single-item planed order

Transaction code: md02

We initialise a MRP planned order for our material PH13 in plant 1200 because there is no material in stock to satisfy our customer.

During this process the system also creates purchasing requests for PI13 and PT13 because these are also needed to produce PH13.

Outcome of MRP



List Edit Goto System Help

Single-Item, Multi-Level

Statistics	
Materials planned	3
Materials with new exceptions	3
Materials with terminated MRP list	

Parameters	
MRP Area	1200
Plnt	1200
Processing Key	NETCH
Create Purchase Requisition	2
Sched. Agreement Schedule Line	3
Create MRP List	1
Planning Mode	1
Scheduling	1

Database statistics	
Planned orders created	1
Purchase requisitions created	2
Dependent requirements created	2

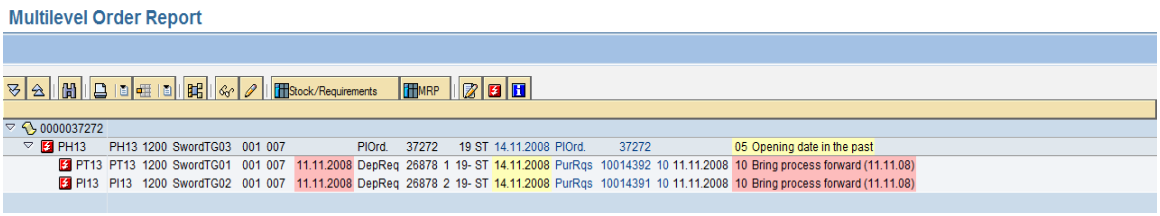
Run-time statistics	
Start of planning run	15:19:59
End of planning run	15:28:00
Planning run time	00:08:01
CPU time: net calc. and lot-size calc	00:00:01
.. BAdI: Change char. value assgmnt	00:00:01
CPU time: BOM explosion	00:00:01
.. BAdI: Alternative Explosion	00:00:01
CPU time: update	00:00:02

Ranking list for materials with highest CPU times (in ms)

Material	MRP area		Plnt		
PlgRunTime	Read	Net calc.	BOM	LdTmeSched	Update
PT13	1200		1200		
209.067	9	18	1	0	440
PI13	1200		1200		
173.507	8	8	0	0	573
PH13	1200		1200		
98.489	31	859	752	106	570

Under statistic we can see that the system created **1 planned order** (PH13) and **2 Purchase Requisitions** (PI13 & PT13) which are also dependent requirements (because needed for the creation of PH13)

Summary of the MRP run, PH13 and the material (PT13 & PI13) which is needed to produce it are ordered.



Multilevel Order Report

Stock/Requirements MRP

0000037272

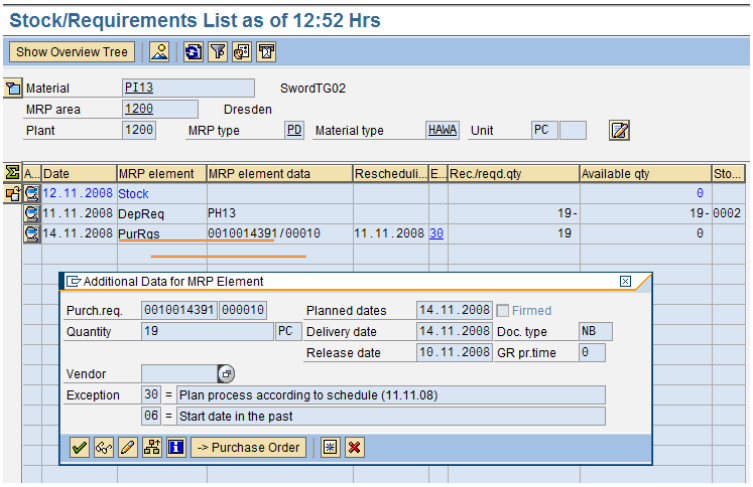
PH13	PH13	1200	SwordTG03	001	007		PlOrd.	37272	19	ST	14.11.2008	PlOrd.	37272		05	Opening date in the past
PT13	PT13	1200	SwordTG01	001	007	11.11.2008	DepReq	26878	1	19- ST	14.11.2008	PurRqs	10014392	10	11.11.2008	10 Bring process forward (11.11.08)
PI13	PI13	1200	SwordTG02	001	007	11.11.2008	DepReq	26878	2	19- ST	14.11.2008	PurRqs	10014391	10	11.11.2008	10 Bring process forward (11.11.08)

3.2.3.2.2 Convert Purchase Request To Purchase Order PI13 & PT13

The purchase department transforms the purchase request to a purchase order.

So we purchase PT13 & PI13 from our vendor.

PI13:

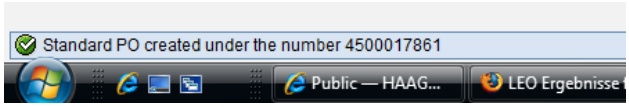


VendorID: 52313 'Swordvendor'

Quantity: 19 pcs

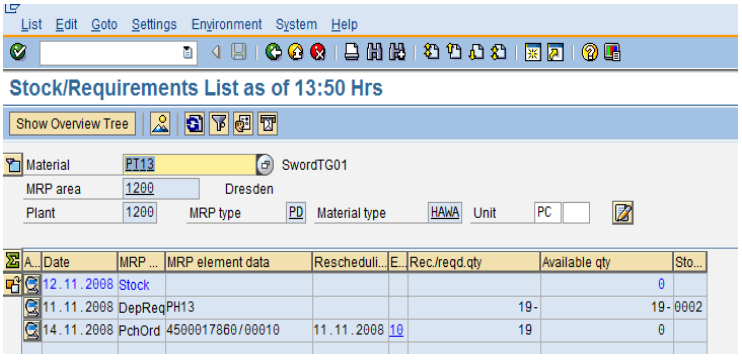
Purchase Requisition: 10014391 (underlined in the picture above) transforming to

Purchase order: 4500017861



PT13:

VendorID: 52313 'Swordvendor'



Quantity: 19 pcs

Purchase Requisition: 10014392

Transforming to

Purchase order nr: 4500017860

3.2.3.3 Receipt Materials PT13 and PH13 to stock

Transaction code: migo

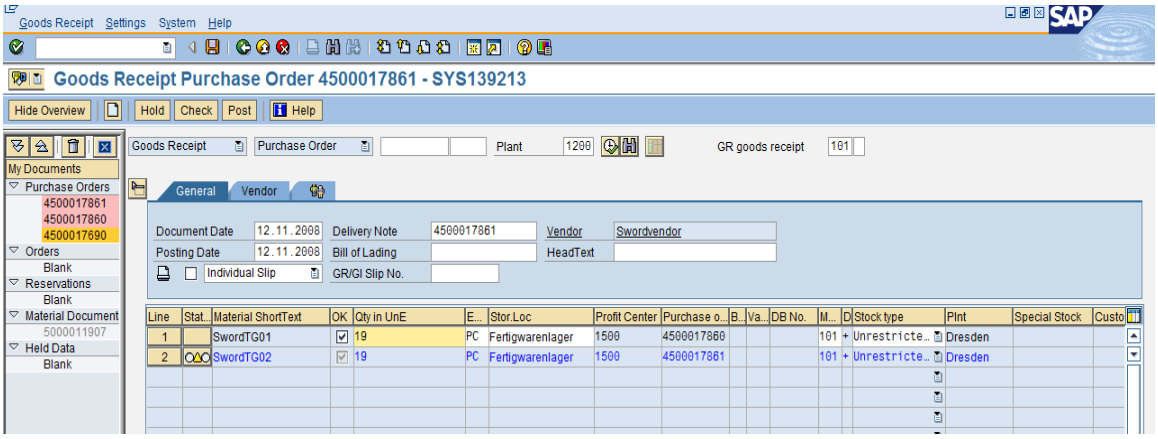
We Receipt PT 13 and PI13 (19 pcs each) add them to stock:

PT13:

Purchase order: 4500017860

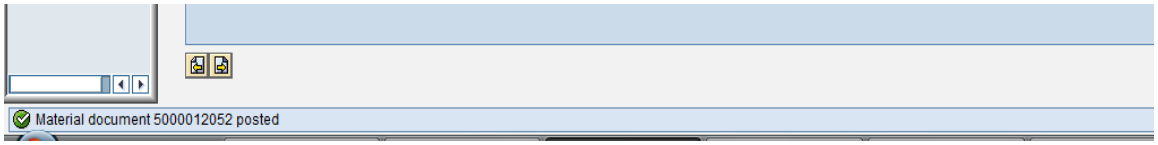
PI13:

Purchase order: 4500017861

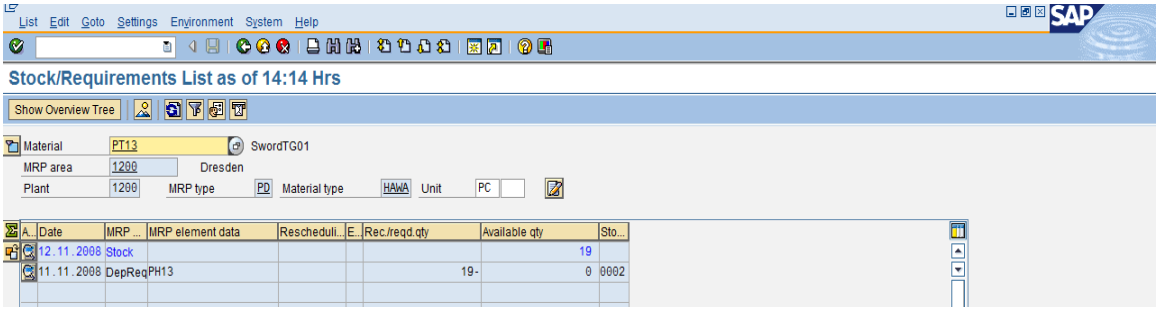


Both purchase orders are added to stock.

Confirmation through Material document: 50000012052



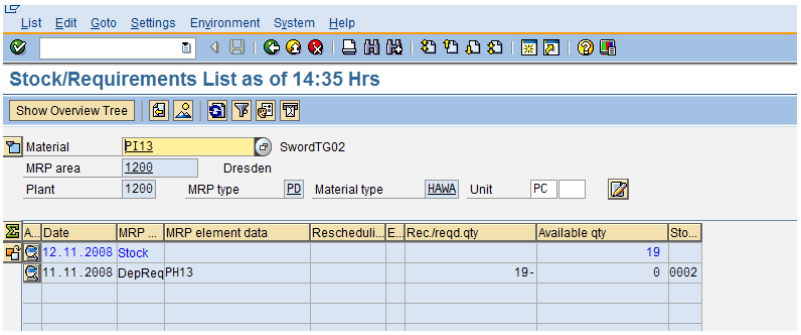
Check stock of PT13:



When we compare the latest and this stock checking outcome, we see that the purchase order disappeared.

Therefore the available quantity is now 19pcs. That is correct because we have already received the goods in this chapter and these goods are now in stock.
On the 11th November (planned date from the system) the stock amount should be zero, because of the customer order (19 pcs needed for production of PH13). But we haven't started the manufacturing process yet, so the depending request of PH is still mentioned, even if the date is already past.

Check Stock Of PI13:

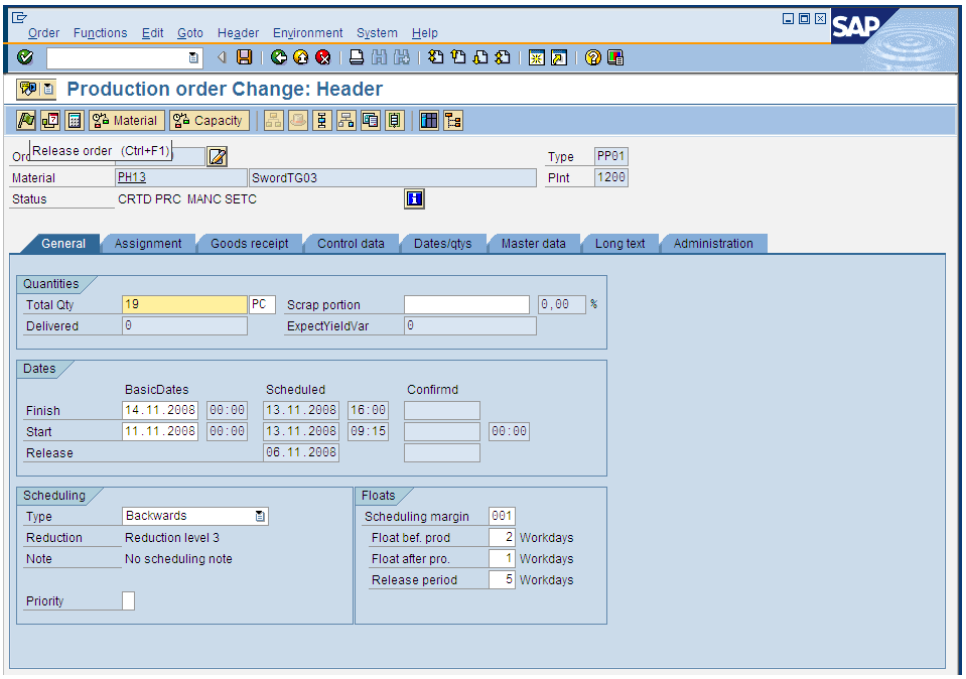


The same result as for PT13.

3.2.3.4 Start To Manufacture Main Product PH13

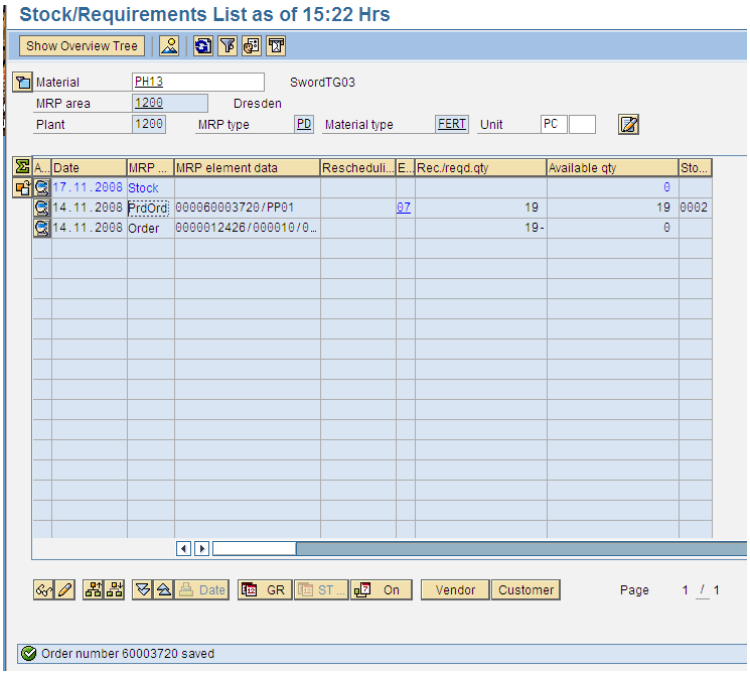
We can now start the production process of PH13, as we already checked in the last chapter we have enough pieces of PT13 and PI13 on stock.
We convert the planned order to a production order:
Enter:

Planned order nr: 37272 (generated number from the system to identify a planned production)
Order type: PP01 'Planned Order'
Order nr: 12426 (generated number from system to identify customer order)



Through pressing the green flag we release the order.

The system generates the production order: 60003720

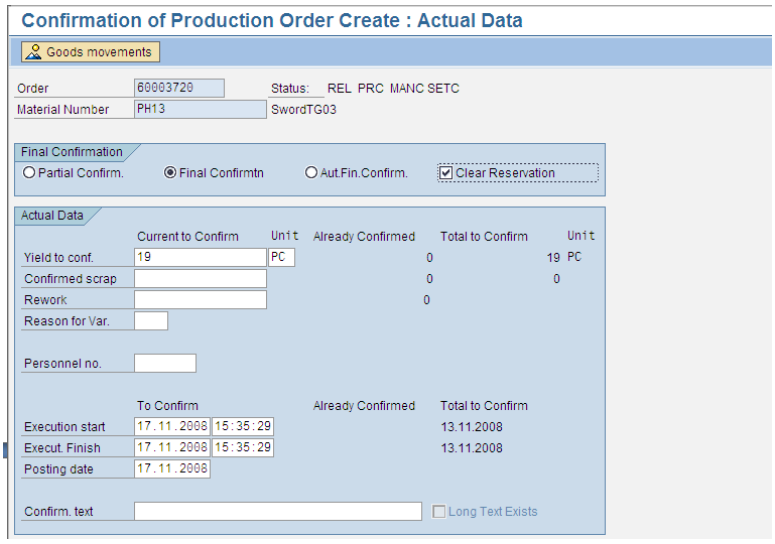


3.2.3.5 To Confirm The Amount Of Manufactured Main Product

Confirm amount of production:

Transaction code: co15

Production order nr: 60003720 (received in the chapter before)

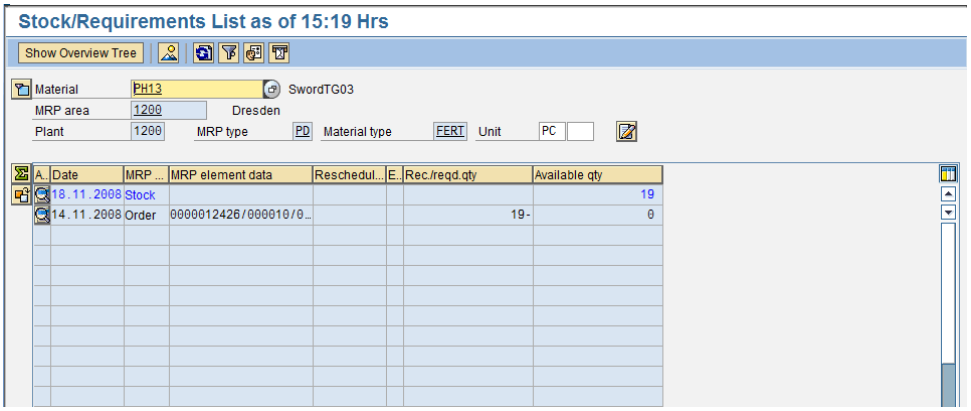


We take 'Final confirmation', this means no further confirmations are required. So to speak this is already the final confirmation. We also take 'Clear Reservation', in combination with 'final confirmation' the indicator 'delivery completed' will be set. And we move the goods to the production with 'goods movement' and save the process.

When we choose to move goods and saved we got message that 3 goods are moved. That's the amount of products we need for the production so we were satisfied with our work. We didn't get error so we didn't have to perform task with error handling.

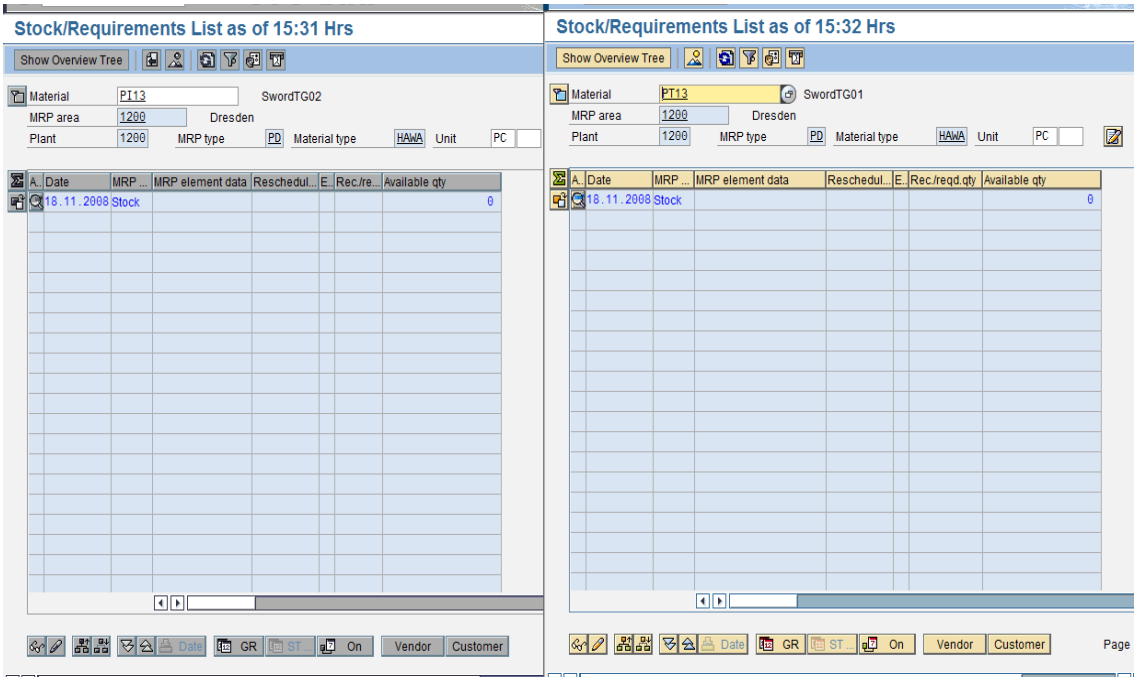
3.2.3.6 Deliver Main Product To Customer

3.2.3.6.1 Check Stock Of PH13



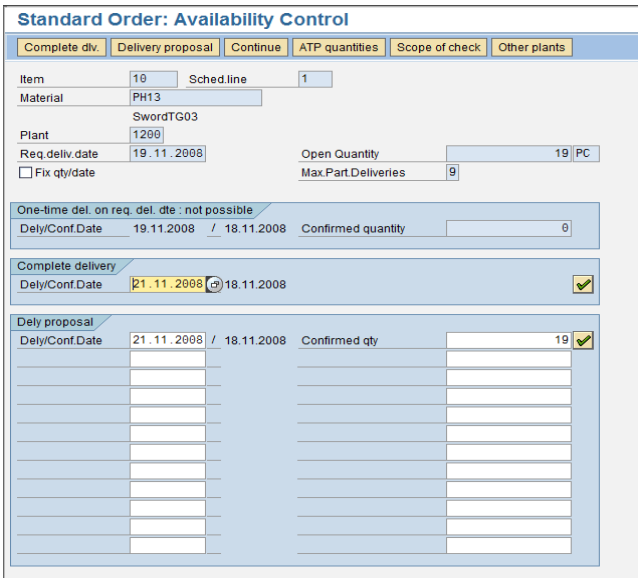
At the moment (18.11.2008) we have 19 pcs on stock. This is correct because we produced them already. On the 14.11.2008 there is a customer order mentioned. We were not able to fulfil this customer order because the required material was not in stock. Now we can execute this customer order, enough material is in stock.

3.2.3.6.2 Check Stock Of PI13 & PT13



As assumed both PI13 and PT13 are out of stock. We used these 2 materials to produce PH13 and ordered only enough pieces to produce the right amount (ordered amount) of PH13.

3.2.3.6.3 Customer Delivery Of Product PH13



First we run an availability check and determine if the needed material for the order is in available.

Sales order nr: 12426

Transaction code: va02

The need material is available so we can allow/activate the complete delivery.

3.2.3.6.3.1 Create Outbound Delivery With Order Reference

Transaction code: vl01n

We create an outbound delivery linked to the customer order. The delivery is saved with the delivery number mentioned below.

Delivery nr: 80015126

3.2.3.6.3.2 Picking For The Delivery & Post Goods Issue

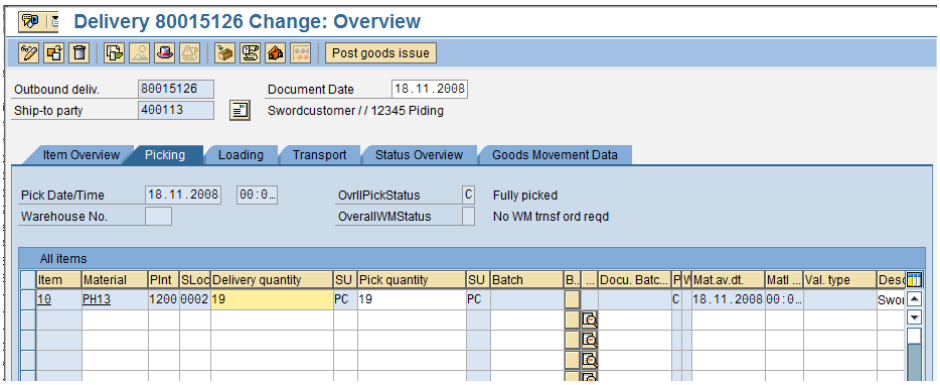
Transaction code: vl02n

Enter

Delivery nr: 80015126

The stock department packs needed material for the delivery.

Define stock location 002 and pick quantity 19 of PT13.

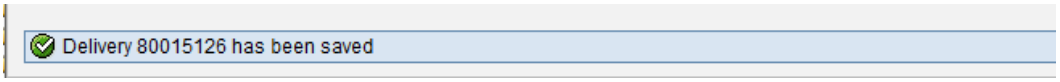


We pick the needed material PH13 for the order from the correct stock location in the right plant.

Release the picked delivery from stock through pressing Post goods issue.

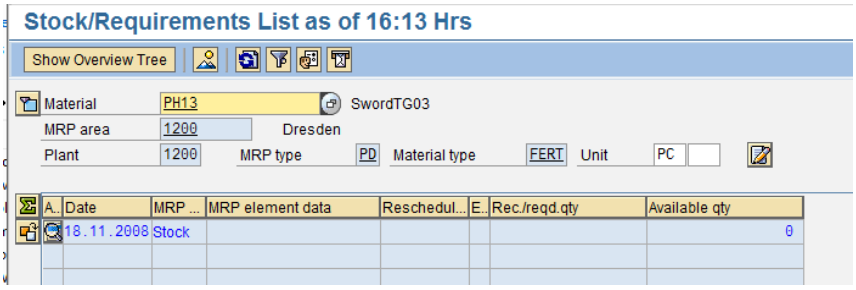
The system confirms that delivery has been saved.

Number of delivery is of course the same: 80015126



The picked material is of course subtracted from stock because it is sent to the customer.

3.2.3.7 Checking Stock Of PH13



Naturally the stock level is now 0 and the order disappeared because we carried it out.

So we had 19 units in stock and delivered 19 to our customer, our stock level is obviously 0 in the end.

2 Summary

In general from this report we will get a full understanding of how to collect organization's data into one centralized system, which allows us to get data easily without going through each separate system, in order to manage this collection we also need to know the organization structure for an easy management of customer orders which is one of our main goals.

Having a functional and understandable system we are able to use it by creating, storing and processing data such as material creation, customer order processing, and bill of material creation. Once the master data is ready in each step and connected together we have a very useful complex system that holds all information we need to handle our production, purchasing, selling and billing which four parts are sufficient to manage our business.

3 Feeback

We as group 3 in the SAP 1 business Application course, we would like to use this opportunity to appreciate haaga-helia university of applied sciences to have this SAP course available at the institution and also to have such a well disciplined and knowledgeable lecturer for the course as you exercised patience and understanding in helping us understand the course as a class and as well as individuals.

From as much as we had a mixture of both local university students, exchange students and open university students, we all received lectures as one SAP family. From the theory we had from guest speakers and the practical work we partook in class i.e. actually using the SAP software with your unsurpassed guidance and knowledge we would proudly say that by now we can work in any company using SAP ECC and we would grade the course 95%.

4 Source Of Information

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RT 4 Exercise, group work

30/11/2008