Production Variance Analysis in SAP® Controlling
## Contents at a Glance

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Initial Planning</td>
<td>23</td>
</tr>
<tr>
<td>2</td>
<td>Cost Estimates</td>
<td>45</td>
</tr>
<tr>
<td>3</td>
<td>Actual Postings</td>
<td>97</td>
</tr>
<tr>
<td>4</td>
<td>Period-End Processing</td>
<td>111</td>
</tr>
<tr>
<td>5</td>
<td>Scrap Variance</td>
<td>175</td>
</tr>
<tr>
<td>6</td>
<td>Reporting</td>
<td>217</td>
</tr>
<tr>
<td>A</td>
<td>Glossary</td>
<td>253</td>
</tr>
<tr>
<td>B</td>
<td>Bibliography</td>
<td>273</td>
</tr>
<tr>
<td>C</td>
<td>Additional Resources</td>
<td>275</td>
</tr>
<tr>
<td>D</td>
<td>The Author</td>
<td>279</td>
</tr>
</tbody>
</table>
Contents

1 Initial Planning ............................................................................................................ 23
  1.1 Sales and Operations Planning ................................................................. 24
  1.2 Long-Term Planning ..................................................................................... 25
    1.2.1 Create Planning Scenario ................................................................. 26
    1.2.2 Long-Term Planning Run ................................................................. 28
    1.2.3 Transfer Requirements to Purchasing ............................................. 32
    1.2.4 Transfer Activity Quantities to Cost Center Accounting ................ 35
  1.3 Cost Center Planning ....................................................................................... 38
  1.4 Summary ........................................................................................................... 44

2 Cost Estimates ......................................................................................................... 45
  2.1 Master Data ..................................................................................................... 46
    2.1.1 Material Master .................................................................................. 46
    2.1.2 Bill of Material .................................................................................... 50
    2.1.3 Routing ............................................................................................... 51
    2.1.4 Product Cost Collector ....................................................................... 52
  2.2 Overhead Costs ............................................................................................... 54
    2.2.1 Calculation Base .................................................................................. 55
    2.2.2 Overhead Rate ..................................................................................... 56
    2.2.3 Credit Key ............................................................................................. 57
  2.3 Cost Components ............................................................................................. 58
  2.4 Costing Variant ............................................................................................... 61
  2.5 Standard Cost Estimate ................................................................................... 64
    2.5.1 Create .................................................................................................... 64
    2.5.2 Mark and Release .................................................................................. 68
  2.6 Costing Run .................................................................................................... 72
    2.6.1 Selection ............................................................................................... 74
    2.6.2 Structural Explosion ............................................................................. 76
    2.6.3 Costing .................................................................................................. 78
    2.6.4 Analysis ................................................................................................ 79
    2.6.5 Marking ................................................................................................. 81
    2.6.6 Release .................................................................................................. 83
## Contents

2.7 Preliminary Cost Estimate ........................................................... 85
   2.7.1 Production Process .......................................................... 87
   2.7.2 Transfer Control ............................................................. 87
   2.7.3 Mass-Processing ............................................................ 90

2.8 Mixed Cost Estimate ................................................................... 90
   2.8.1 Quantity Structure and Costing Version ......................... 91
   2.8.2 Create Procurement Alternative ................................. 92
   2.8.3 Define Mixing Ratios .................................................... 93
   2.8.4 Create Mixed Cost Estimate .......................................... 94

2.9 Summary .................................................................................... 96

3 Actual Postings ............................................................................. 97

   3.1 Primary Costs ........................................................................ 97
      3.1.1 Goods Issue to Production Order ............................ 97
      3.1.2 Vendor Invoice Posting ......................................... 98

   3.2 Secondary Costs ................................................................... 99
      3.2.1 Assessment ............................................................. 99
      3.2.2 Activity Confirmation ............................................ 100

   3.3 Credits .................................................................................. 101
      3.3.1 Primary Credits ....................................................... 101
      3.3.2 Secondary Credits .................................................. 102

   3.4 Post Actual Costs ................................................................ 103
      3.4.1 Create Production Order ....................................... 103
      3.4.2 Confirm Activities .................................................. 104
      3.4.3 Default Activities .................................................. 106
      3.4.4 Operation Sequence .............................................. 108

   3.5 Report Actual Costs .............................................................. 109

   3.6 Summary ................................................................................ 110

4 Period-End Processing ............................................................... 111

   4.1 Types of Variance Calculation ........................................... 111
      4.1.1 Total Variance .......................................................... 111
      4.1.2 Production Variance ............................................... 112
      4.1.3 Planning Variance ................................................... 112

   4.2 Variance Configuration ....................................................... 113
      4.2.1 Define Variance Keys .............................................. 113

8
## Contents

4.2.2 Define Default Variance Keys for Plants ......................... 115  
4.2.3 Define Variance Variants ............................................... 115  
4.2.4 Define Valuation Variant for Scrap and WIP .................. 117  
4.2.5 Define Target Cost Versions .......................................... 118  

4.3 Variance Categories .......................................................... 122  
4.3.1 Input Variances ............................................................. 123  
4.3.2 Output Variances .......................................................... 125  

4.4 Period End ......................................................................... 128  
4.4.1 Overhead ...................................................................... 128  
4.4.2 Work in Process ............................................................ 130  
4.4.3 Variance Calculation ..................................................... 136  
4.4.4 Settlement .................................................................... 144  

4.5 Cost Center Variances ........................................................... 147  
4.5.1 Information System ....................................................... 147  
4.5.2 Target Cost Analysis ...................................................... 151  
4.5.3 Variance Analysis .......................................................... 154  
4.5.4 Actual Price Calculation ............................................... 158  

4.6 Purchase Price Variance .......................................................... 163  
4.6.1 Master Data .................................................................. 164  
4.6.2 Configuration ................................................................ 165  
4.6.3 Reporting ..................................................................... 166  

4.7 Actual Costing/Material Ledger .................................................. 172  
4.8 Summary ............................................................................ 172  

5 Scrap Variance ........................................................................ 175  

5.1 Scrap Basics ........................................................................ 175  
5.2 Assembly Scrap .................................................................... 177  
5.2.1 Assembly Scrap Definition ............................................ 177  
5.2.2 Effect of Assembly Scrap on Quantities ......................... 177  
5.2.3 Assembly Scrap Master Data ......................................... 178  
5.2.4 Planned Assembly Scrap Costs ...................................... 179  
5.2.5 Actual Assembly Scrap Costs ....................................... 181  
5.2.6 Variance Calculation ..................................................... 182  
5.2.7 Assembly Scrap Target/Actual ..................................... 183  

5.3 Component Scrap .................................................................. 187  
5.3.1 Component Scrap Definition ......................................... 187  
5.3.2 Effect of Component Scrap on Quantities ....................... 187  
5.3.3 Component Scrap Master Data ..................................... 188
## Contents

5.3.4 Planned Component Scrap Costs ................................... 189  
5.3.5 Actual Component Scrap Costs ................................... 190  
5.3.6 Variance Calculation ..................................................... 193  
5.3.7 Component Scrap Target/Actual .................................... 193  

5.4 Operation Scrap .......................................................................... 197  
5.4.1 Operation Scrap Definition ........................................... 197  
5.4.2 Effect of Operation Scrap on Quantities ..................... 198  
5.4.3 Operation Scrap Master Data ................................. 199  
5.4.4 Planned Operation Scrap Costs ......................... 200  
5.4.5 Actual Operation Scrap Costs .......................... 202  
5.4.6 Variance Calculation ..................................................... 203  
5.4.7 Operation Scrap Target/Actual ......................... 204  

5.5 Combined Scrap .......................................................................... 208  
5.5.1 Component Scrap ......................................................... 208  
5.5.2 Component and Operation Scrap ............................. 209  
5.5.3 Component, Operation, and Assembly Scrap ........ 209  
5.5.4 BOM Item Operation Scrap .............................. 211  
5.5.5 Operation and Assembly Scrap .............................. 212  
5.5.6 Calculate Assembly Scrap ................................. 212  

5.6 Summary .................................................................................... 215  

6 Reporting .................................................................................. 217  

6.1 Summarized Analysis Reports ............................................ 218  
6.1.1 Product Drilldown Reports .................................... 220  
6.1.2 Summarization Hierarchy Reports ..................... 227  

6.2 Detailed Reports .......................................................................... 235  

6.3 Line Item Reports ..................................................................... 237  

6.4 Production Order Reports ..................................................... 239  
6.4.1 Order Information System ...................................... 239  
6.4.2 Order Selection ............................................................. 242  

6.5 Cost Center Reports .................................................................. 244  

6.6 Summary .................................................................................... 246  

6.7 Guide Summary ........................................................................... 247  

6.8 Looking Ahead ........................................................................... 249
## Appendices

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Glossary</td>
<td>253</td>
</tr>
<tr>
<td>B Bibliography</td>
<td>273</td>
</tr>
<tr>
<td>C Additional Resources</td>
<td>275</td>
</tr>
<tr>
<td>D The Author</td>
<td>279</td>
</tr>
<tr>
<td>Index</td>
<td>281</td>
</tr>
</tbody>
</table>
5 Scrap Variance

In Chapter 4, we analyzed all scrap categories in detail, except for scrap variance. Processing scrap and analyzing scrap variances has its own chapter because there is more involved in master data settings and cost estimate analysis than in any of the other variance categories.

In this chapter, we’ll analyze scrap processing and scrap variance analysis in detail. We’ll discuss scrap basics, types of scrap, and master data settings; carry out plan and actual scrap postings; and then analyze scrap postings in detailed reports. The method we use for analyzing scrap variance in this chapter can be used as a model for analyzing variances in general.

5.1 Scrap Basics

Because no production process is perfect, there is always some percentage of scrap produced. Assemblies or components that do not meet quality standards may either become scrap or require rework. Depending on the problem, cheaper items may become scrap, while more costly assemblies may justify rework.

Case Scenario

The mounting holes for a metal plate are accidentally drilled larger than they were supposed to be. Filling the holes with weld and re-drilling correctly sized holes would cost more than the plate is worth. The plate is scrapped, and a new plate is drilled correctly and delivered to inventory. Statistics show that 1 in every 10 plates is drilled incorrectly, so you plan 10% assembly scrap for the drilled metal plate.

A drilled metal plate is issued from inventory as a component in a higher-level assembly, and during inspection, before production use, the mounting holes are found to be oversize. The plate is discarded, and another plate is issued from inventory. Statistics show that 1 in every 50 drilled plates issued from inventory is drilled incorrectly and discarded, so you plan 2% component scrap for the drilled metal plate.

You enter both 10% assembly scrap and 2% component scrap in the material master MRP views of the drilled plate.
If the plates were made of an expensive metal alloy that is not readily available, it may be cost effective to rework the oversize holes by welding and re-drilling. In this case, you do not plan scrap.

Scrap is different from other losses during the manufacturing of a product because it can be analyzed and predicted. You can enter and store known scrap amounts in master data as planned scrap percentages. Scrap percentages increase the planned manufacturing costs of a product, via the released cost estimate and standard price. If actual scrap equals planned scrap, no variance occurs because postings are as planned. Benefits of planning for scrap include the following:

- Margin analysis is more accurate.
- Variances highlight processes that need analysis.
- Production resources can be more accurately planned.
- Cost of sales more accurately reflect manufacturing costs.

Target and actual scrap costs are calculated from plan scrap quantity and actual scrap quantity posted during activity confirmation. Scrap variance is calculated and subtracted from total variances and is displayed in a scrap variance column in cost reports. A requirement to display the scrap variance column is to activate scrap calculation and reporting in the variance key and variance variant, as we examined in Chapter 4.

There are three different types of scrap that can be planned for:

- **Assembly scrap**
  This includes the entire cost of faulty or lost assemblies in the cost of sales. The plan quantity of the assembly is increased.

- **Component scrap**
  This includes the cost of faulty or lost individual components in the cost of sales. The plan quantity of components is increased.

- **Operation scrap**
  This optimizes the use of valuable components. The plan quantity of components in subsequent operations is decreased.

Now that we’ve covered scrap basics, let’s discuss each of the three different types of scrap in detail.
5.2 Assembly Scrap

Assembly scrap includes the entire cost of faulty or lost assemblies in the cost of sales. If assembly scrap is not planned, all scrap costs post in other variance categories. Although variance can be included at a higher level in profitability reporting, planned assembly scrap is included at the material or gross profit level, as we discussed in Chapter 3. This results in more accurate analysis of profitability at the product level.

5.2.1 Assembly Scrap Definition

Assembly scrap can be defined as the percentage of assembly quantity that does not meet required production quality standards. For example, planned assembly scrap of 25% means that in order to deliver 100 pieces of an assembly, you plan to produce 125. Planned assembly scrap also improves the MRP process by ensuring you start with an increased quantity in order to achieve the required product yield. Assembly scrap is considered an output scrap because it affects the planned output quantity of items in the production process.

5.2.2 Effect of Assembly Scrap on Quantities

Scrap quantities are important because they cause scrap values. Let’s follow a simple example of how assembly scrap applied at the assembly level affects lower-level component and activity quantities.

**Example**

You plan to produce 100 finished printed circuit boards (PCBs). If planned assembly scrap is entered for the finished PCBs, all component and activity quantities are increased by 10%, as highlighted in the QUANTITY COSTED column in Figure 5.1.

<table>
<thead>
<tr>
<th></th>
<th>Quantity no scrap</th>
<th>Quantity costed</th>
<th>Assembly scrap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finished PCBs</td>
<td>100 PC</td>
<td>110 PC</td>
<td>0 PC</td>
</tr>
<tr>
<td>Blank PCBs</td>
<td>100 PC</td>
<td>110 PC</td>
<td>10 PC</td>
</tr>
<tr>
<td>BIOS</td>
<td>100 PC</td>
<td>110 PC</td>
<td>10 PC</td>
</tr>
<tr>
<td>Operation 1</td>
<td>100 h</td>
<td>110 h</td>
<td>10 h</td>
</tr>
<tr>
<td>Processor</td>
<td>100 PC</td>
<td>110 PC</td>
<td>10 PC</td>
</tr>
<tr>
<td>Operation 2</td>
<td>100 h</td>
<td>110 h</td>
<td>10 h</td>
</tr>
</tbody>
</table>

*Figure 5.1 Effect of Assembly Scrap on Component and Activity Quantities*
By increasing the quantity of components and activities, assembly scrap increases the plan cost of producing the finished PCBs. MRP will propose a production quantity of 110 PC (pieces), with the expectation that 100 PC will be delivered to inventory, and 10 PC will be confirmed as scrap.

Now that we know what assembly scrap is and how it affects scrap quantities, we’ll investigate how to plan assembly scrap in the next section.

5.2.3 Assembly Scrap Master Data

You can plan assembly scrap in two different master data fields. The most commonly used field is located in the MRP 1 view of the material master, which you access with Transaction MM02 or via menu path Logistics • Materials Management • Material Master • Material • Change • Immediately. Click on the MRP 1 tab to display the screen shown in Figure 5.2.

![Figure 5.2 Assembly Scrap Field in MRP 1 View](image)

Fill in the Assembly scrap (%) field with a flat rate percentage determined by your production statistics of scrap rates, which is 10.00% in this example. You should update this field prior to each costing run if the statistics change during the current year. Later, in Section 5.2, we’ll examine how assembly scrap affects standard cost estimates.

Another master data field that controls assembly scrap is located in the Basic Data tab of a BOM item. You can view or change BOM item details with Transaction CS02 or via menu path Logistics • Production • Master Data • Bills of Material • Bill of Material • Material BOM • Change. Double-click on a BOM item to display BOM item details, as shown in Figure 5.3.
You can select the NET ID checkbox to ignore assembly scrap for this component. This is useful if you need to enter a scrap percentage for a particular component that is different from the assembly scrap percentage of the assembly. In this case, select the NET ID checkbox, and fill in the percentage scrap for the component in either the Operation scrap in % or Component scrap (%) fields. If you make an entry in the Component scrap (%) field without selecting the NET ID checkbox, assembly scrap is calculated first, and then component scrap is calculated in addition, as discussed in detail in Section 5.3.

### 5.2.4 Planned Assembly Scrap Costs

Planned assembly scrap costs are included in the standard cost estimate. Let’s compare two cost estimates, one without assembly scrap, and one with assembly scrap, to highlight the difference. To display the screen shown in Figure 5.4, use Transaction CK13N or menu path Accounting • Controlling • Product Cost Controlling • Product Cost Planning • Material Costing • Cost Estimate with Quantity Structure.
The total value of the STANDARD FG cost estimate without assembly scrap is 46,254.68. The figures in the SCRAP and SCRAP QUANTITY columns indicate there is no planned output scrap. Now let's display a cost estimate for material STANDARD FG with 10% assembly scrap planned, as shown in Figure 5.5.

The total value of the STANDARD FG cost estimate with assembly scrap is 50,880.14, which is 10% higher than the cost estimate without assembly scrap. This is because the quantity of all components has increased by 10%, illustrated by comparing the QUANTITY columns in both cost estimates. The increase in component quantities is shown in the SCRAP QUANTITY column, while the corresponding increase in value is shown in the SCRAP column. While only material cost estimates are displayed in Figure 5.5, the quantity and value of all other cost estimate items, such as activities, are also increased by 10%.

Tip
To quickly determine if assembly scrap is included in a cost estimate, click on the cost estimate QTY STRUCT. (quantity structure) tab, which displays the screen shown in Figure 5.6.

The ASSEMBLY SCRAP ONLY text indicates assembly scrap is included in the cost estimate, without the need to refer to the MRP 1 view of the material master. Information text also appears in the same tab if operation scrap is included in the cost estimate, as discussed later in Section 5.4.
Now that we’ve looked at planning for assembly scrap with master data entries and the effect on cost estimates, let’s examine how actual scrap postings occur.

### 5.2.5 Actual Assembly Scrap Costs

Actual scrap costs usually occur during production order activity confirmation. This is when activities are confirmed, and goods movements occur during backflushing and auto goods receipt, as discussed in detail in Chapter 3. We’ll now create a production order and carry out a confirmation to demonstrate how actual assembly scrap costs occur.

You create a production order with Transaction CO01 or via menu path LOGISTICS • PRODUCTION • PRODUCTION CONTROL • ORDER • CREATE • WITH MATERIAL. The screen shown in Figure 5.7 is displayed.

![Production Order Quantity Increased by Planned Assembly Scrap](image)

**Figure 5.7** Production Order Quantity Increased by Planned Assembly Scrap

The production order quantity is automatically increased by 10% due to assembly scrap in the material master MRP 1 view, as discussed in Section 5.2. MRP proposes a total quantity of 1,100,000, as shown in the TOTAL QUANT. field, even though only 1,000,000 are required. This is because a confirmed scrap assembly quantity of 100,000 is expected, as shown in the SCRAP PORTION field.

Actual assembly scrap is posted during production order confirmation. In Chapter 3, we saw a confirmation per operation. In this example, we’ll follow a confirmation at the order header level with Transaction CO15 or via menu path LOGISTICS • PRODUCTION • PRODUCTION CONTROL • CONFIRMATION • ENTER • FOR ORDER. The screen shown in Figure 5.8 is displayed.
A quantity of 100,000, due to planned assembly scrap, defaults in the CONFIRMED SCRAP field in the CURRENT CONFIRM. column. If the default CONFIRMED SCRAP quantity is manually changed, a scrap variance will result. The expected scrap quantity of 100,000 is displayed in the TOTAL TO CONFIRM column of the CONFIRMED SCRAP row.

After scrap is confirmed, you will carry out variance calculation next, as we will discuss in the following section.

### 5.2.6 Variance Calculation

You carry out variance calculation with Transactions KKS6 (individual) and KKS5 (collective) or via menu path ACCOUNTING • CONTROLLING • PRODUCT COST CONTROLLING • COST OBJECT CONTROLLING • PRODUCT COST BY PERIOD • PERIOD-END CLOSING • SINGLE FUNCTIONS: PRODUCT COST COLLECTOR • VARIANCES. The screen shown in Figure 5.9 is displayed following variance calculation.

<table>
<thead>
<tr>
<th>Target cost</th>
<th>Act. cost</th>
<th>Ctrl. costs</th>
<th>Variance</th>
<th>Scrap</th>
<th>Rerm var</th>
<th>Actual qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>46,254.68</td>
<td>50,830.14</td>
<td>46,254.68</td>
<td>0.02</td>
<td>4,625.48</td>
<td>0.00</td>
<td>1,000.000</td>
</tr>
</tbody>
</table>

Figure 5.9 Variance Calculation Scrap Output Screen
Assembly scrap maintains the expected **Actual Qty** (last column) delivered to inventory at 1,000,000 by increasing the manufactured quantity. After the planned assembly scrap quantity is actually confirmed as scrap, the output quantity is the quantity required.

The unfavorable **SCRAP** variance of 4,625.48 indicates that assembly scrap was posted but not planned for in this example. **SCRAP** variance is subtracted from total variance during variance calculation, which simplifies the task of analyzing total variance. Click on the SCRAP button (not shown) in the variance calculation output screen to display details of the scrap variance by cost element and operation.

Now that we’ve examined how to plan and post actual scrap and calculate variance, let’s look at how to report and analyze scrap postings.

### 5.2.7 Assembly Scrap Target/Actual

During a period, or at period end, you may need to carry out further detailed analysis of scrap variance. Before doing so, you should first run a variance calculation to determine the target costs. You can display and analyze target versus actual costs in detailed product cost collector reports with Transaction PKBC_PKO or via menu path **Accounting • Controlling • Product Cost Controlling • Cost Object Controlling • Product Cost by Period • Information System • Reports for Product Cost by Period • Detailed Reports**. A similar report is available for production and process orders with Transaction PKBC_ORD.

Let’s compare a series of three detailed reports to demonstrate how assembly scrap affects variance.

**Assembly Scrap Not Planned and Actual Scrap Posted**

The first detailed report contains an unfavorable scrap variance because assembly scrap is not planned, while actual scrap is posted, as shown in Figure 5.10.

Because assembly scrap is not planned, actual assembly scrap posts as an unfavorable scrap variance with a value of 4,625.48, as shown in the **SCRAP** column.
Activity and component quantities to make 1,100,000 STANDARD FG are issued from inventory, as shown in the TOTAL ACT.QTY column. This corresponds to the value of 50,880.14 in the DEBIT row and Ttl actual (total actual costs) column.

A quantity of 1,000,000 STANDARD FG is delivered to inventory, as shown in the TOTAL ACT.QTY (last) column. This corresponds to the credit value of 46,254.68 in the DELIVERY row and Ttl actual column.

Because the total actual debits of 50,880.14 are greater than the total actual credits of 46,254.68, an unfavorable variance of 4,625.46 results, as shown in the summary (last) row of the TOTAL ACTUAL column.

Now that we’ve looked at how posting assembly scrap without planning for it results in an unfavorable variance, let’s see the consequences of planning but not posting assembly scrap.

**Assembly Scrap Planned and Actual Scrap Not Posted**

Compare the report in the previous section with an unfavorable scrap variance to a report in this section with a favorable scrap variance that results from planning but not posting assembly scrap, as shown in Figure 5.11.

Because assembly scrap is planned, all planned scrap that is not actually posted results in a favorable scrap variance, with a value of 4,625.50- as seen in the SCRAP column in Figure 5.11.
Activity and component quantities needed to make 1,000,000 STANDARD FG are issued from inventory, as shown in the TOTAL ACT. QTY (last) column. This corresponds to the value of 46,254.68 in the DEBIT row and TTL ACTUAL (total actual) costs column.

A quantity of 1,000,000 STANDARD FG is delivered to inventory, as shown in the TOTAL ACT. QTY column. This corresponds to the credit value of 50,880.14- in the DELIVERY row and TTL ACTUAL column. The credit value is based on the standard cost estimate, which contains the costs for making 1,100 assemblies, because assembly scrap is planned.

Because total actual debits of 46,254.68 are less than the total actual credits of 50,880.14, a favorable variance of 4,625.46- is shown in the summary (last) row of the TOTAL ACTUAL column.

Now that we've looked at how posting assembly scrap without planning for it results in an unfavorable variance, and how planning assembly scrap and not actually posting it results in a favorable variance, let's see the effect of both planning and posting assembly scrap.

**Assembly Scrap Planned and Actual Scrap Posted**

Compare the reports in the previous two sections with unfavorable and favorable scrap variances to the report in this section with no scrap variance, which results from planning assembly scrap and posting actual scrap, as shown in Figure 5.12.
Scrap Variance

Because assembly scrap is planned and actual scrap is posted, only rounding differences of 0.04- remain in the Scrap variance column.

Activity and component quantities needed to make 1,100,000 STANDARD FG are issued from inventory, as shown in the SFG row and TOTAL ACT.QTY column. This corresponds to the value of 50,880.13 in the DEBIT row and Ttl actual (total actual costs) column.

A quantity of 1,000,000 STANDARD FG is delivered to inventory, as shown in the STANDARD FG row and TOTAL ACT.QTY column. This corresponds to the credit value of 50,880.14- in the DELIVERY row and TOTAL ACTUAL column. The credit value is based on the standard cost estimate, which contains the costs for making 1,100 assemblies, because assembly scrap is planned.

Because total actual debits of 50,880.13 are nearly equal to total actual credits of 50,880.14, variance is nearly eliminated, as shown by the 0.01- in the summary (last) row of the TOTAL TGT column.

Total variance ideally should only include unplanned production costs. If you don't plan scrap, all scrap costs will post as a scrap variance, as demonstrated earlier in Figure 5.10. When you plan assembly scrap based on production statistics, scrap costs are separated from variance, and only the difference between plan and actual scrap costs posts as a variance, as shown in Figure 5.12.

Now that we've examined assembly scrap, let's look at the next type of scrap: component scrap.

<table>
<thead>
<tr>
<th>Transaction</th>
<th>Origin</th>
<th>Origin Text</th>
<th>Total qty</th>
<th>Till actual qty</th>
<th>Variance qty</th>
<th>Scrap qty</th>
<th>Total actual qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confirmations</td>
<td>1303B-5420/LABOR</td>
<td>Production/Labor Hours</td>
<td>5,036.32</td>
<td>5,036.32</td>
<td>0.00</td>
<td>0.00</td>
<td>255,521</td>
</tr>
<tr>
<td></td>
<td>1303B-5420/O/HD</td>
<td>Production/Overhead Hours</td>
<td>6,630.77</td>
<td>6,630.77</td>
<td>0.00</td>
<td>0.01-</td>
<td>255,521</td>
</tr>
<tr>
<td></td>
<td>1303B-5420/MNT</td>
<td>Production/Maintenance Hours</td>
<td>3,684.01</td>
<td>3,684.01</td>
<td>0.00</td>
<td>0.00</td>
<td>255,521</td>
</tr>
<tr>
<td>Goods Issues</td>
<td>1303B-5420/ELEC</td>
<td>Production/Electricity</td>
<td>3,828.96</td>
<td>3,828.96</td>
<td>0.00</td>
<td>0.00</td>
<td>957,151</td>
</tr>
<tr>
<td></td>
<td>1303B-5420/NGAS</td>
<td>Production/Natural Gas</td>
<td>325.19</td>
<td>325.19</td>
<td>0.01-</td>
<td>0.00</td>
<td>7,700</td>
</tr>
<tr>
<td></td>
<td>1303B/40000000001</td>
<td>PRIMER</td>
<td>250.19</td>
<td>250.19</td>
<td>0.01-</td>
<td>0.00</td>
<td>7,700</td>
</tr>
<tr>
<td></td>
<td>1303B/40000000003</td>
<td>URETHANE A 16</td>
<td>6,770.96</td>
<td>6,770.96</td>
<td>0.00</td>
<td>0.01-</td>
<td>6,637,931</td>
</tr>
<tr>
<td></td>
<td>1303B/40000000004</td>
<td>MGO ISO B  MATERIAL</td>
<td>1,678.07</td>
<td>1,678.07</td>
<td>0.00</td>
<td>0.00</td>
<td>1,052,099</td>
</tr>
<tr>
<td></td>
<td>1303B/30000002252</td>
<td>SFG</td>
<td>25,598.54</td>
<td>25,598.54</td>
<td>0.00</td>
<td>0.02-</td>
<td>1,100,000</td>
</tr>
</tbody>
</table>

**Figure 5.12** Assembly Scrap Planned and Actual Scrap Posted
5.3 Component Scrap

Component scrap includes the cost of faulty or lost components in the cost of sales. A case scenario involving component scrap was presented in Section 5.1. If component scrap is not planned, all component scrap costs post as a variance. Although variance can be included at a higher level in profitability reporting, planned component scrap is included at the material or gross profit level as discussed in Chapter 3. This results in more accurate analysis of profitability at the product level.

5.3.1 Component Scrap Definition

Component scrap can be defined as the percentage of component quantity that does not meet required production quality standards before being inserted in the production process. Planned component scrap is treated as additional consumption of the relevant component. Planned component scrap also improves the MRP process by ensuring that you start with an increased component quantity in order to achieve the required product yield. Component scrap is an input scrap because it is detected before use in the production process.

5.3.2 Effect of Component Scrap on Quantities

Scrap quantities are important because they cause scrap values. Let’s follow a simple example of how component scrap applied at the component level affects component quantities. We’ll also examine the interaction between component and assembly scrap.

**Example**

When planning to produce 100 finished PCBs, assembly scrap is calculated first, and component scrap is calculated second. Assembly scrap applied to the finished PCBs increases all component and activity quantities by 10%, as shown in the outlined Quantity costed column in Figure 5.13.

<table>
<thead>
<tr>
<th></th>
<th>Quantity no scrap</th>
<th>Quantity costed</th>
<th>Assembly scrap</th>
<th>Component scrap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finished PCBs</td>
<td>100 PC</td>
<td>100 PC</td>
<td>0 PC</td>
<td>0 PC</td>
</tr>
<tr>
<td>Blank PCBs</td>
<td>100 PC</td>
<td>110 PC</td>
<td>10 PC</td>
<td>0 PC</td>
</tr>
<tr>
<td>BIOS</td>
<td>100 PC</td>
<td>110 PC</td>
<td>10 PC</td>
<td>0 PC</td>
</tr>
<tr>
<td>Operation 1</td>
<td>100 h</td>
<td>110 h</td>
<td>10 h</td>
<td>-</td>
</tr>
<tr>
<td>Processor</td>
<td>100 PC</td>
<td>116 PC</td>
<td>10 PC</td>
<td>6 PC</td>
</tr>
<tr>
<td>Operation 2</td>
<td>100 h</td>
<td>110 h</td>
<td>10 h</td>
<td>-</td>
</tr>
</tbody>
</table>

**Figure 5.13** Component Scrap Increases Component Quantities
A component scrap of 5% applied to the Processor component increases the QUANTITY COSTED from 110 to 116, as shown in the outlined Processor row in Figure 5.13. Because component scrap is applied after assembly scrap, the COMPONENT SCRAP quantity is 6 PC.

Assembly and component scrap increase the plan cost of producing finished PCBs by increasing the plan quantity of components and activities. MRP will propose a production quantity of 110 assemblies, with the expectation that 100 will be delivered to inventory and 10 confirmed as scrap. MRP will also propose the consumption of a quantity of 116 PC of the Processor component, even though only 100 would be needed without planned scrap.

Now that we know what component scrap is and how it affects quantities, let’s look at how to plan component scrap.

### 5.3.3 Component Scrap Master Data

You can plan component scrap in two different master data fields. The most commonly used field is located in the MRP 4 view of the material master, which you can access with Transaction MM02 or via menu path LOGISTICS • MATERIALS MANAGEMENT • MATERIAL MASTER • MATERIAL • CHANGE • IMMEDIATELY. Navigate to the MRP 4 tab to display the screen shown in Figure 5.14.

![Component Scrap Field in the MRP 4 View of Component](image)

Fill in the COMPONENT SCRAP (%) field with a flat rate percentage determined by your production statistics of scrap rates. You should update this field prior to each costing run if the statistics change during the current year. Later in Section 5.3, we’ll examine how component scrap affects standard cost estimates.

Another field used to plan component scrap is located in the BASIC DATA tab of the BOM item. You can view or change BOM item details with Transaction CS02 or via menu path LOGISTICS • PRODUCTION • MASTER DATA • BILLS OF MATERIAL • BILL OF MATERIAL • MATERIAL BOM • CHANGE. Double-click on a BOM item to display the BOM item details, as shown in Figure 5.15.
An entry in the COMPONENT SCRAP (%) field in the BOM item takes priority over an entry in the material master, MRP 4 view. Fill in the COMPONENT SCRAP (%) field with a flat rate percentage determined by your production statistics of scrap rates.

**Case Scenario**

A component is used in many assemblies, and generally the component scrap rate is 10%, which is entered in the material master MRP 4 view of the component. One assembly is manufactured close to the inventory store, and only 5% of components are lost or damaged on the way to production of this assembly. A component scrap rate of 5% is entered in the component BOM item for this particular assembly. The component scrap rate of 5% in the BOM item takes priority over the 10% component scrap rate entered in the material master MRP 4 view of the assembly.

You should update this field prior to each costing run if the statistics change during the current year. We’ll examine how component scrap affects standard cost estimates in the next section.

### 5.3.4 Planned Component Scrap Costs

Planned component scrap costs are included in the standard cost estimate. Let’s compare two cost estimates, one without component scrap, and one with component scrap, to highlight the difference. To display the screen shown in Figure 5.16, use Transaction CK13N or menu path ACCOUNTING • CONTROLLING • PRODUCT COST CONTROLLING • PRODUCT COST PLANNING • MATERIAL COSTING • COST ESTIMATE WITH QUANTITY STRUCTURE.
The **Total value** of the **standard fg** cost estimate without component scrap is 46,254.68. The figures in the **Scrap** and **Scrap quantity** columns indicate that there is no planned output scrap. Now let's display a cost estimate for material **standard fg** with 10% component scrap entered in the material master MRP 4 view, as shown in Figure 5.17.

The **Total value** of the **standard fg** cost estimate with component scrap is 48,581.82, which is higher than the **Total value** of 46,254.68 of the cost estimate without component scrap. This is because the quantity of component SFG has increased by 10%, as shown by comparing the **Quantity** columns in both cost estimates. The **Total value** of component SFG has increased by 10% due to the increase in **Quantity**.

The increase in component quantity is not shown in the **Scrap quantity** column. Component scrap is an **input quantity** variance, not an output scrap variance. Later in this section, we'll explore how to analyze component scrap in detail.

### 5.3.5 Actual Component Scrap Costs

Actual scrap costs usually occur during production order confirmation. This is when activities are confirmed and goods movements occur during backflushing and auto goods receipt, as discussed in detail in Chapter 3. Let's now create a production order and carry out a confirmation to demonstrate how actual component scrap costs occur.
You create a production order with Transaction CO01 or via menu path Logistics • Production • Shop Floor Control • Order • Create • With Material. To display the component overview screen shown in Figure 5.18, from the initial production order header screen, select Goto • Overviews • Components from the menu bar.

Component SFG quantity is automatically increased by 10% due to component scrap in the material master MRP 4 view, as we discussed earlier in Section 5.3. MRP proposes a total quantity of 1,100,000, as shown in the Reqmts qty (requirements quantity) column in the SFG row, even though only 1,000 are required according to the BOM quantities. This is because it is expected that 100 of the components will be lost or damaged on the way to the production line or will not pass inspection for some reason.

Actual component scrap is posted during production order confirmation. In Chapter 3, we looked at a confirmation per operation. In this example, we’ll look at a confirmation at the order header level with Transaction CO15, or via menu path Logistics • Production • Shop Floor Control • Confirmation • Enter • For Order. The screen shown in Figure 5.19 is displayed.
Scrap Variance

Figure 5.19 Confirmation Screen with Component Scrap Planned

Only output scrap, such as assembly or operation scrap, is entered in the CONFIRMED SCRAP field. There is no expected output scrap to confirm, as shown at the TOTAL TO CONFIRM column of the CONFIRMED SCRAP row. Click on the GOODS MOVEMENTS button to display the goods movements screen shown in Figure 5.20.

Figure 5.20 Confirmation Goods Movements Screen

A QUANTITY of 1,100.000 for MATERIAL 300002252 (SFG) defaults from the production order. The production order quantity of component SFG was increased 10% due to component scrap entered in the material master MRP 4 view. If you manually adjust the default component quantity shown in Figure 5.20, you will introduce an unplanned input quantity variance.

After scrap is confirmed, you carry out variance calculation, as discussed in the next section.
5.3.6 Variance Calculation

Variance calculation is done using Transactions KKS6 (individual) and KKS5 (collective) or via menu path Accounting • Controlling • Product Cost Controlling • Cost Object Controlling • Product Cost by Period • Period-End Closing • Single Functions: Product Cost Collector • Variances. The screen shown in Figure 5.21 is displayed following variance calculation. You carry out variance analysis for production and process orders with Transactions KKS2 (individual) and KKS1 (collective).

<table>
<thead>
<tr>
<th>Target cost</th>
<th>Act. costs</th>
<th>Ctrl costs</th>
<th>Variance</th>
<th>Scrap Rem. var.</th>
<th>Input qty var</th>
<th>Actual qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>46,254.68</td>
<td>48,581.82</td>
<td>48,581.82</td>
<td>2,327.14</td>
<td>0.00</td>
<td>2,327.14</td>
<td>1,000.00</td>
</tr>
<tr>
<td>46,254.68</td>
<td>48,581.82</td>
<td>48,581.82</td>
<td>2,327.14</td>
<td>0.00</td>
<td>2,327.14</td>
<td>1,000.00</td>
</tr>
</tbody>
</table>

Figure 5.21 Component Scrap Displays as Input Quantity Variance

There is no scrap variance because component scrap is categorized as an input quantity variance, as shown by the 2,327.14 value in the Input qty var. (input quantity variance) column. Detailed variance analysis for component scrap occurs in product cost collector reports, as explained in the next section.

5.3.7 Component Scrap Target/Actual

During a period or at period end, you may need to carry out further detailed analysis of scrap variance. Before doing so, you should first run variance calculation to update the target costs. You can display and analyze plan versus actual costs in detailed product cost collector reports with Transaction PKBC_PKO or via menu path Accounting • Controlling • Product Cost Controlling • Cost Object Controlling • Product Cost by Period • Information System • Reports for Product Cost by Period • Detailed Reports. A similar report is available for production and process orders with Transaction PKBC_ORD.

Let’s compare three detailed reports to demonstrate how component scrap affects variance.

Component Scrap Not Planned and Actual Scrap Posted

The first product cost collector report contains an unfavorable scrap variance because component scrap is not planned while actual scrap is posted, as shown in Figure 5.22.
Scrap Variance

Component Scrap Not Planned and Actual Scrap Posted

Because component scrap is not planned, actual component scrap posts as an unfavorable input quantity variance, with a value of 2,327.14 in the VARIANCE (total variance) and QTY VARIANCE (input quantity variance) columns.

A component quantity needed to make 1,100,000 STANDARD FG is issued from inventory, as shown in the TOTAL ACT. QTY column. This corresponds to the value of 25,598.54 in the SFG row and Ttl actual (total actual costs) column.

Because the standard cost estimate doesn’t contain planned component scrap, the component target value of 23,271.40 in the SFG row in the TOTAL TGT (total target costs) column is 10% less than the component actual value of 25,598.54. This results in an unfavorable variance of 2,327.14, as shown in the DEBIT row of the QTY VARIANCE column.

Overall, because total actual debits of 48,581.82 are greater than total actual credits of 46,254.68, the result is an unfavorable variance of 2,327.14 in the summary (last) row of the TOTAL ACTUAL column.

Now that we've looked at how posting component scrap without planning for it results in an unfavorable variance, let's see the effect of planning but not posting component scrap.

Component Scrap Planned and Actual Scrap Not Posted

Compare the report in the previous section with an unfavorable variance to a report in this section with a favorable variance, which results from planning component scrap but not posting an actual increase in component quantity, as shown in Figure 5.23.

<table>
<thead>
<tr>
<th>Transact</th>
<th>Origin</th>
<th>Origin (Text)</th>
<th>x</th>
<th>Total qty</th>
<th>x</th>
<th>Ttl actual</th>
<th>x</th>
<th>Variance</th>
<th>x</th>
<th>Scrap</th>
<th>x</th>
<th>Qty variance</th>
<th>x</th>
<th>Total actual qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confirmations</td>
<td>1303/5420/LABOR</td>
<td>Production / Labor Hours</td>
<td>4,578.49</td>
<td>4,578.48</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>232.262</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1303/5420/PHG</td>
<td>Production / Overhead Hours</td>
<td>6,027.98</td>
<td>6,027.98</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>232.262</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1303/5420/MINT</td>
<td>Production / Maintenance Hours</td>
<td>3,349.65</td>
<td>3,349.65</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>232.262</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1303/5420/ELEC</td>
<td>Production / Electricity</td>
<td>770.99</td>
<td>770.99</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>5,317.191</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1303/5420/NATGAS</td>
<td>Production / Natural Gas</td>
<td>348.05</td>
<td>348.05</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>870.137</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goods issued</td>
<td>1303/4000000091</td>
<td>PRIMER</td>
<td>227.44</td>
<td>227.44</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>7,900</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1303/4000000093</td>
<td>UNEQUIPE A 18</td>
<td>6,156.17</td>
<td>6,156.17</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>9,634.463</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1303/4000000094</td>
<td>MODISO B MATERIAL</td>
<td>1,525.52</td>
<td>1,525.52</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>995.157</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1303/300002552</td>
<td>SFG</td>
<td>23,271.40</td>
<td>25,598.54</td>
<td>2,327.14</td>
<td>0.00</td>
<td>0.00</td>
<td>1,106.009</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Debit</td>
<td></td>
<td></td>
<td>46,254.68</td>
<td>48,581.82</td>
<td>2,327.14</td>
<td>0.00</td>
<td>0.00</td>
<td>2,327.14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goods receipt</td>
<td>1303/100010692</td>
<td>STANDARD FG</td>
<td>46,254.69</td>
<td>46,254.68</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>1,000.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delivery</td>
<td></td>
<td></td>
<td>46,254.68</td>
<td>46,254.68</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.00</td>
<td>2,327.14</td>
<td>2,327.14</td>
<td>0.00</td>
<td>0.00</td>
<td>2,327.14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 5.22  Component Scrap Not Planned and Actual Scrap Posted
Because component scrap is planned, all planned scrap that's not actually posted results in a favorable variance with a value of 2,327.14- in the Qty variance (input quantity variance) column.

A component quantity needed to make 1,000,000 STANDARD FG is issued from inventory, as shown in the Total act.qty column, and there is no increase in component quantity. This corresponds to the component actual value of 23,271.40 in the SFG row and Ttl actual (total actual costs) column. This results in total actual debits of 46,254.68, as shown in the Debit row and the Ttl actual column.

Because the standard cost estimate contains 10% planned component scrap, the component target value of 25,598.54 in the SFG row in the Total tgt (total target costs) column is 10% greater than the component actual value of 23,271.40. This results in a favorable variance of 2,327.14-, as shown in the Debit row and Qty variance column.

Overall, because total actual debits of 46,254.68 are less than total actual total credits of 48,581.82, the result is a favorable variance of 2,327.14- in the summary row of the Total actual column.

Now that we've looked at how posting component scrap without planning for it results in an unfavorable variance, and how planning component scrap and not actually posting it results in a favorable variance, let's see the effect of both planning and posting component scrap.
Component Scrap Planned and Actual Scrap Posted

Compare the reports in the previous two sections with unfavorable and favorable variances to the report in this section with no variance, since component scrap is planned and actual component quantity is posted, as shown in Figure 5.24.

Because component scrap is planned, and actual component quantities are posted as planned, no variances remain in the VARIANCE or QT VAR. columns.

A component quantity needed to make 1,100,000 of STANDARD FG is issued from inventory, as shown in the TOTAL ACT. QTY column of the SFG row. This corresponds to the value of 25,598.54 in the TTL ACTUAL (total actual costs) column of the SFG row.

Because the standard cost estimate contains 10% planned component scrap, the component target value of 25,598.54 in the SFG row in the TOTAL TGT (total target costs) column is the same as the component actual value of 25,598.54. This results in a value of 0.00 in the QTY VARIANCE column of the DEBIT row.

Overall, because total actual debits of 48,581.82 are equal to total actual credits of 48,581.82, the result is a value of 0.00 in the summary row of the TTL ACTUAL column.

Total variance ideally should only include unplanned production costs. If you don't plan scrap, all scrap costs will post as a variance, as demonstrated in Figure 5.22. When you plan component scrap based on production statistics, scrap costs are included in the cost estimate, and only the difference between plan and actual component scrap costs posts as an input quantity variance, as demonstrated in Figure 5.24.
Now that we’ve examined assembly and component scrap, let’s look at the third type of scrap: operation scrap.

5.4 Operation Scrap

Planned operation scrap includes the entire cost of faulty or lost assemblies in the cost of sales. If operation scrap is not planned, all scrap costs post as a variance. Although variances can be included at a higher level in profitability reporting, planned operation scrap is included at the material or gross profit level, as we discussed in Chapter 3. This results in more accurate analysis of profitability at the product level.

5.4.1 Operation Scrap Definition

Operation scrap can be defined as the percentage of assembly quantity that does not meet required production quality standards. For example, planned operation scrap of 20% means that if you start an operation with 125 pieces, you will lose 20% (25 pieces) during the operation. One hundred pieces will be available for the subsequent operation. Operation scrap is an output scrap because it reduces the planned output quantity in the production process.

Operation scrap has different effects on quantities, depending on whether it is entered in the routing, BOM item, or both. We’ll now discuss the three possible options in the following subsections.

Operation Scrap in Routing

Operation scrap entered in the routing ensures that faulty assemblies are discarded before valuable components are inserted. The output quantity of assembly operations is reduced by the operation scrap amount before valuable components are inserted in a subsequent operation. This reduces wastage of valuable components discarded in assemblies.

Case Scenario

A music CD packaging facility inspects a CD case for scratches in operation 010 and inserts a CD in the case in operation 020. Operation scrap of 20% is applied at operation 010. For every 100 CD cases inspected, 20 are discarded, and CDs are inserted in 80 CD cases in operation 020. Because CDs are more expensive than cases, damaged cases are discarded before inserting the CDs.
However, the manufacturer still has a requirement to assemble 100 CDs in cases. Planned assembly scrap of 25% is added to the assembly material master. MRP generates a requirement for inspection of 125 cases in operation 010, and 20%, or 25 cases, are discarded due to operation scrap. One hundred cases are available for operation 020.

Now that we’ve discussed operation scrap entered in routings, let’s see how operation scrap entered in BOM items works.

**Operation Scrap in BOM Item**

Operation scrap entered in the *BOM item* ensures the input quantity of valuable components inserted in an assembly is reduced. Assembly scrap entered in the material master of the assembly can be ignored by selecting a net checkbox. This allows close control over the planning and use of individual valuable components in an assembly. This may also be useful when a component can be salvaged and reused, even if the assembly does not pass quality inspection. If BOM operation scrap is not entered, assembly scrap from the material master is used.

**Operation Scrap in Operation and BOM Item**

Operation scrap entered in *both* the routing and BOM item reduces the *output* quantity of an assembly before valuable components are inserted in the next operation. It also controls the *input* quantity of individual valuable components in the assembly.

Routing operation scrap refers to the *activity* quantity used, while BOM operation scrap refers to the *material* quantity used.

**5.4.2 Effect of Operation Scrap on Quantities**

Scrap quantities are important because they cause scrap values. Let’s follow a simple example of how operation scrap applied at the operation level affects component and activity quantities.

You begin a process with 100 finished PCBs. If planned operation scrap of 10% is entered in the first operation, and 20% is entered in the second operation in the routing of the finished PCB, a quantity of 72 finished PCBs will be available at the end of the second operation, as shown in Figure 5.25.
By decreasing operation output quantity, operation scrap increases the cost of producing the finished PCBs. MRP will propose a production quantity of 100 assemblies, with the expectation that 72 PC will be delivered to inventory, and 28 partial assemblies will be confirmed as scrap. No operation scrap is entered in the BOM item in this example.

Now that we know what operation scrap is and how it affects scrap quantities, we'll investigate how to plan operation scrap.

### 5.4.3 Operation Scrap Master Data

You can plan operation scrap in two master data fields. The most commonly used field is located in the routing operation details view. To enter operation scrap, as displayed in Figure 5.26, use Transaction CA02 or menu path LOGISTICS • PRODUCTION • MASTER DATA • ROUTINGS • ROUTINGS • STANDARD ROUTINGS.
You enter operation scrap in the **Scrap in %** field of the **General data** section of the routing operation details screen.

Another field used to plan operation scrap is located in the **Basic Data** tab of the BOM item. You can view or change BOM item details with Transaction CS02 or via menu path **Logistics • Production • Master Data • Bills of Material • Bill of Material • Material BOM • Change**. Double-click on a BOM item to display BOM item details, as shown in Figure 5.27.

![Figure 5.27 Operation Scrap Field in BOM Item](image)

You enter operation scrap in the **Operation scrap in %** field of the **Basic Data** tab of the BOM item. The **Net ID** checkbox is selected to ignore assembly scrap, and it must be selected if you enter operation scrap. For a particular component, operation scrap allows you to enter a different scrap percentage, usually less than the assembly scrap percentage.

### 5.4.4 Planned Operation Scrap Costs

Planned operation scrap costs are included in the standard cost estimate. Let’s compare two cost estimates, one **without** operation scrap, and one **with** operation scrap, to highlight the difference. To display the screen shown in Figure 5.28, use Transaction CK13N or menu path **Accounting • Controlling • Product Cost Controlling • Product Cost Planning • Material Costing • Cost Estimate with Quantity Structure**.
The **Total value** of the STANDARD FG cost estimate **without** operation scrap is 46,254.68. The figures in the Scrap and Scrap Quantity columns indicate there is no planned output scrap. Now let’s display a cost estimate for material STANDARD FG with 10% operation scrap entered in the first operation of the routing, as shown in Figure 5.29.

The **Total value** of the STANDARD FG cost estimate **with** operation scrap is 46,254.68, the same as **without** operation scrap. However, the output Quantity of the cost estimate with operation scrap is reduced by 10%, from 1,000,000 **without** operation scrap, to 900,000 **with** operation scrap. It costs the same to produce 900,000 with operation scrap as it does to produce 1,000,000 **without** operation scrap, so per unit cost is increased by operation scrap.

**Tip**

To quickly determine if operation scrap is included in a cost estimate, click on the cost estimate Qty Strct. (quantity structure) tab, which displays the screen shown in Figure 5.30.
The **Operation Scrap Only** text indicates that operation scrap is included in the cost estimate, without the need to refer to operation details. Information text also appears in the same tab if assembly scrap is included in the cost estimate as discussed in Section 5.2.

Now that we've looked at planning for operation scrap with master data entries and how it affects cost estimates, let's examine how actual operation scrap postings occur.

### 5.4.5 Actual Operation Scrap Costs

Actual scrap costs usually occur during production order confirmation. That is when operation output is either confirmed as yield or as scrap. We'll now create a production order and carry out a confirmation to demonstrate how actual operation scrap costs occur.

You create a production order with Transaction CO01 or via menu path **LOGISTICS • PRODUCTION • SHOP FLOOR CONTROL • ORDER • CREATE • WITH MATERIAL**. From the production order header screen, select **GOTO • OVERVIEWS • OPERATIONS** from the menu bar to display the operations overview screen. Then double-click on the operation in which you entered operation scrap in Section 5.4 to display the production order operation detail screen shown in Figure 5.31.

![Production Order Operation Scrap Field](image)

**Figure 5.31** Production Order Operation Scrap Field

Operation Scrap defaults from the routing, as discussed in Section 5.4. Production order total quantity is unchanged by planned operation scrap. MRP proposes
a quantity of 1,000, with plan yield of 900 and an operation scrap quantity of 100.

Actual operation scrap is posted during production order confirmation. A confirmed scrap field is available, and planned operation scrap defaults from the production order when using confirmation Transaction CO11N or menu path LOGISTICS • PRODUCTION • SHOP FLOOR CONTROL • CONFIRMATION • ENTER • FOR OPERATION • TIME TICKET, as shown in Figure 5.32.

![Figure 5.32 Production Order Confirmation Screen Includes Scrap Field](image)

The **PLANNED TOTAL YIELD** quantity of 1,000.000 is reduced by default operation **SCRAP** quantity of 100.000, resulting in a default **YIELD** quantity of 900.000. If the default operation **SCRAP** quantity is manually changed, a scrap variance will result.

After scrap is confirmed, you carry out variance calculation, as discussed next.

### 5.4.6 Variance Calculation

Variance calculation is done using Transactions KKS6 (individual) and KKS5 (collective), or accessing menu path ACCOUNTING • CONTROLLING • PRODUCT COST CONTROLLING • COST OBJECT CONTROLLING • PRODUCT COST BY PERIOD • PERIOD-END CLOSING • SINGLE FUNCTIONS: PRODUCT COST COLLECTOR • VARIANCES. The screen shown in Figure 5.33 is displayed following variance analysis. You carry out variance analysis for production and process orders with Transactions KKS2 (individual) and KKS1 (collective).
Operation scrap has reduced the expected Actual QTY delivered to inventory to 900,000 from 1,000,000. Operation scrap doesn’t increase the manufactured quantity, so after the planned operation scrap quantity is actually confirmed as scrap, the output quantity is less than the quantity required. You need to plan assembly scrap as well as operation scrap in order to output the required quantity, as described in the case scenario in Section 5.4.

The unfavorable Scrap variance of 4,625.48 indicates that operation scrap was posted but not planned in this example. Scrap variance is subtracted from total variance, which simplifies the task of analyzing total variance.

Click on the Scrap button (not shown) in the variance calculation output screen to display details of the scrap variance by cost element and operation.

Now that we’ve examined how to plan and post actual scrap and calculate variance, let’s look at how to report and analyze operation scrap postings.

### 5.4.7 Operation Scrap Target/Actual

During a period or at period end, you may need to do further detailed analysis of scrap variance. Before analysis during a period, you should first run variance calculation to update the target costs. You can display and analyze target versus actual costs in detailed product cost collector reports with Transaction PKBC_PKO or via menu path Accounting • Controlling • Product Cost Controlling • Cost Object Controlling • Product Cost by Period • Information System • Reports for Product Cost by Period • Detailed Reports. A similar report is available for production and process orders with Transaction PKBC_ORD.

Let’s compare a series of three detailed reports to demonstrate how operation scrap affects variance.

#### Operation Scrap Not Planned and Actual Scrap Posted

The first report contains an unfavorable scrap variance, which results from not planning operation scrap, while posting actual scrap, as shown in Figure 5.34.
Because operation scrap is not planned, actual operation scrap posts as an unfavorable variance with a value of 4,625.48 in the Scrap variance column.

Activity and component quantities needed to make 1,000,000 STANDARD FG are issued from inventory, as shown in the Total Act.Qty column. This corresponds to the value of 46,254.68 in the TTL ACTUAL (total actual costs) column of the Debit row.

A quantity of 900,000 STANDARD FG is delivered to inventory, as shown in the Total Act.Qty column. This corresponds to the credit value of 41,629.21- in the TTL ACTUAL column of the Delivery row.

Because total actual debits of 46,254.68 are greater than the total actual credits of 41,629.21, an unfavorable variance of 4,625.47 results, as shown in the summary row of the Total actual column.

Now that we’ve looked at how posting operation scrap without planning for it results in an unfavorable variance, let’s see the effect of planning but not posting operation scrap.

**Operation Scrap Planned and Actual Scrap Not Posted**

Compare the report in the previous section with an unfavorable scrap variance to a report in this section with a favorable scrap variance, which results from planning component scrap but not posting actual scrap, as shown in Figure 5.35.
Because operation scrap is planned, all planned scrap not actually posted results in a favorable scrap variance, with a value of 4,625.47- in the Scrap column.

Activity and component quantities needed to make 900,000 STANDARD FG are issued from inventory, as shown in the Total Act Qty column. This corresponds to the value of 41,629.22 in the Ttl Actual (total actual costs) column of the Debit row.

A quantity of 900,000 STANDARD FG is delivered to inventory, as shown in the Total Act Qty column. This corresponds to the credit value of 46,254.68 in the Ttl Actual column of the Delivery row.

The credit value is based on the standard cost estimate, which contains the costs for making 1,000 assemblies because operation scrap is planned.

Because total actual debits of 41,629.22 are less than the total actual credits of 46,254.68, a favorable variance of 4,625.46- is shown in the summary row of the Ttl Actual column.

Now that we've looked at how posting operation scrap and not planning for it results in an unfavorable variance, and how planning operation scrap and not actually posting it results in a favorable variance, let's see the effect of both planning and posting operation scrap.
Assembly Scrap Planned and Actual Scrap Posted

Compare the reports in the previous two sections with favorable and unfavorable scrap variances to the report in this section with no scrap variance, which results from planning operation scrap and posting actual scrap, as shown in Figure 5.36.

Because operation scrap is planned and actual scrap is posted, scrap variance is eliminated, as shown in the summary row of the SCRAP variance column.

Activity and component quantities needed to make 1,000,000 STANDARD FG are issued from inventory, as shown in the TOTAL ACT. QTY column. This corresponds to the value of 46,254.67 in the Ttl actual (total actual costs) column of the DEBIT row.

A quantity of 900,000 STANDARD FG is delivered to inventory, as shown in the TOTAL ACT. QTY column. This corresponds to the credit value of 46,254.68 in the Ttl actual column of the DELIVERY row. The credit value is based on the standard cost estimate, which contains the costs for making 1,000 assemblies because operation scrap is planned.

Because the total actual debits of 46,254.67 are nearly equal to the total actual credits of 46,254.68, variance is nearly eliminated, as shown by the 0.01- in the summary row of the Ttl actual column.

Ideally, total variance should only include unplanned production costs. If you don't plan scrap, all assembly and operations scrap costs will post as a scrap variance, as was demonstrated in Figure 5.34. When you plan operation scrap based on production
statistics, scrap costs are separated from variance, and only the difference between plan and actual scrap costs post as a variance, as demonstrated in Figure 5.36.

Now that we’ve carried out a detailed analysis of each of the three types of scrap, let’s see an example with all three types of scrap combined.

## 5.5 Combined Scrap

In this section, we’ll follow an example beginning with component scrap, and then progressively combine all three types of scrap in the following subsections.

### 5.5.1 Component Scrap

Component scrap increases input component quantity, as shown in Figure 5.37.

The BOM requires 100 blank PCBs, 100 processors, and 100 BIOS assemblies to manufacture 100 finished PCBs. The routing for the finished PCBs contains two operations that consume production activities. The blank PCBs and processors are assembled in operation 1, and the BIOS assemblies are added in operation 2.

To manufacture 100 PCBs, 104 BIOS assemblies are required. You can plan 4% component scrap in the BIOS assembly material master, BOM item, or both. The component scrap that you enter in the material master applies to all materials containing the BIOS assemblies as components. The component scrap that you
enter in the BOM item takes priority over the component scrap that is entered in the material master.

### 5.5.2 Component and Operation Scrap

Next we need to establish that an operation scrap of 10% occurs in operation 1, and 20% occurs in operation 2. You plan for operation scrap in the routing operation details, which reduces the activity quantity corresponding to the yield from the previous operation. Let’s look at an example as shown in Figure 5.38.

![Figure 5.38](image)

**Figure 5.38** Operation Scrap Reduces Output Quantity

Output scrap reduces the operation output yield. In this example, the operation scrap of 10% reduces operation 1 output from 100 PC to 90 PC. The operation scrap of 20% reduces operation 2 output from 90 PC to 72 PC. You can plan routing operation scrap in the operation detail screen previously shown in Figure 5.26.

### 5.5.3 Component, Operation, and Assembly Scrap

Let’s now look at a scenario involving the manufacture of 100 PC finished PCBs instead of 72 PC. You need to increase the input quantity of components and subassemblies to manufacture 100 finished PCBs. You achieve this by entering 38.89% assembly scrap in the finished PCB material master MRP 1 view.

Let’s analyze how assembly scrap increases the quantity of finished PCBs in Figure 5.39.
Plan assembly scrap of 38.89% increases the output quantity of finished PCBs from 72 PC to 100 PC. Assembly scrap also increases the input quantity of components from 100 PC to 139 PC. Because 4% component scrap is also planned for the BIOS, the input quantity is increased from 104 PC to 145 PC. The BIOS quantity of 145 PC is calculated as follows:

1. **Assembly Scrap**
   The planned assembly scrap of 38.89% entered in the finished PCB material master MRP 1 view increases the BIOS quantity from 100 PC to 139 PC.

2. **Component Scrap**
   The planned component scrap of 4% entered in the BIOS material master MRP 4 view, or the BOM item details screen, increases the BIOS quantity from 139 PC to 145 PC.

We've corrected the output quantity of finished PCBs with plan assembly scrap. However, the input quantity of BIOS is 145 PC, while the required quantity is 125, which enters operation 2 from operation 1 as shown in Figure 5.39.
Let’s now explore how to correct the component quantity with BOM item operation scrap.

### 5.5.4 BOM Item Operation Scrap

Operation scrap entered in the routing reduces the activity quantity, rather than the component quantity. You also need to enter operation scrap of 20% in the BOM item in order to ensure that the correct quantity of BIOS assemblies is removed from inventory. The resulting quantities are shown in Figure 5.40.

**Figure 5.40** BOM Item Operation Scrap Corrects Component Quantity

BOM item operation scrap reduces the BIOS input quantity from 145 PC, shown in Figure 5.39, to 125 PC as shown in Figure 5.40. This number corresponds with the quantity of 125, which enters operation 2 from operation 1. You plan BOM item operation scrap as previously shown in Figure 5.27. The BIOS quantity of 125 PC shown in Figure 5.40 is calculated as follows:

1. **Net ID Checkbox**
   When you plan BOM item operation scrap, you’re required to select the Net ID checkbox, which ignores assembly scrap. At this stage, the component quantity is 100 PC.

2. **Operation Scrap**
   Plan operation scrap entered in the BOM item increases the component quantity by 20%. At this stage, the component quantity is 120 PC.
3. **Component Scrap**

Plan component scrap entered in the BOM item increases the component quantity by 4%. At this stage, the component quantity is 125 PC.

By following these steps, we removed the assembly scrap of 38.89% from the BOM item, replaced it with operation scrap of 20%, and then increased the quantity by 4% component scrap.

### 5.5.5 Operation and Assembly Scrap

Let’s now analyze our scenario without component scrap to help further illustrate how plan scrap affects quantities. Component plan scrap has been removed from the scenario shown in Figure 5.41.

<table>
<thead>
<tr>
<th>Plan: 100 PC</th>
<th>Routing</th>
<th>BOM</th>
<th>Input quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation scrap 10%</td>
<td>139</td>
<td>Blank PCBs</td>
<td>139 PC</td>
</tr>
<tr>
<td>-14</td>
<td>Processor</td>
<td>139 PC</td>
<td></td>
</tr>
<tr>
<td>(139 h)</td>
<td>Operation 1</td>
<td>Install/test</td>
<td></td>
</tr>
<tr>
<td>Operation scrap 20%</td>
<td>125</td>
<td>BIOS</td>
<td>120 PC</td>
</tr>
<tr>
<td>-25</td>
<td>Component scrap 0%</td>
<td>Net ID selected</td>
<td></td>
</tr>
<tr>
<td>(125 h)</td>
<td>Operation 2</td>
<td>Install/test</td>
<td></td>
</tr>
<tr>
<td>Assembly scrap 38.89%</td>
<td>Finished PCBs</td>
<td>100 PC</td>
<td></td>
</tr>
</tbody>
</table>

**Figure 5.41** Operation and Assembly Scrap without Component Scrap

We have selected the Net ID checkbox, which ensures assembly scrap is ignored for the BIOS component. Operation scrap of 20% then increases the BIOS quantity from 100 PC to 120 PC.

Let’s look at how you can automatically calculate the assembly scrap required to compensate for reduced production output due to operation scrap.

### 5.5.6 Calculate Assembly Scrap

Plan operation scrap records how many products will be lost or damaged in an operation. It reduces the output of an operation into subsequent operations. You
can enter plan assembly scrap in the material master MRP 1 view to achieve the required production output in combination with plan operation scrap.

If operation scrap occurs in many operations and in many assemblies, it can be time-consuming to manually calculate the required assembly scrap. You can automatically calculate assembly scrap and have the system populate the corresponding material master field.

**Assembly Scrap Formula**

Let's follow an example to illustrate how assembly scrap is calculated.

- Operation scrap reduces operation output quantity:
  - Input quantity 1,000 units
  - Operation 10 contains 20% operation scrap: Output quantity 800 units
  - Operation 20 contains 20% operation scrap: Output quantity 640 units
- Assembly scrap required to produce 1,000 assemblies:
  - Input quantity 1,562 units achieved with assembly scrap of 56.25%
  - Operation 10 contains 20% operation scrap: Output quantity 1,250 units
  - Operation 20 contains 20% operation scrap: Output quantity 1,000 units
- The system calculates assembly scrap with the following formula:
  \[ \text{Assembly scrap} = \frac{1}{1 - \text{operation scrap}} \times \frac{1}{1 - \text{operation scrap}} - 1 \]
- You calculate assembly scrap in this example with the following values:
  \[ \text{Assembly scrap} = \frac{1}{1 - 0.2} \times \frac{1}{1 - 0.2} - 1 \]
  \[ = (1.25 \times 1.25) - 1 \]
  \[ = 0.5625 \]
  \[ = 56.25\% \]

Now that we've examined the formula to calculate assembly scrap, let's see how you get the system to automatically calculate assembly scrap.

**Assembly Scrap Calculation**

You calculate assembly scrap automatically with Transaction CA97 or via menu path Logistics • Production • Master Data • Routings • Extras • Material
**Master • Schedule Material Master.** The selection screen shown in Figure 5.42 is displayed.

![Image](image-url)

**Figure 5.42 Transfer Scheduling Results to Material Master**

This transaction allows you to transfer scheduling results from routings to material masters. You can transfer setup and teardown time, processing time, inter-operation time, assembly scrap, and base quantity. The transfer ensures consistency of scheduling data between routings and material masters, which is mandatory for requirements and detailed planning.

Select the **Update with assembly scrap** checkbox to update the **Assembly scrap** field in the material master MRP1 view with the automatically calculated assembly scrap.

**Note**

If scheduling does not calculate an assembly scrap value, then the material master assembly scrap value is overwritten with the value zero.

Type in your entries in the selection screen in Figure 5.42 and press **Enter** to display the results screen shown in Figure 5.43.
The results screen lists the material masters that were selected and displays the success of the update.

Now that we've discussed how to automatically calculate assembly scrap, we've reached the end of this chapter on scrap variance. Let's review what we covered.

**5.6 Summary**

In this chapter, we discussed scrap basics, including the difference between scrap and rework, and presented a case scenario involving the interaction between assembly and component scrap, and the decision of whether to scrap or rework. We also briefly looked at the definition of the three types of scrap: assembly scrap, component scrap, and operation scrap.

We then analyzed each of the three types of scrap at a detailed level and looked at diagrams to help you understand the effect of scrap on quantities and costs. We also looked at how to plan scrap by making master data entries, and we examined the priorities if two entries are made.

We analyzed the effect of plan scrap on cost estimates by analyzing cost estimates before and after the plan scrap entries. We also looked at a shortcut for determining if assembly and/or operation scrap influence a cost estimate: clicking on the cost estimate quantity structure tab.

We explained how actual scrap postings occur, by first creating a production order and then carrying out confirmations involving scrap. We then carried out variance calculation and analyzed the output results screen.
We then examined three detailed reports for each type of scrap:

- First, we analyzed the effect of not planning scrap and then posting actual scrap, and the resulting unfavorable variance.
- Second, we saw the effect of planning for scrap but not actually posting scrap, and the resulting favorable variance.
- Third, we examined the ideal scenario of planning for scrap and then posting the planned amounts of scrap. One of the main benefits of this scenario is the reduction in total variance, making it easier to analyze other variance categories, as described in Chapter 4.

Finally, we followed scenarios combining the three types of scrap, and then examined how to automatically calculate assembly scrap.

In Chapter 6, we'll walk through the many excellent standard reports available for CO reporting in general and for variance reporting in particular.
Index

A
Activity
  Confirmation, 52, 97, 100, 104, 110, 176
  Consumption, 154, 157
  Price, 36, 42, 66
  Quantity, 36, 152, 154, 177, 198
  Rate, 41, 51
  Rates, 150
  Type, 40, 155
Activity-dependent planning, 152, 154
Activity-independent costs, 154, 155
Activity previously confirmed, 107
Activity scheduled quantity, 23
Actual
  Cost, 23, 119, 183, 193, 204, 236
  Credit, 119
  Debit, 151
  Scrap, 16, 114, 176
Actual assembly scrap, 181
Actual costing, 172, 253, 259
Actual cost splitting, 155
Actual price calculation, 158, 162
Actual price indicator, 160
Actual procurement lot size, 48
Actual scrap, 16
Allocated actual cost, 156
Alternate summarization hierarchy, 227
Alternative cost estimate, 121
Alternative methods of manufacture, 52
  Actual, 181
  Analysis, 183
  BOM item, 178
  Confirmation, 181
  Cost estimate text, 180
  Definition, 177
  Example, 177
  Master data, 178
  Material master, 178
  Output scrap, 177
  Plan, 179
Quantity, 177
  Without planning, 184
  With planning, 184
Assessment, 150
Auto goods receipt, 181
Automatic goods receipt, 105

B
Backflushing, 105, 181
Balance sheet account, 131, 271
Base, 55
Bill of material (BOM), 26, 45, 50, 50, 87
  Alternative, 137
  Lowest-level, 51
BOM item, 51, 178, 188, 200
  Bulk material, 51
  Quantity field, 51
  Relevancy to costing indicator, 51
Bottom line, 102
Building lease, 54
Bulk material, 51

C
Calculation base
  Cost element, 55
  Cost element group, 56
  Overhead, 55
  Rows, 55
Change in WIP, 133
Collective processing time, 139
Company assets, 131
Component, 25, 98
  Lower-level, 35
  Purchasing requirements, 38
Component scrap, 176, 187
  Actual, 190
  Analysis, 193
Index

BOM item, 188
Case scenario, 189
Definition, 187
Field, 179
Input quantity variance, 190
Master data, 188
Material master, 188
Plan, 189
Priority, 189
Quantity, 187
Without planning, 190
With planning, 190
Component standard price, 98
Condition technique, 221
Confirmation, 181, 190
Activity, 143
Default yield, 106
Expected quantity, 106
Labor, 143
Per operation, 108
Production order, 104, 108
Quantities, 106
Screen, 143
Time event, 105
Time ticket, 105
Confirmed scrap, 182, 203
Confirmed yield, 134
Consumption account, 97
Control costs, 119, 137, 143
Controlling, 97
Area, 219
Level, 87
CO-PA, 111, 144, 150
CO product group, 222
Assign materials, 223
Create, 222
Hierarchy, 223
Corrective action, 122
Cost
Activity, 38
Activity-independent, 40
Actual, 119
Labor, 26, 38, 52
Material, 51
Overhead, 52, 54
Primary, 38
Target, 131
Unit, 127
Variable, 38, 40
Cost center, 51, 100
Activity quantity, 44
Actual costs, 155
Actual/plan reports, 147
Analyze balance, 147
Assessment, 101
Assignment, 166
Balance, 147, 149, 154, 155
Credit, 55
Credits, 149, 157
Debits, 149, 158
Fixed cost variance, 158
Functional area, 258
Input price variance, 156
Input quantity variance, 156
Input variance, 156
Line items, 150
Manager, 38
Output variance, 157
Overhead, 99
Plan credits, 150
Plan debits, 149
Planned costs, 26
Planning, 38
Primary planning, 38
Production, 150, 154
Profit center, 264
Purchasing, 165
Remaining input variance, 157
Report, 42, 149
Resource-usage variance, 157
Target cost analysis, 147, 154
Target costs, 151
Under/over absorption, 102, 107
Under/overabsorption, 147
Variance, 42, 154, 173
Variance analysis, 147, 154
Variance calculation, 155
Cost center accounting, 23, 35, 37
Cost component, 58
Available, 60
Component material cost, 59
Configuration, 59
Labor, 58, 60
Material, 58
Overhead, 58
Roll up costs, 59
Split, 58
Structure, 59
Cost component structure, 60
Costed multilevel BOM, 66
Cost element, 38, 55, 155
Button, 141
Category, 97
Change, 164
Default account assignment, 164
Group, 155
PPV, 166
Primary, 97
Secondary, 99
Cost estimate, 141
Alternative material, 121
Finish date, 66
Itemization, 138
Mixed, 125
Modified standard, 122
Preliminary, 16, 44, 112, 117, 131, 137
Release, 138
Released, 176
Standard, 16, 112, 117, 137, 138
Start date, 66
Costing lot size, 48, 65, 127, 168, 170
Costing run, 16, 72, 117, 163, 171
Analysis, 79
Background processing, 77
Company code, 81
Costing, 78
Costing level, 78
Costing variant, 81
Costing version, 81
Create, 72
Dates tab, 74
Edit, 74
Execute column, 75
Flow step column, 74
Log, 77
Log by costing levels, 78
Marking, 81
Master data errors, 72
Material overview, 76
Other prices, 83
Parameter, 74
Print log, 77
Release, 83
Release date, 72
Rerun, 81
Selection, 75
Selection screen, 73
Structural explosion, 76
Costing sheet, 52, 54, 128
Available, 54
Base, 55
Calculation rate, 56
Components, 54
Configuration, 54
Cost element, 55
Credit key, 57
Dependency, 56
Example, 54
Fixed cost, 56
Maintenance, 58
Origin group, 56
Overhead rate, 56
Percentage rate, 56
Variable cost, 56
Costing status, 71
Costing step, 78
Costing type, 62
Costing variant, 15, 53, 61
Components, 62
Configuration, 44, 61
Costing type, 62
Date control, 66
Permitted, 69
PPC2, 121
Transfer control, 65
Costing version, 65, 94
Costing view, 47
Cost object, 97
Cost object hierarchy, 122
Actual costs, 122
Index

Equivalences, 122
Target cost version 3, 122
Cost of sales, 154, 176, 187
Costs
  Actual, 97, 253
  Cost center, 107
  Primary, 97
  Production order, 98
  Report actual, 109
  Secondary, 97
Costs based on field, 67
Create production order, 103
Credit, 55
Credit key, 57
  Actual overhead debit, 58
  Cost center, 57
  Fixed costs, 58
  Plan overhead cost, 58
  Secondary cost element, 58
  Variable costs, 58
Current planned price, 49
Customer, 219

D

Data collection, 219, 224, 231
  Hierarchy node, 232
  Objects, 233
  Product drilldown, 225
  Results screen, 225, 233
  Summarization time frame, 232
Date control, 66
Dates tab, 65
Debit, 98
Default
  Account assignment, 164, 165
  Activities, 107
  Activity quantity, 106
  Assembly scrap, 182
  Quantities, 106
  Yield, 106
  Variance key, 115
Deletion flag
  Activate, 135
  Revoke, 135
Dependency field, 56
Dependent requirements, 26, 28
Detailed analysis, 109
Detailed report, 16, 217, 235
  Cost element details, 235
  Drildown, 235
  Source document, 236
Detail list checkbox, 139, 145
Drill down, 110
Drilldown functionality, 217
Drilling down, 143, 172

E

Edit costing run, 72
Electricity, 128
Equivalence numbers, 155
Error messages, 45
Estimated purchase price, 49
Exception message, 30
Exception rules, 140, 217, 235
Expected cost, 111
Expense account, 98
External activity, 149
External business transactions, 97
External procurement, 26, 32, 47
External vendor, 98

F

Final confirmation, 105
Final operation, 106
Financial accounting, 98, 110
Finished good, 51
Finished product, 172
Fiscal period, 128
Fiscal year, 38
Fixed component, 154
Fixed cost variance, 158
Flow step column, 74
Future planned price, 49
Future purchasing requirements, 34
### G
- General ledger account, 110
- Goods issue, 123
- Goods movement, 106, 110, 192
- Goods receipt, 52, 123, 138, 163, 265
  - Quantity, 134
  - Valuated, 143
- GR/IR, 98
  - Account, 163
- Gross profit, 102, 177, 187

### H
- Highest-level report, 217
- History tab, 89

### I
- Incremental debit, 159
- Information system, 155
- In-house production, 26
- Initial planning, 38, 110
- Input price variance, 156
- Input quantity variance, 107, 143
- Input variance, 156
- Insurance, 54
- Internal order, 97
- Inventory, 97, 101, 111, 138
  - Valuation, 45, 98, 117
  - Revaluation, 71, 81

### L
- Labor allocation, 100
- Legacy system, 41
- Line item details, 110, 142, 237
- Line item postings, 166
- Line item report, 16, 145, 146, 217, 237
  - Activity confirmations, 239
  - Goods receipt, 239
  - Material documents, 239

- Posting date, 238
- Quantity, 239
- Source documents, 239
- Logistics master data, 44
- Long-term MRP, 32, 35
- Long-term planning, 23, 25, 36, 43, 44
  - BOM, 29
  - Collective run, 29
  - MRP list, 30
  - Planning horizon, 29
  - Planning scenario, 26
  - Processing key, 29
  - Run, 28
  - Simulative dependent requirements, 29
  - Simulative planned orders, 29
  - Version active indicator, 26
- Lot size, 127
- Lower-level cost estimate, 89

### M
- Maintain Version Configuration, 159
- Manually insert operation, 108
- Manufacturing company, 59
- Manufacturing order, 143
  - Efficiency, 52
- Margin analysis, 102, 154, 176
  - Gross profit, 102
  - Net profit, 102
  - Operating expenses, 102
  - Operating profit, 102
  - Pretax profit, 102
  - Profit margin, 102
  - SG & A, 102
- Mark cost estimate, 70
- Marking allowance, 68
- Master data, 15, 46, 123, 178, 188
  - BOM, 45
  - Fields, 46
  - Logistics, 46
  - Material master, 50
  - Routing, 45
  - Stable, 46
  - Statistical key figure, 268
Material consumption, 172
Material document, 110, 168
Material group, 217, 222
Material ledger, 16, 172
Material master, 46, 50, 61, 70, 115
Material movement, 97
Material origin, 217
Material origin checkbox, 138
Material overhead, 55
Material overview, 76
Material Requirements Planning (MRP), 26, 175
Message analysis, 145
Metal plate, 175
Mixed
  Cost estimate, 90, 91, 94, 125
  Costing, 90, 91
  Costing checkbox, 95
  Price, 90, 125
  Price variance, 91, 125
  Procurement costs, 90
Mixing ratio, 90, 93
Modified cost estimate, 122
Modified product, 49
Mounting holes, 175
MRP, 26, 178, 187, 188, 202, 218
  Exception message, 30
  Long-term, 32
  Operative, 26

N
Net ID checkbox, 179, 200
Net profit, 102
Nonrecurring expense, 150

O
Operating profit, 102
Operating rate, 152
Operation, 52, 105, 131
Operation details, 199
Operation scrap, 176, 197, 261
  Actual, 202
  Analysis, 204
  Assembly scrap, 198
  BOM item, 198
  Confirmation, 203
  Cost estimate text, 202
  Definition, 197
  Field, 179
  Master data, 199
  Operation details, 199
  Operations overview, 202
  Output scrap, 197
  Plan, 197, 200
  Quantity, 198
  Routing, 198
  Subsequent operations, 176
  Valuable components, 176
  Without planning, 201
  With planning, 201
Operation sequence, 108
Operative MRP, 26, 35
Order
  Category, 242
  Fully delivered, 143
  Manufacturing, 143
  Quantity, 106
  Status, 137, 143
Order information system, 106, 218, 239
  Layout, 240
  MRP controller, 239
  Operation, 239
  Order header, 240
  Production supervisor, 239
Order-related manufacturing, 52
Order selection, 242
  Order category, 242
  Order type, 243
Original transaction, 110, 143
Origin group, 56
Other prices, 83
Output price variance, 157, 158
Output quantity, 127
Overhead, 45, 127
  Calculation, 100, 128
  Cost, 54
  Cost center, 99
  Key, 56
Overhead rate, 55, 57
Calculation base, 56
Date-dependent, 57
Dependency, 56
Percentage, 57
Percentage factor, 56
Overhead rates, 23

Possible entries
Operation sequence, 108
Order category, 242
Order type, 243
Process category, 92
Procurement type, 46
Summarization characteristics, 230

Posting origin, 97
Posting Period, 145
PPV, 163
Preliminary cost estimate, 85, 112
Controlling level, 87
Costing Data tab, 87
Mass processing, 90
Production version, 87
Transfer control, 87

Pretax profit, 102
Previous planned price, 49

Price
Accuracy, 254, 263
Break, 171
Revaluation, 154
Unit, 68, 263
Price control, 50
Moving average, 123
Standard, 123
Primary cost, 41
Element, 38, 59, 97, 98, 101
Planning, 44, 150
Printed circuit boards, 177
Process category, 92
Processor, 188
Process order, 106, 109
Procure components, 45
Procurement alternative, 90, 92, 94, 125
Procurement type, 46
Product Cost by Order, 52, 113, 136
Product Cost by Period, 52, 90, 113
Product cost collector, 47, 52, 84, 112, 226
Analysis report, 142
Analyze, 109, 141
Create, 138
Deletion flag, 138
Settlement, 144
Variance key, 138
Product development, 72

Partial assembly, 134
Payroll, 128
Period, 43
Period-end closing, 52
Period-end process, 128
Plan
Activity, 43
Activity quantity, 42, 150
Capacity quantity, 42
Component scrap, 188
Cost, 23, 97
Cost center, 23, 36
Debit, 154
Depreciation, 38
Fixed costs, 40
Payroll, 38
Primary cost, 38
Production, 23, 38
Reconciliation, 38, 44
Sales, 23, 38
Scrap, 16
Version, 32
Planned assembly scrap, 181, 191
Planned independent requirements, 25
Consume, 28
Sales order, 28
Version, 29
Planned price 1, 49, 64
Planning horizon, 29
Planning layout, 39
Planning performance, 121
Planning scenario, 26
Planning variance, 112, 121, 262
Plan operating rate, 158
Plant manager, 217
Product drilldown
Configuration, 220
Control parameters, 220
Cumulative, 226
Data collection, 224
Improve performance, 226
Periodic, 226
Period range, 226
Reports, 220
Run report, 225
Product group, 24, 221
Product hierarchy, 220, 221
Production
Control, 52, 118
Cost center, 38, 100, 150
Costs, 130
Efficiency, 120
Line, 118
Order, 47, 101
Output, 151
Output account, 101
Performance, 120
Plan, 24, 38, 44
Process, 54, 87, 137
Quantity, 25
Run, 118
Variance, 112, 120, 122, 173
Version, 53, 87, 90
Production order
Activity confirmation, 104, 110
Automatic goods receipt, 105
Backflush, 105
BOM, 103
Confirmation, 105, 106
Costs, 98
Create, 103
Credit, 101
Details, 106
Information system, 106
List, 106
Material, 103
Operation sequence, 108
Personnel, 217
Primary credit, 101
Release, 104
Resource, 176
Routing, 103
Secondary credit, 102
Statistic, 188
Status, 118
Type, 107
Variances, 102
Profitability analysis, 102, 267
Profitability reporting, 177
Profit and loss account, 131, 271
Profit margin, 102
Propose activities, 107
Purchased items, 25
Purchase order, 169
Price, 35, 163
Quantity, 35
Value, 34, 35
Purchase price, 23, 163
Variance, 163
Purchase requisition, 32
Purchasing department, 35
Performance, 163
Purchasing info record, 25, 32, 44, 45, 163, 169
Conditions, 169
Price, 61
Scale, 170
Validity periods, 170
Purchasing information system, 23, 32, 38
Purchasing requirements, 34, 44
Q
Quality inspection operation, 108
Quality standards, 177
Quantity structure, 87, 120, 201
Date, 66
Tab, 180
Type, 91
R
Raw material, 51, 163
Inventory, 98
Reconciliation, 131
Redundant messages, 145
Reference quantity, 134
Index

Release, 84  
Cost estimate, 71  
Production order, 103  
Step, 84  
Relevancy to costing indicator, 52  
Remaining input variance, 157  
Remaining variance, 115, 127, 158  
Repetitive manufacturing, 52, 118  
Replacement parts, 157  
Reports  
Cost center, 244  
Line item, 217, 237  
Product drilldown, 220, 264  
Production order, 239  
Source documents, 244  
Standard, 217  
Summarization hierarchies, 227  
Summarized, 220  
Request for quotation (RFQ), 32  
Revaluation, 162  
Rework, 175  
ROH, 51  
Roll up, 51  
Rounding differences, 127  
Routing, 45, 51, 87, 108, 117, 137, 197  
Structure, 117  
Input, 187, 255  
Operation, 192, 197  
Output, 177, 192, 197, 253, 261  
Percentage, 176, 179  
Plan, 16  
Planned, 114, 176  
Target, 176  
Valuate, 120  
Value, 114, 177, 187  
Variance, 114, 115, 116, 176, 186  
Variance checkbox, 127  
Secondary cost element, 59  
Type 41, 42, 43, 99, 100  
Select Layout Icon, 141  
Settlement, 102, 111, 112, 144, 267  
Basic list, 145  
Current period, 143, 145  
Error messages, 145  
Line item report, 145  
List of values, 146  
Period-end, 144  
Prior periods, 145  
Processing time, 145  
Reversal, 145  
Rule, 138  
Selection parameters, 146  
Selection screen, 146  
Sequential, 138  
Type, 138  
Settlement type  
FUL, 143  
Full, 143  
PER, 138  
Periodic, 138  
Setup time, 48, 127  
Shop floor control, 239  
Simulative planned order, 32  
SOP, 24  
Sort line items, 143  
Source document, 110, 168, 217, 228  
Specialized activities, 98  
Special procurement type, 47  
Splitting rules, 155  
Standard activity time, 51  
Standard cost estimate, 45, 64, 68, 117, 179, 189, 200  
Costing run, 72
Index

Costing status VO, 70
Costing variant PPC1, 64
Costing version, 69
Current, 89
Future, 89
History tab, 89
Mark, 49, 68
Marking allowance, 68
One per material, 87
Previous, 89
Previously released, 49
Release, 45, 49, 71
Status FR, 84
Status VO, 83
Valuation variant, 68
Standard hierarchy, 245
Standard price, 163, 176, 180
Finished goods, 101
Standard report, 16, 217
Standard value field, 52
Status
  Deletion flag, 135
  Determine automatically, 143
  Determine manually, 143
  Fully delivered, 136
  Released, 136
  Technically complete, 135, 136
  Selection profile, 229, 231
Stock/requirements list, 31
Stock valuation, 64
Strategy sequence, 64
Structural explosion step, 76
Subcontracting, 64
Substitute components, 124
Summarization
  Analysis, 218
  Level, 227
  Report, 217, 230
  Time frame, 225
Summarization hierarchy
  ALV format, 230
  Data collection, 231
  Exception rules, 235
  Hierarchy levels, 229
  Material, 230

Order number, 230
Plant, 230
Profit center, 230
Selection profile, 231
Single objects, 235
Status selection profile, 229
Summarized analysis, 16
Summarized reporting, 139
System messages, 45

T

Target cost, 97, 111, 114, 118, 119, 131, 137, 138, 152
  Button, 141
  Configuration, 143
  Version, 139, 159
  Version 0, 111, 119, 268
  Version 1, 112, 120
  Version 2, 113, 121
  Version 3, 116, 121
Target debit, 154
Target quantity, 157
Task list, 51
Tax, 102
Tear-down time, 127
Test run checkbox, 155
Total variance, 64, 111, 269
Total WIP, 133
Traffic light symbols, 235
Transactional data, 46
Transfer control, 36, 65, 87

U

Under/overabsorption, 147, 269
Unfavorable variance, 48
Unit cost, 48, 127
Unplanned consumption, 157
User entry, 68
Index

V

Valuable components, 197
Valuation, 23
  Class, 50
  Date, 66
Valuation variant, 63, 117, 120, 270
  Activity types/processes, 64
  External processing, 64
  Scrap and WIP, 118, 131
  Subcontracting, 63
Value field, 112
Variable component, 154
Variable quantity, 157
Variance
  Analysis, 45, 47, 63, 102, 111, 123, 217
  Button, 141
  Calculate, 114
  Calculation, 16, 101, 111, 114, 122, 126,
    136, 138, 154, 155, 182, 192
  Categories, 271
  Categories, 101, 115, 122, 136, 155
  Collective, 139
  Column, 140
  Component, 138
  Configuration, 113
  Cost center, 147
  Cumulative, 143
  Debit, 149
  Favorable, 149
  High, 140
  Individual materials, 140
  Input, 123
  Input price, 112, 123
  Input quantity, 107, 124, 141, 143, 193
  Key, 47, 53, 113, 116, 138, 176
  Keys default, 115
  Largest, 140
  Lot size, 112, 127
  Manufacturing, 102
  Mixed-price, 125
  Original cause, 143
  Output price, 126
  Planning, 112, 121, 137, 262
  Plant manufacturing, 217
Price, 71
Process order, 109
Product cost collector, 102
Production, 71, 112, 120, 137, 264, 269
Production order, 109
Recalculate, 140
Reconcile, 146
Reconciliation, 131
Reduce, 71
Remaining, 115, 127
Remaining input, 125
Reporting, 16
Requirements, 143
Resource usage, 124
Scrap, 137, 193
Sequence, 144
Sort, 140
Source, 102
Total, 101, 111, 136, 139
Unfavorable, 48, 140, 234
Variant, 115, 116
Write line items, 114
Variance analysis, 39
Variance Category Columns, 141
Variance Key, 47, 53
Vendor information, 46
Vendor quotation, 25, 35, 45, 163, 170
Version, 36
Version 0, 36
Version configuration, 159

W

Work center, 35, 87, 100, 137
  Load, 44
Work in Process (WIP), 131
  At target, 131
  Calculate, 118, 136
  Cancel, 135, 136, 144
  Explanation, 133
  Target, 118
  Unsettled, 143
Workload, 98
The book will provide finance professionals with the data-gathering strategies, configuration steps, best practices, technical guidance, and case studies for smoothly implementing or optimizing the check delivery and payment processes. Specific sections of the book focus on configuration steps for payment configuration in SAP, designing check and electronic payment strategies centred around a comprehensive data-gathering strategy (internal and external stakeholders), and technical considerations for both printed checks and electronic payments.

340 pp., 2010, 69.95 Euro / US$ 84.95