CHAPTER 6

Costing and Budgeting

This chapter is about money and how it functions when attending to assets like equipment, machines, and manufacturing assembly lines. Imagine you have an instrument that's broken and requires repair. Fixing things incurs costs, and this chapter helps you understand where the money goes when technical assets are being fixed.

The following are some of the key topics covered.

- Costing in asset maintenance and repair
- Maintenance order cost settlement and closure
- Budgeting in asset maintenance and repair

6.1. Costing in Asset Maintenance and Repair Process

In S/4HANA Asset Management, financial costing in maintenance orders is a way to track and manage the expenses related to maintenance activities in a business. It helps organizations keep a close eye on the costs incurred during maintenance, such as servicing equipment, repairing machinery, or any other maintenance-related activities.

R. Ojha and C. M. Jaiswal, *SAP S/4HANA Asset Management*,
https://doi.org/10.1007/978-1-4842-9870-1_6

6.1.1. Integration with Finance and Controlling

As part of logistics, asset management is closely integrated with other business areas, such as finance (accounting). This implies that the organizational units defined for finance and controlling in S/4HANA also cover aspects of costing in asset management. For example, the creation of asset management–specific cost centers with annual plans.

The following lists the most common organizational objects and their structure in S/4HANA Finance and Controlling (also see Figure 6-1).

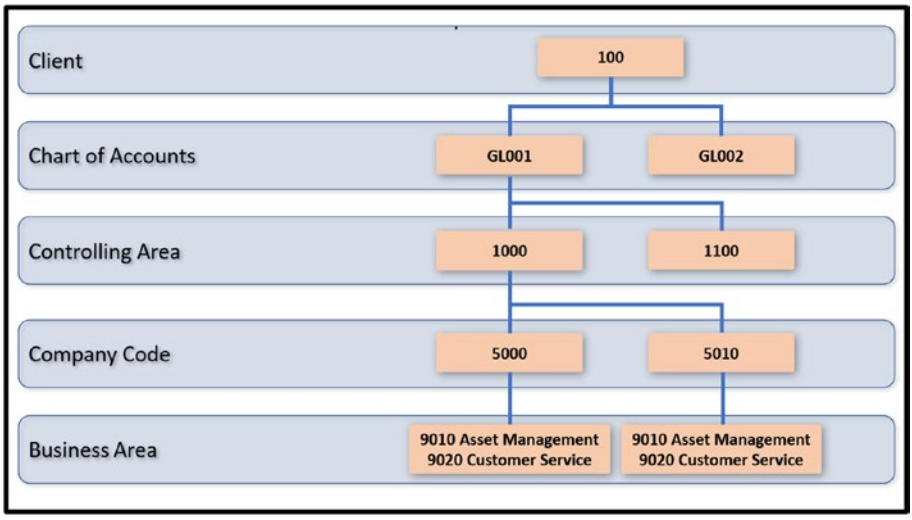

Figure 6-1. *Organizational objects and their structure in Finance and Controlling*

- **Client**: The client stands as the top-level entity among all organizational units. For example, it may represent a conglomerate of corporations comprising multiple companies. All the business applications within a client share a common database for data.

- **Controlling area**: a controlling area in S/4HANA is a way of grouping and organizing one or more company codes to enable centralized control and management accounting functions across multiple subsidiaries or business units within an organization.
- **Chart of accounts**: In the SAP S/4HANA system, each company is associated with a specific chart of accounts, and all G/L (General Ledger) accounts used by that company are mapped to this chart of accounts. The G/L accounts within a chart of accounts are distinct and not repeated.
- **Company codes**: A company represents an independent legal entity or a business unit within a corporate group. For instance, if you have a parent company with multiple subsidiaries, each subsidiary may be represented as a separate company code in S/4HANA.
- **Cost centers**: A cost center is like an account/bucket where all the expenses related to a specific function, department, and project are collected and monitored (see Figure 6-2). It helps organizations understand how much money is being spent in different parts of the business.

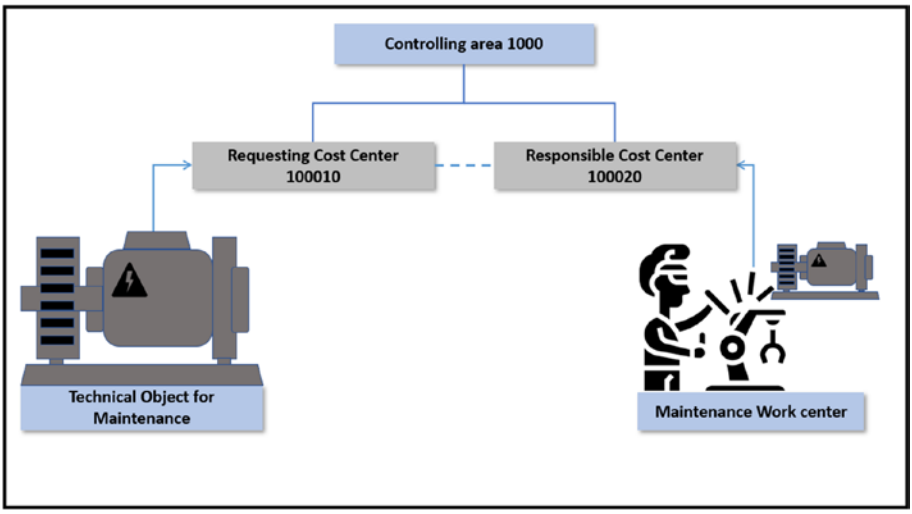

Figure 6-2. *Cost centers in S/4HANA Asset Management*

Cost centers are created within a controlling area. For asset management, a minimum of two cost centers are relevant to capture and monitor internal costs (see Figure 6-3).

- A **responsible cost center** is assigned to the maintenance work center, which performs maintenance and repair activities for an asset. It is assigned in the Costing view of the maintenance work center.
- A **requesting cost center** is created to collect and monitor the costs incurred on the asset. This cost center is entered in the Organizational view of the equipment master or functional location of an asset.

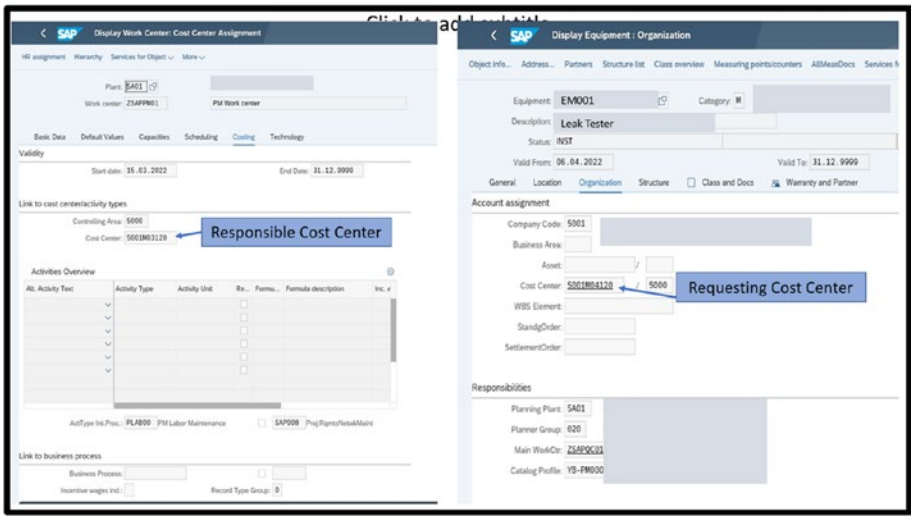

Figure 6-3. *Responsible and requesting cost centers*

6.1.2. Various Accounting Terms (Order Values) in Maintenance Order

Maintenance and repair work in a maintenance order generates and incurs various financial and cost values, which can be classified according to costs incurred, output (activities) generated, and settlements.
These financial and costing values (see Figure 6-4) also depend on the maintenance order type and processing phase.

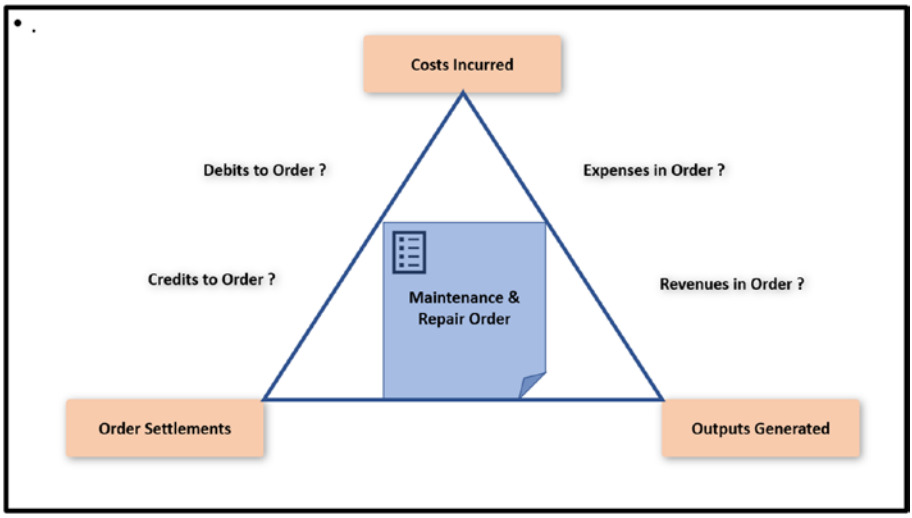

Figure 6-4. *Various account terms (order values) in maintenance order*

- **Costs** are incurred when spare parts consumed, third-party services rendered, and internal man-hours utilized during the maintenance and repair work of an asset, and these get posted to the maintenance order. As a result, the maintenance order gets debited with the value of the cost posted.
- **Activities** are the output generated during an asset's maintenance and repair work. For example, refurbishment of an assembly of a technical system adds value to the assembly by improving its working condition, which, in turn, results in credits being posted to the refurbishment maintenance order, and the order gets credited.

- **Settlement** is a process of cost allocation, fully or partially, from one cost object to another. By settling the maintenance and repair orders, you transfer the costs from the order to the relevant cost centers or other cost objects where these expenses belong. This way, the financial reports become accurate, and you can understand the true financial impact of the maintenance activities related to asset management.
- **Expenses** are the costs incurred in a maintenance and repair order and generally represent expenses in the books of accounts. On the other hand, the activities or output generated during maintenance and repair work generally do not represent revenue because they are not sold to customers.

6.1.3. Costing Value Flow in Maintenance Order: Estimated, Planned and Actual Cost

In repair and maintenance orders, there are three types of costs available.

- **Estimated cost**: The value for the estimated cost is entered manually in the repair and maintenance order. Users can enter this value based on their own estimation of spares and man-hours required during the maintenance activity. The estimated cost must be entered before releasing the order. Estimated costs are also saved in the Plant Maintenance Information System (PMIS) for use in reporting and analytics.

- **Planned cost**: The maintenance order-related resources, such as operations with internal man-hours and materials, generate planned costs for the order when these resources are entered in the order and the order is released (dispatched). The planned cost is derived automatically based on the cost estimate, and it is not possible to manually maintain the planned costs.
- **Actual cost**: The maintenance order is automatically debited with actual costs due to resource consumption, such as man-hour utilization confirmation, materials issue posting, and so on (see Figure 6-5). It is not possible to enter actual costs manually.

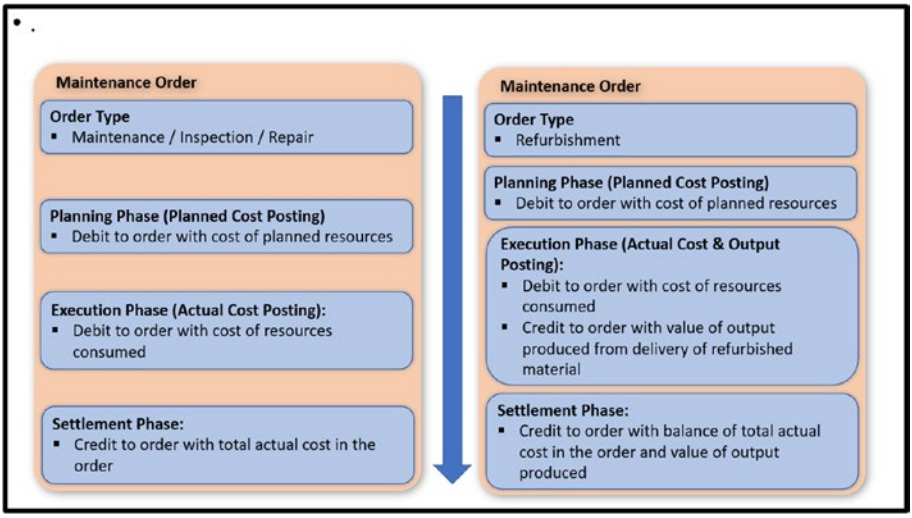

Figure 6-5. *Costing value flow in maintenance and repair order*

The maintenance order types also determine the types of accounting value flow.

During maintenance, inspection, and repair of a technical object using related order types, the order gets debited with planned costs when the required resources, such as spare parts and man-hours, have been planned and the order has been released (dispatched). The order is debited again with the actual cost when the planned spare part has been consumed, or the utilized man-hours have been confirmed. Finally, at the time of order settlement during the completion phase, the debited cost of the order is transferred to the received cost object, such as the cost center.

In refurbishing any assembly or technical object using a refurbishment order type, the order gets debited with planned costs when the required resources, such as spare parts and man-hours, have been planned, and the order has been released (dispatched). The order is debited again with the actual cost when the planned spare part has been consumed, or the utilized man-hours have been confirmed. At the time of delivery (transferring the refurbished technical object to inventory), the order is credited with the equivalent value of the newly refurbished material (technical object). Finally, at the time of order settlement during the completion phase, the difference between the order's debited cost and the output generated (value of the newly refurbished material) is transferred either to the material (settlement receiver for the refurbishment order type) or the price different account.

6.1.4. Option of Costing at Operation Level of Maintenance Order

In general, all the costing values (such as planned and actual costs of spare parts and man-hours) within a maintenance order are derived and stored at the maintenance order level (header level) and not at the individual operation (task) level. However, with the functionality of an operation account assignment (OAA), it is possible to derive all the costing values at each operation level of a maintenance order, enabling the option and

flexibility to plan and control costs at the operation level. To use the OAA functionality, the business function, LOG_EAM_OLC, needs to be activated.

Regulators and legal requirement bodies prefer to capture asset management costs at a detailed level so that they can be reported in categories other than the company's overall business strategy. Various industries using asset management software also prefer to perform costing at the individual operation level and derive the aggregated value at the entire job (order) level. With OAA functionality, these needs can be fulfilled. It allows planning and capturing all costing values at each maintenance order operation.

Note that an order can be either header or operation-level, but not both. To distinguish a maintenance order with OAA, the system status activity account assignment (ACAS) is set, which can be viewed in the order or any order-related report. The costing data (such as planned and actual costs of spare parts and man-hours) can be viewed for an operation in a separate view (see Figure 6-6). All costs are only recorded at the operation level and dynamically aggregated at the maintenance order level.

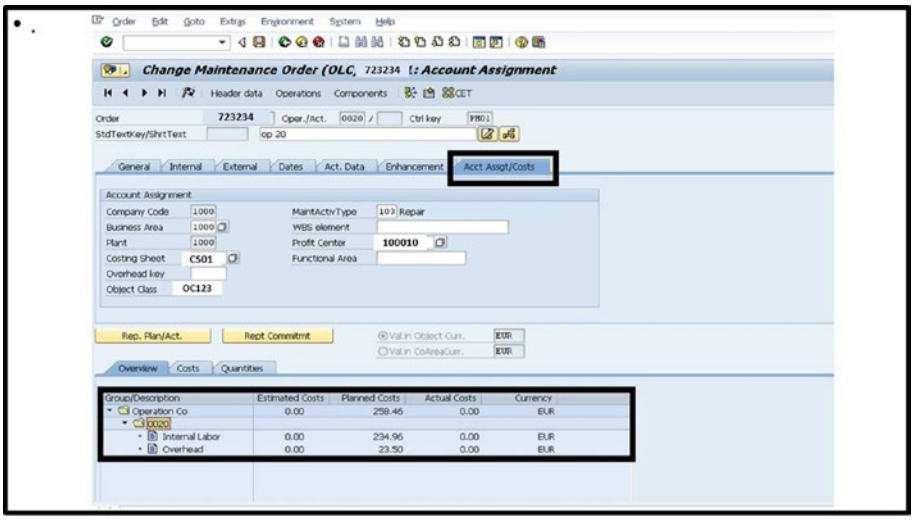

Figure 6-6. *Costing at the operation level of maintenance order*

OAA has various functionalities in the asset management process.

- **Estimated cost**: The user can manually enter the estimated cost only at the operation level, and it is aggregated at the maintenance order level. To facilitate the user, the functionality to copy planned cost to estimated cost can be used by pressing the Copy Estimated Cost button before the maintenance order release.
- **Spare parts issues**: Planning and issuing stocked spare parts make the operation an account assignment for debiting the cost of the spare part. For non-stocked spare parts, the operations are entered as account assignments during goods receipt for the purchase order.
- **Procurement**: When a purchase requisition is generated for a non-stocked spare part required for an operation, the operation gets assigned as the account assignment object in the purchase requisition for the spare part. Subsequently, the OAA is transferred to the purchase order created for the purchase requisition.
- **Settlement**: The settlement rule is maintained at the operation level and not at the order level, and settlement happens for each operation individually.

6.1.5. Overhead Rates

Overhead is a lump sum calculated based on the incurred direct cost. Typically, the calculation involves a percentage of the base cost or an amount-based markup. It is added to the planned and actual cost of a maintenance order to factor in overhead costs consisting of other

resources used in maintenance and repair, such as consumable items (lubricant and fasteners), disposable gloves used by technicians, or any other items consumed that are difficult to quantify and plan (see Figure 6-7).

In addition to allocating overhead rates, they distribute sales and administration overhead costs. Furthermore, these overheads can be applied to account for the expenses of resources consumed in the order that are not itemized separately, including administration, transportation, and more.

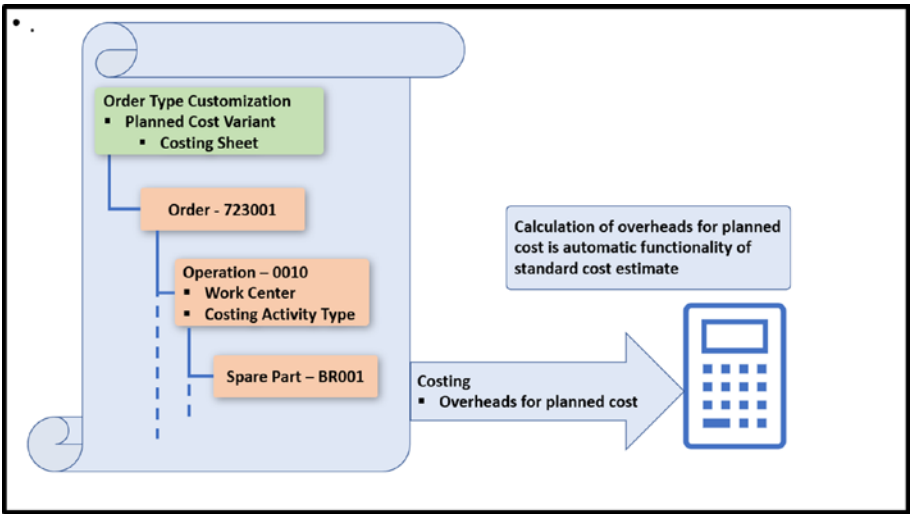

Figure 6-7. *Overheads based on planned cost*

For the total planned cost of maintenance and repair orders, overhead is calculated as part of the standard cost estimate. In other words, it is automatically calculated when the order is saved after planning resources. Additionally, it can be recalculated as and when required, such as when there is a change in the planned quantity of resources. The prerequisite configuration of assigning the costing sheet to the respective planned costing variant for the maintenance order type must be set up in the finance and controlling area to get overhead on planned costs.

Costing Sheet and Costing Variant

The costing sheet and variant are configurable data in finance and controlling applications. The costing sheet links all the parts of the overhead calculation. It comprises baselines, overhead lines, and total lines processed during overhead calculation. The costing variant contains control parameters for costing, determining how costing is carried out. It forms the link between the application and customizing, as all cost estimates are created and saved with reference to a costing variant.

Unlike overheads for planned cost, the overheads for maintenance order actual cost are not calculated automatically. For each consumption of resources (such as spare parts and man-hours), you must run overhead calculations manually. Then the order gets debited with overheads on actual cost (see Figure 6-8). Similar to overheads for planned cost, to obtain overheads on actual cost, the prerequisite configuration of assigning the costing sheet to the respective actual costing variant for the maintenance order type must be set up in the finance and controlling area.

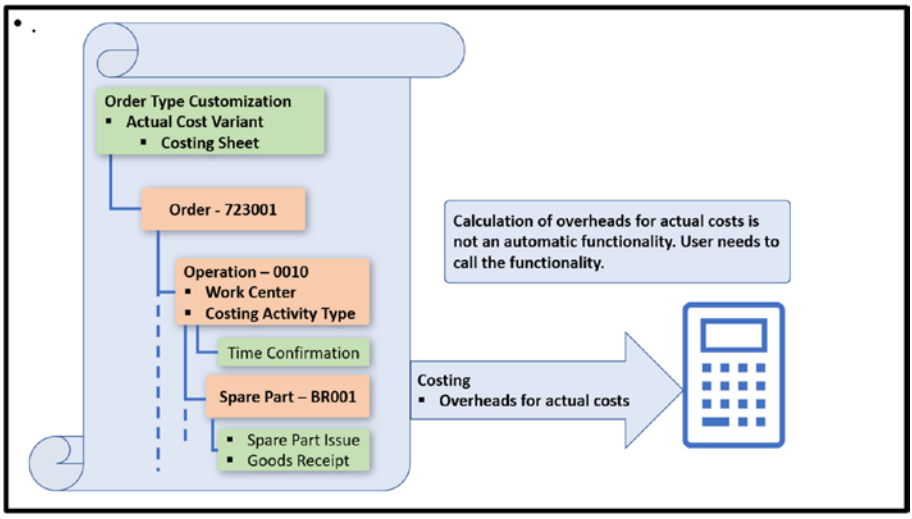

Figure 6-8. *Overheads based on actual cost*

6.1.6. Commitment Management

Commitments in SAP maintenance orders are obligations for external purchases or material requirements planning. These commitment values are not directly recorded in accounting objects, but they can result in actual costs in the maintenance order due to various business transactions.

Commitment management is employed to input these obligations during a maintenance order's early planning stage and examine how they impact costing and finance, particularly concerning purchase orders.

Maintenance order commitments separately update and track specific resources, especially those needed for external procurement. These commitment values are updated in parallel with maintenance order planning and execution. In simpler terms, both the planned and actual costs influence the commitment value, allowing better control and visibility over the resources involved in the maintenance process.

You must activate open items management for the required order type to set up commitment functionality for maintenance orders.

The commitment value gets calculated when the planned cost for the maintenance order is determined. As the commitment value is derived for external resources, such as external services or non-stocked materials, it is typically smaller than the maintenance order's planned cost (see Figure 6-9).

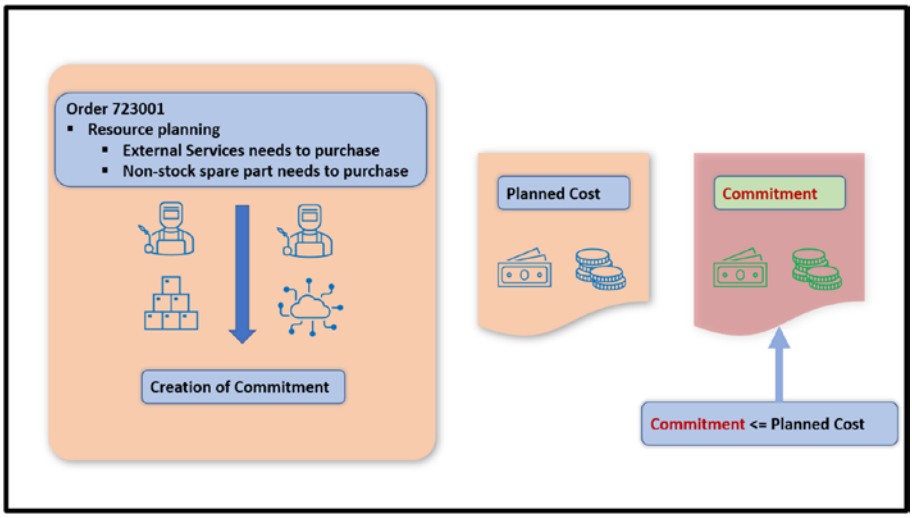

Figure 6-9. *Generating commitment*

However, the commitment value can increase due to certain business transactions after the maintenance order has been planned. These transactions may include generating a purchase order for a purchase requisition linked to an operation in the maintenance order, increasing the price in the purchase order, manually creating a purchase order, and using the maintenance order as a cost object (account assignment) in the purchase order. These business transactions increase the commitment value, which may exceed the planned cost (see Figure 6-10).

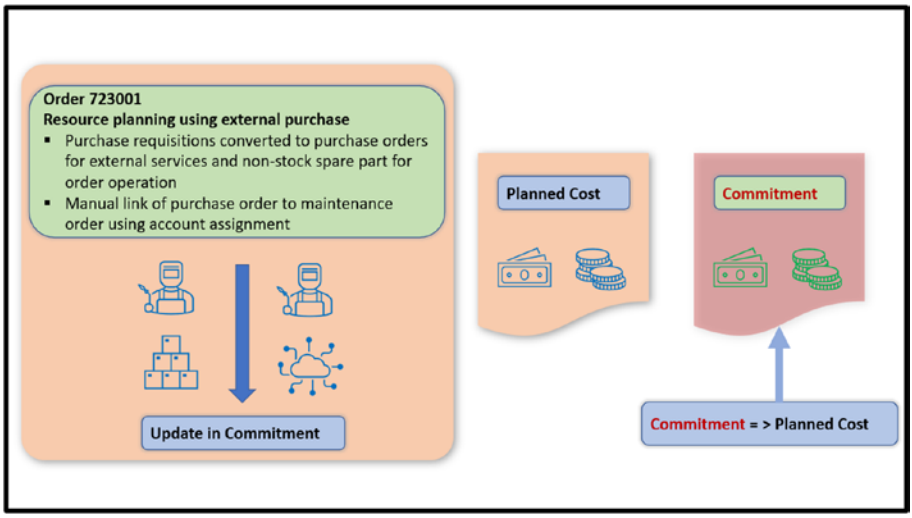

Figure 6-10. *Update in commitment value*

During the processing of the maintenance order, as external resources are consumed—for example, posting goods receipts against a purchase order for non-stock material—the order's commitment value is reduced. The actual costing values determine the reduction in commitment value. Logically, the commitment value should reach zero when all the planned external resources have been fully consumed.

6.1.7. Costing in Refurbishment of Subassemblies

In refurbishing subassemblies/technical objects using refurbishment order type, the costing values flow is different from the maintenance and repair work using maintenance order types.

In the refurbishment order type, along with estimated, planned, and actual cost values, the value for output also gets updated and displayed separately. Here, output refers to the refurbished/overhauled

subassembly. The value for output generated is displayed as a negative figure in the refurbishment order and delivery costing reports.

At the time of delivery (transferring the refurbished technical object to inventory), the order is credited with the equivalent value of the newly refurbished material (technical object).

Also, at the time of order settlement during the completion phase, the difference between the order's debited cost and the output generated (value of the newly refurbished material) is transferred to the material (settlement receiver for the refurbishment order type).

6.1.8. Required Configuration Activities for Costing in Maintenance and Repair Orders

Configuration is the process of customizing and setting up various functionalities and features of the SAP S/4HANA software according to the specific needs and requirements of an organization's business processes.

Customizations (configurations) related to costs in maintenance and repair activities in asset management are grouped within many application areas. Such as Organizational structure customization is within the finance and controlling area. The following are important customizations for maintenance order costing.

- Value categories
- Assign cost elements to value categories
- Version for cost estimates
- Default values for value categories
- Costing sheet
- Valuation variant

- Costing variant
- Commitment management
- Settings for costs at an operational level

From the SAP Easy Access menu, navigate to Tools → Customizing. Double-click IMG → SPRO–Execute Project. Click the SAP Reference IMG button (see Figure 6-11).

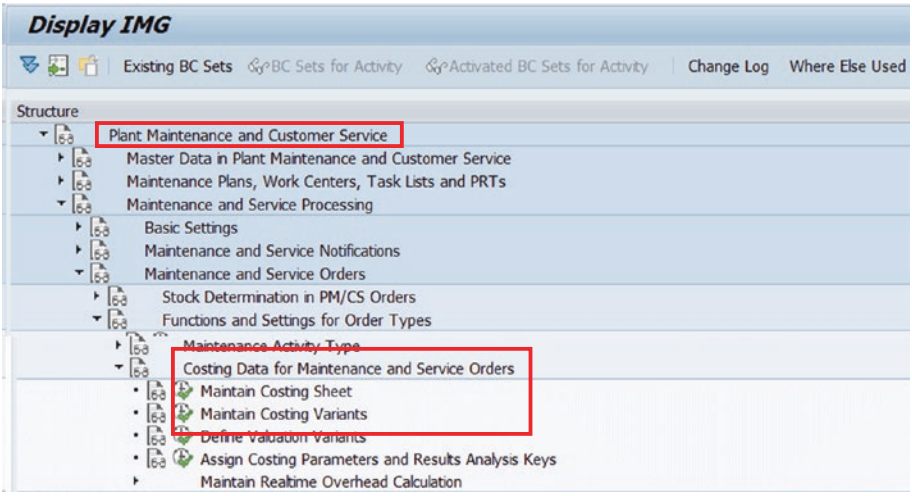

Figure 6-11. *Customization (configuration) nodes for maintenance order costing*

Table 6-1 lists important configuration paths related to maintenance order costing.

Table 6-1. *Configuration Path for Important Configuration Related to Maintenance Order Costing*

Configuration Step	Configuration Path
Maintain value categories.	Plant Maintenance and Customer Service → Maintenance and Service Processing → Basic Settings → Settings for Display of Costs → Maintain Value Categories
Assign cost elements to value categories.	Plant Maintenance and Customer Service → Maintenance and Service Processing → Basic Settings → Settings for Display of Costs → Assign Cost Elements to Value Categories
Assign version for cost estimates.	Plant Maintenance and Customer Service → Maintenance and Service Processing → Basic Settings → Settings for Display of Costs → Define Version for Cost Estimates for Orders
Assign default values for value categories.	Plant Maintenance and Customer Service → Maintenance and Service Processing → Basic Settings → Settings for Display of Costs → Define Default Values for Value Categories
Define the costing sheet.	Plant Maintenance and Customer Service → Maintenance and Service Processing → Maintenance and Service Orders → Functions and Settings for Order Types → Costing Data for Maintenance and Service Orders → Maintain Costing Sheet
Define/assign costing variants.	Plant Maintenance and Customer Service → Maintenance and Service Processing → Maintenance and Service Orders → Functions and Settings for Order Types → Costing Data for Maintenance and Service Orders → Maintain Costing Variants

(*continued*)

Table 6-1. (*continued*)

Configuration Step	Configuration Path
Define the valuation variant.	Plant Maintenance and Customer Service → Maintenance and Service Processing → Maintenance and Service Orders → Functions and Settings for Order Types → Costing Data for Maintenance and Service Orders → Define Valuation Variants
Activate commitment management (OpenItem M.).	Plant Maintenance and Customer Service → Maintenance and Service Processing → Maintenance and Service Orders → Functions and Settings for Order Types → Configure Order Types
Define the settings for costs at the operational level.	Plant Maintenance and Customer Service → Maintenance and Service Processing → Maintenance and Service Orders → Functions and Settings for Order Types → Costs at Operation Level

6.2. Maintenance Order Cost Settlement and Closure

In asset management, the maintenance and repair order is an object for planning, controlling, and executing maintenance activities. All costs incurred from planning and consuming resources (such as materials, man-hours, and external services) are posted to the maintenance order. The order gets debited with the actual costs of the resources consumed.

During the completion phase of the maintenance order, the order is settled to an actual cost receiver, which means the order is credited by allocating its debit to the receiving cost object (see Figure 6-12).

For example, in a manufacturing industry, the settlement receiver can be the cost center of the technical object which was repaired or the cost center of the organizational unit (such as the cost center of the maintenance plant), which requested for a maintenance job. This means the maintenance order collects all the resource costs for reporting and analysis at the maintenance order level. Subsequently, the cost is transferred to receiving cost objects where these expenses belong. This way, the financial reports become accurate, and you can understand the true financial impact of the maintenance activities related to asset management.

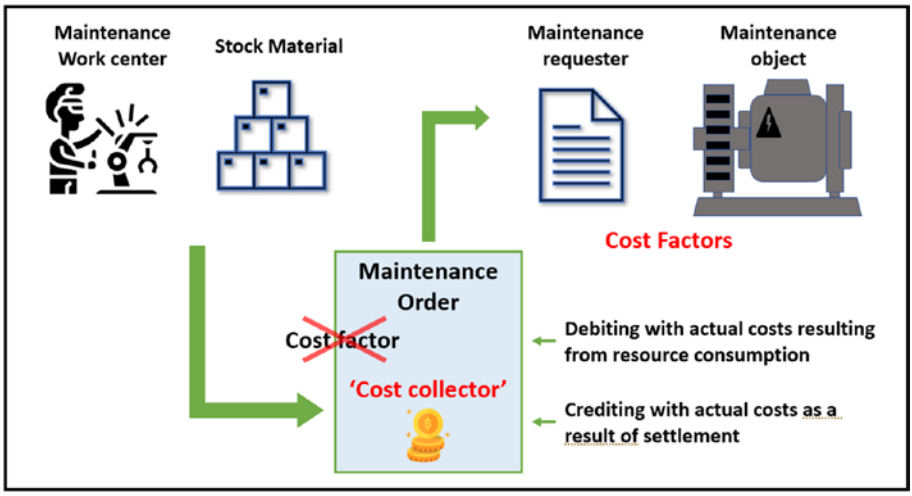

Figure 6-12. *Settlement process*

6.2.1. Maintenance Order Settlement and Business Completion

Figure 6-13 illustrates settlement for continuous tasks (in-progress orders).

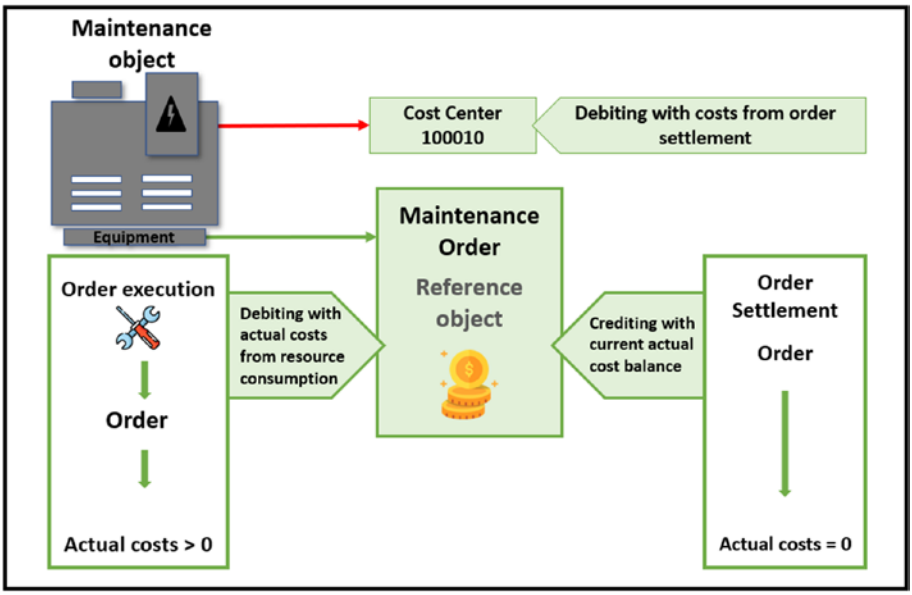

Figure 6-13. *Settlement for continuous tasks (in-progress orders)*

Types of Settlement Receiver (Account Assignment Objects) in Order Settlement

Apart from the cost center, other cost objects such as the work breakdown structure (WBS), assets, orders, and others can also be used as settlement receivers in the settlement rule of maintenance and repair orders. The nature of the maintenance and repair activity typically determines the type of settlement receiver (see Figure 6-14).

For example, maintenance and repair activities for shutdown maintenance can be settled to WBS or network. Maintenance activities related to improvement/investment projects for an asset, which increases the asset's value, should be settled to the asset. On the other hand, repair activity costs that need to be claimed from any vendor/supplier of the asset can be settled in an internal order. In customer service, where you repair customers' assets and later raise an invoice to receive the price of the repair, such maintenance and repair orders should be settled to the sales order.

Based on the configuration for the settlement rule in a maintenance order type, the appropriate settlement receiver type is entered automatically in the maintenance and repair order.

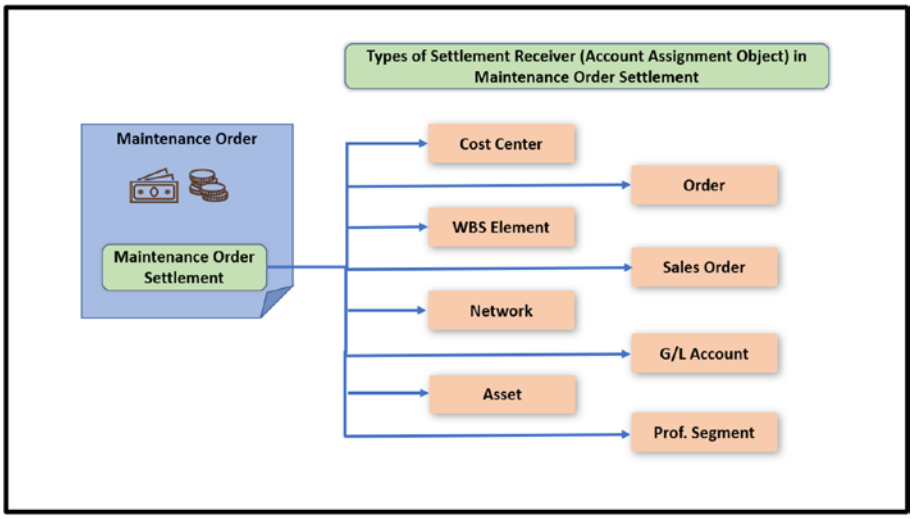

Figure 6-14. *Various types of settlement receivers (account assignment objects) in an order settlement*

Options to Derive Settlement Rule in Maintenance Order

The settlement rule in a maintenance order can be entered in various ways, such as the following (also see Figure 6-15).

- Manually, by calling the settlement rule maintenance screen in the maintenance order
- Automatically, when the maintenance order is released or technically completed
- Manually with or without system default (In a system default, the settlement receiver is copied automatically from the technical asset's equipment master data.)

The time the settlement rule is entered depends on the configuration setting for settlement rule timing. But at the latest, the settlement rule must be entered by maintenance order technical completion time. In general, one settlement rule is entered in a maintenance order, but if required, multiple settlement rules can also be entered in a maintenance order. For example, if there is a business need to settle the cost of a specific spare part to a different settlement receiver (such as in an internal order created specifically for a vendor), then in such cases, the maintenance order is set up with two settlement receivers, as follows.

- **Settlement receiver 1**: A cost center to receive all the debited costs from the order, except the cost of spare parts covered under warranty.
- **Settlement receiver 2**: An internal order to receive the cost of the spare parts covered under warranty.

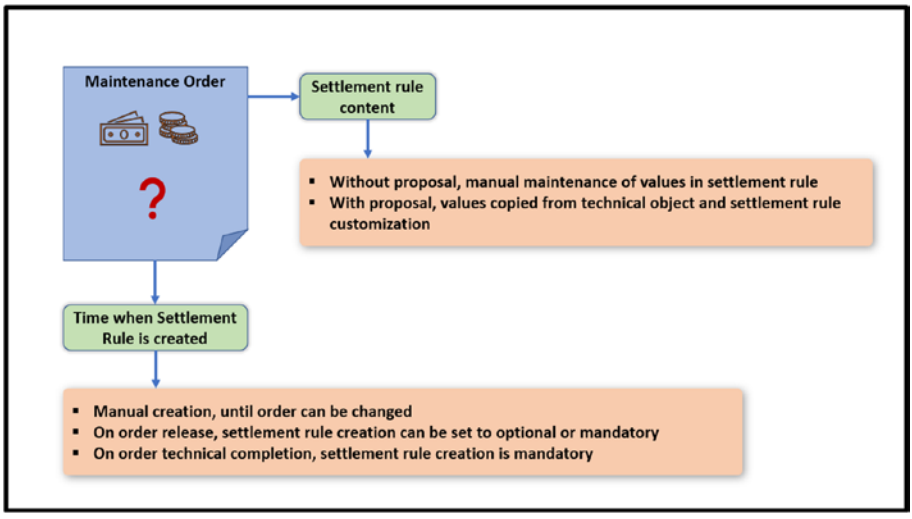

Figure 6-15. *Options to derive settlement rule in maintenance order*

An order can be settled multiple times if required during maintenance and repair. For example, for a large maintenance activity spanning over multiple months, the maintenance order is settled at the end of every month if it has a value of debited cost more than zero during each settlement. The settlement is part of the period-end activity performed by finance and controlling. Therefore, during each period-end settlement, if a maintenance order is available with cost, then the order is settled to transfer the total cost to a receiver cost object and reduce the cost to zero in the maintenance order (see Figure 6-16).

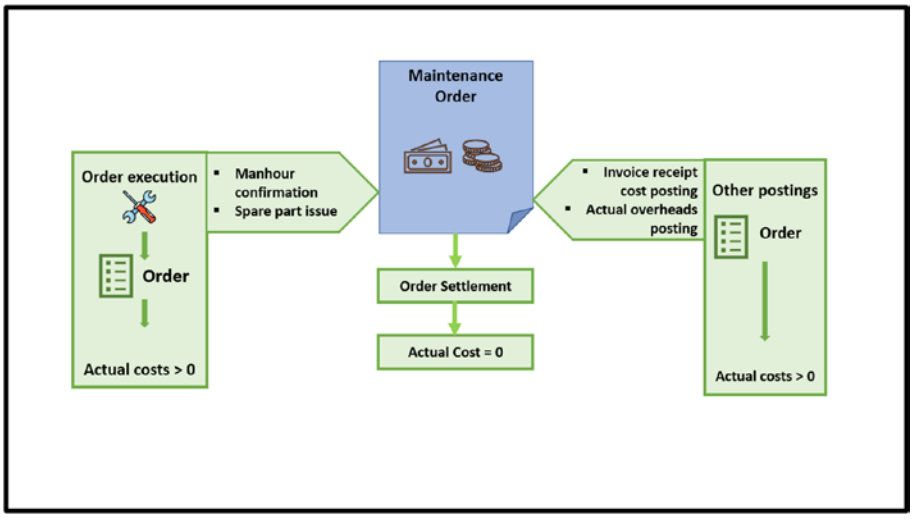

Figure 6-16. *Order settlement*

Order Completion Phase

The maintenance and repair order completion phase consists of several steps. First, the order is completed from a technical point of view (technically completed) in the asset management application area after all the maintenance operations have been finished. If a settlement rule is not defined in the order by that time, then during technical completion,

the settlement rule is entered in the maintenance order. Once the maintenance order is technically completed, no further changes are possible.

An order technically completed means no further maintenance and repair is expected. As part of period-end activities, settlement can be performed for the order to transfer the actual debited cost to the receiving cost object. Still, the already settled maintenance order can accept costs, such as for the external vendor's incoming invoice posting for the external service purchased during the repair work in the order. In this case, the maintenance order needs to settle again during the future period-end settlement process.

After the maintenance order has been settled and there is zero actual cost debit, business completion is performed for the order. After business completion, a maintenance order is closed from all aspects, such as repair and maintenance work, settlement work, and actual cost posting (see Figure 6-17).

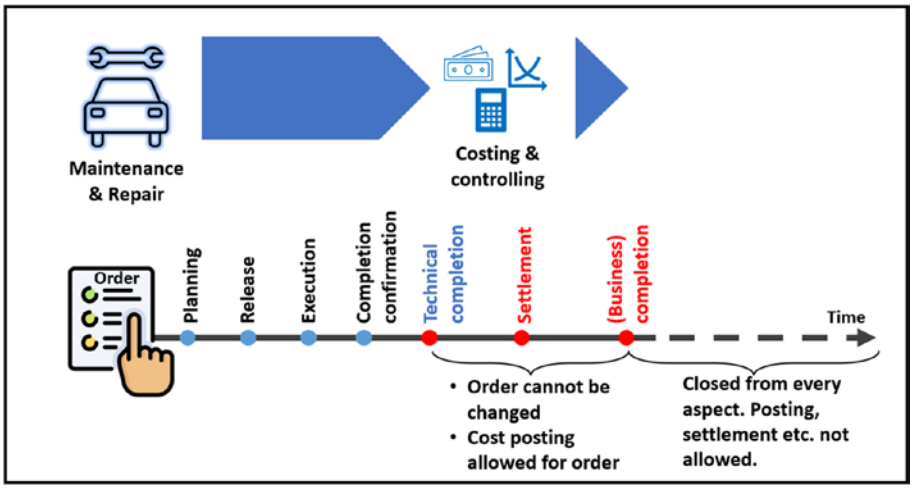

Figure 6-17. *Allowed business function after completion of a maintenance order*

The Document Flow functionality in the maintenance order displays a hierarchical structure, listing the documents created and their status during maintenance order execution. These documents can be opened from the document flow, and preceding and succeeding documents related to the opened documents can also be accessed. For maintenance and repair orders, the following is the list of documents that appear in the document flow.

- Maintenance notification
- Maintenance plan
- Maintenance and repair order
- Goods movement document for material issue, receipt
- Man-hour confirmation
- Service entry sheet
- Billing document

6.2.2. Refurbishment Order Settlement

The settlement of a refurbishment order differs from that of a maintenance and repair order. A refurbishment order is settled against the material inventory (stock) of the subassembly material that has been refurbished.

During the refurbishment process, the order gets debited with the actual cost when the planned spare part and subassembly to be refurbished have been issued or the utilized man-hours have been confirmed. At the time of delivery (transferring the refurbished material to inventory), the order is credited with the equivalent value of the newly refurbished material (technical object). The credit value for the generated output is updated and displayed separately as a negative debit in the order.

At the time of settlement (see Figure 6-18), the balance credit transfer (difference between the order's debited cost and the generated output) from the order to the material inventory (stock) can be of two types.

- With the standard price control setting in the material master, the balance credit for the batch of the refurbished material is posted with the value of the standard price. The difference is posted as a credit memo to a general ledger account used for price differences in finance.
- With the moving average price control setting in the material master, the balance credit for the batch of the refurbished material is posted with the value of the actual increase in value, in other words, the value of the costs in man-hours and materials. This increases the moving average price at the material level.

The prerequisite customization for settling a refurbishment order to material inventory is that you have marked the material as the default account assignment in the settlement profile for the order type. This settlement profile is assigned to the refurbishment order type. At the time of refurbishment order processing, the settlement rule is automatically entered with the material as the settlement receiver (account assignment).

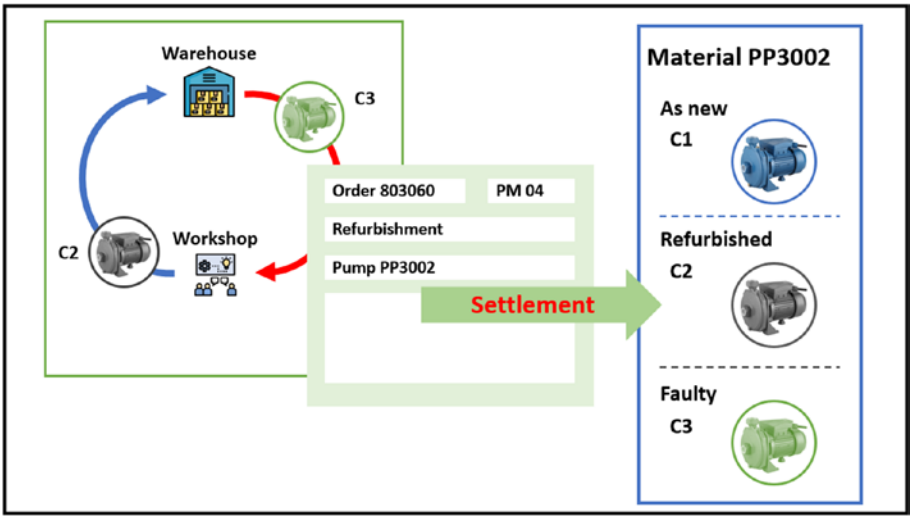

Figure 6-18. *Refurbishment order settlement*

6.2.3. Required Configuration Activities for Cost Settlement

Customization (configurations) related to an order's cost settlement involves the following.

- Settlement profile
- Allocation structure
- Time and creation of settlement/distribution rule

From the SAP Easy Access menu, navigate to Tools → Customizing. Double-click IMG → SPRO–Execute Project. Click the SAP Reference IMG button (see Figure 6-19).

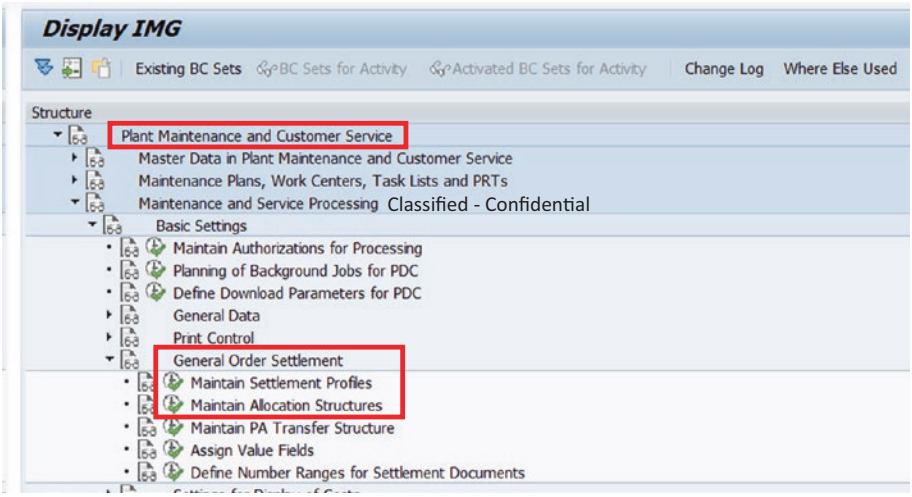

Figure 6-19. *Customization (configuration) nodes for maintenance order settlement*

Table 6-2 lists important configuration paths related to maintenance order settlement.

Table 6-2. *Configuration Path for Important Configuration Related to Maintenance Settlement*

Configuration Step	Configuration Path
Maintain settlement profile.	Plant Maintenance and Customer Service → Maintenance and Service Processing → Basic Settings → General Order Settlement → Maintain Settlement Profiles
Maintain allocation structure.	Plant Maintenance and Customer Service → Maintenance and Service Processing → Basic Settings → General Order Settlement → Maintain Allocation Structures
Configure order types (to assign settlement profile to order type).	Plant Maintenance and Customer Service → Maintenance and Service Processing → Maintenance and Service Orders → Functions and Settings for Order Types → Configure Order Types
Assign time and creation of settlement rule/distribution rule.	Plant Maintenance and Customer Service → Maintenance and Service Processing → Maintenance and Service Orders → Functions and Settings for Order Types → Settlement Rule: Define Time and Creation of Distribution Rule

6.3. Budgeting in Asset Maintenance and Repair

Budgeting the maintenance and repair of assets refers to setting, monitoring, and controlling the costs associated with performing large and high-cost maintenance activities on assets (equipment, machines, and assembly lines). Budgeting in maintenance orders helps organizations control maintenance expenses and make informed financial decisions (see Figure 6-20).

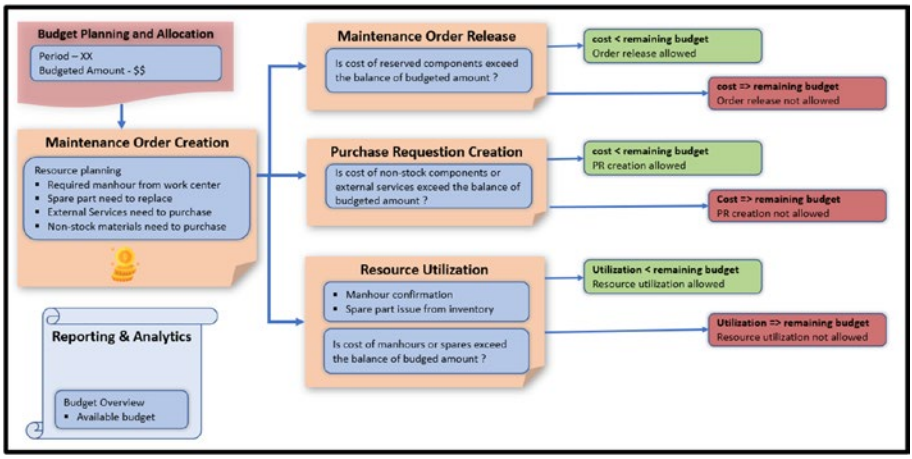

Figure 6-20. *Asset maintenance and repair budgeting*

Budgeting in asset maintenance and repair allows you to do the following.

- Plan and allocate budget as per the business requirement
- Monitor and control the consumption of spare parts, man-hours, and external services when the expense reaches the specified limit of the budget
- Analyze and make decisions based on available reports and analytics

Since asset management is seamlessly integrated with other S/4HANA business applications, budgeting in asset maintenance and repair processes can be set up in conjunction with the budgeting functionalities available in other business applications such as finance, project systems, and controlling. Budgeting in asset maintenance can be implemented in various ways, such as the following.

- Using funds management in the Finance module
- Using WBS in the Project System module
- Using the budget profile in the Controlling module

6.3.1. Budgeting Using Funds Management from the Finance Module

The Funds Management functionality serves to budget for all revenues and expenditures in individual functional areas of an enterprise, such as asset management. It controls future fund transactions according to the allocated budget and prevents exceeding it. The fund management functionality is integrated with the General Ledger Accounting component of the finance business application.

Integrating asset management and funds management applications allows you to oversee asset management processes that involve costs and require budgeting. As a prerequisite, integration between materials management and fund management is necessary for budget control during component issues for maintenance orders and the creation of external service and non-stock material purchase requisitions from maintenance orders. Additionally, integration with controlling and fund management (where FM-CO posting integration is active) is necessary for budget control during man-hour confirmation (confirmation of maintenance order operation with costing activity type).

The integration between asset management and funds management applications is established by maintaining an account assignment from funds management, such as commitment items, funds center, and funds, in the header section of a maintenance order.

During maintenance order processing and cost determination for planned resources, the system automatically selects the account assignment from the maintenance order.

The automatic determination of FM account assignment in a maintenance order occurs if you have entered the required assignments of FM account elements to CO objects in one of the steps of your derivation strategy. The system can extract the FM account elements from these assignments in this case. For instance, it can derive the FM account assignment from the requesting cost center entered in the technical asset (functional location, equipment master) of the maintenance order. The FM account assignment element determined through the account assignment derivation strategy appears as the default value and cannot be changed. Alternatively, the FM account assignment can be entered manually.

The following describes the process flow.

1. **Maintenance order creation**: When a maintenance order is created, the system determines and automatically populates an account assignment for funds management based on the defined derivation strategy. For manually managing the FM account assignment, navigate to Extras → Assignments → Funds Management in the maintenance order.

2. **Resource planning**: During the planning of resources for maintenance work, such as component reservation, purchase requisition for non-stock components, and external services, the system checks the available budget against the fund center linked to the cost center (such as the requesting cost center maintained in the technical asset) entered in the maintenance order's Account Assignment tab. If the cost of the required resources for the order reaches or exceeds the budget limit, the system prevents the release of the order and the generation of a purchase requisition.

3. **Operation confirmation**: During man-hour confirmation (confirmation of maintenance order operation with a costing activity type), the system checks the available budget. If the cost of the man-hours reaches or exceeds the budget limit, the system does not permit the saving of the completion confirmation.

Fund management is an application component within the finance and controlling module, integrating with various modules in S/4HANA, such as material management, project systems, asset management, and controlling. Users from the finance and controlling modules carry out all the necessary customizations. Therefore, customization activities are outside the scope of S/4HANA Asset Management and are not covered in this book.

6.3.2. Budgeting Using WBS in the Project System Module

Managing long-duration and high-cost maintenance work, such as shutdown maintenance, as a project enables you to allocate a specific budget to the project. This budget can be monitored and controlled, assisting you in keeping the costs in check and ensuring that the shutdown maintenance activities are completed within the allocated financial limits.

Integrating S/4HANA project system and asset management enables you to link maintenance orders with the WBS project. This integration facilitates budgeting in maintenance orders, as maintenance costs incurred during the order processing can be directly allocated to specific project WBS, aiding in better monitoring and controlling costs.

The user needs to calculate and allocate the budget to the respective WBS element to initiate budgeting in maintenance order processing. The WBS element with the allocated budget must then be entered in the maintenance order's WBS element field under the Additional Data tab.

During maintenance and repair planning for the maintenance order, the system compares the total planned cost for the required resources in the order with the remaining balance of the allocated budget for the WBS. The user can save the order if the budget limit is not reached. However, if the cost of the required resources for the order reaches or exceeds the budget limit (see Figure 6-21), the system prevents saving the maintenance order.

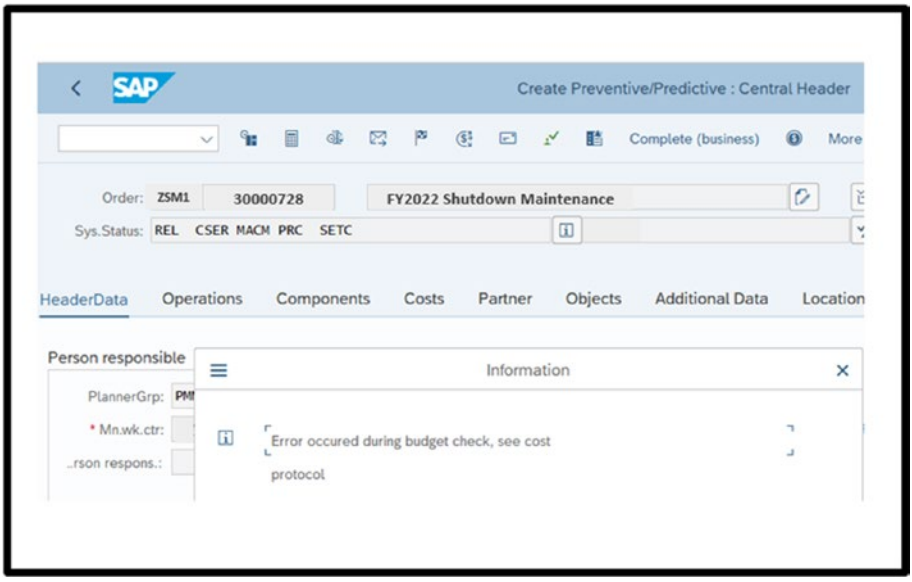

Figure 6-21. *Maintenance order not allowed to save when budget limit reached*

Budgeting using WBS does not require any specific customization, and typically, the existing setup of the project system module is equipped to start creating relevant master data, such as WBS elements, assigning budgets for the WBS elements, and defining tolerance limits for the budgeted value. After setting up the WBS element with a budget and tolerance limit, the WBS can be used in the maintenance order for budget control.

6.3.3. Budgeting Using Budget Profile from the Controlling Module

Another way of managing the budget for maintenance and repair orders is by using a budget profile from the controlling application. However, in this approach, the limitation is that you must allocate a budget to a specific maintenance order or a group of existing orders. This limitation restricts the usefulness of this approach.

Plan and Assign Budget

To initiate budgeting in maintenance order processing, the user must appropriately calculate and allocate the budget. In this approach to budget management, the budget can be allocated for a specific order or a group of existing orders (see Figure 6-22).

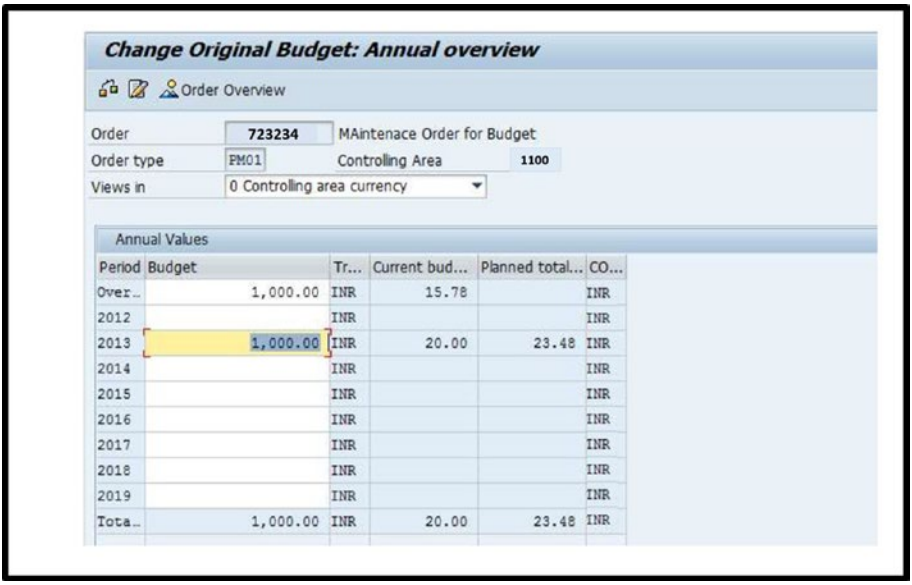

Figure 6-22. *Allocation of budget for maintenance orders or groups of orders for a year*

For example, a company wants to plan for a two-week-long shutdown maintenance work. The budget for annual shutdown maintenance has already been planned and released to the department.

For this work, the maintenance planner has created multiple orders. The planner has grouped all these orders and created an order group. The planned annual budget assigned for the order group. This budget applies to each order within the order group for the full year.

Maintenance and Repair Order Processing

During maintenance and repair planning for the orders from the group of orders, the system compares the total cost for the required resources with the remaining balance of the allocated budget for the group of orders. The user can process the order if the budget limit is not reached. However,

if the cost of the required resources for the order reaches or exceeds the budget limit, the system does not allow the planned resources to be utilized (see Figure 6-23).

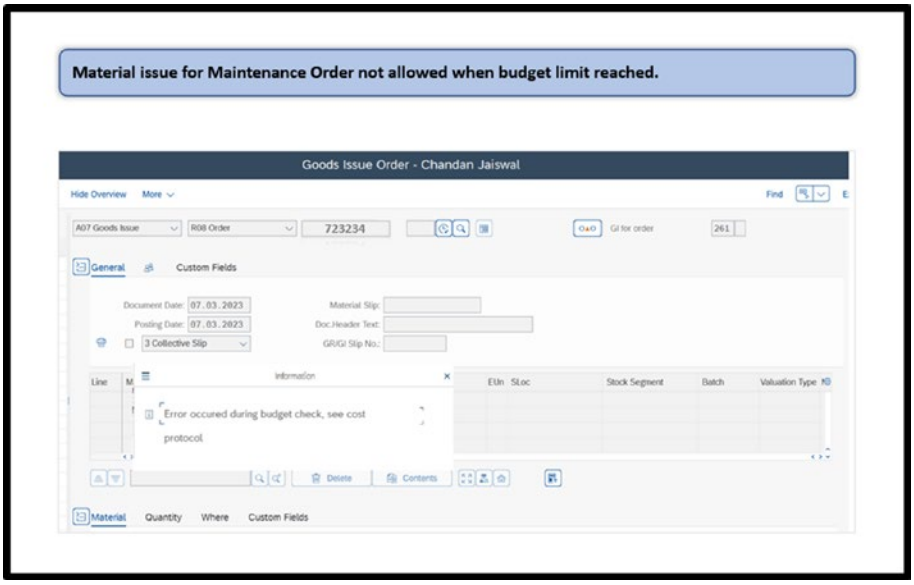

Figure 6-23. *Material issue for maintenance order not allowed when budget limit reached*

When the system does not allow the utilization of resources, the maintenance planner needs to review and replan the maintenance order (see Figure 6-24), aiming to reduce the required resources. This ensures that the maintenance cost does not exceed the allocated budget.

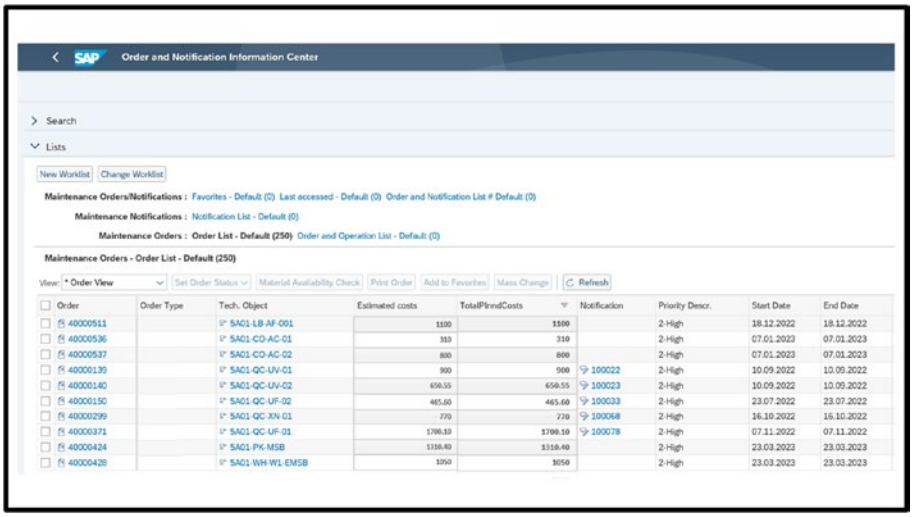

Figure 6-24. *Maintenance orders list with planned costs*

Setting up budgeting for maintenance orders involves the following customization steps.

1. **Create a budget profile.** To allocate a budget to maintenance order(s), you must define a budget profile. This profile includes information such as the time period for the validity of the budget and the activation settings for the budget profile, among other details.

2. **Define a tolerance limit.** In this customization step, you set up the tolerance limit for the budgeted value, such as 80%. This means the system triggers control measures when the order cost exceeds the allocated budget of 80% or more.

3. **Assign the budget profile to a maintenance order type.** In this customization step, you assign the budget profile to the maintenance order type for which budgeting is required.

Table 6-3 lists important configuration paths related to budgeting in maintenance order.

Table 6-3. *Configuration Path for Important Customization Related to Budgeting in Maintenance Order*

Configuration Step	Configuration Path
Maintain budget profile.	SAP Customizing Implementation Guide → Controlling → Internal Orders → Budgeting and Availability Control → Maintain Budget Profile
Define tolerance limits.	SAP Customizing Implementation Guide → Controlling → Internal Orders → Budgeting and Availability Control → Define Tolerance Limits for Availability Control
Assign a budget profile to the maintenance order type.	SAP Customizing Implementation Guide → Plant Maintenance and Customer Service → Maintenance and Service Processing → Maintenance and Service Orders → Functions and Settings for Order Types → Configure Order Types

6.4. Summary

The chapter delved into key aspects of managing costs and budgets in asset maintenance and repair processes. It covered costing in asset maintenance and repair, where integration with finance and controlling, account terms in maintenance orders, operation level costing, and costing value flow were explored. Additionally, topics such as overhead rates, commitments management, and costing in refurbishment of subassemblies were discussed with necessary configuration activities.

The chapter examined processes like maintenance order settlement, business completion, refurbishment order settlement, and the required configuration activities for cost settlement.

The chapter concluded with insights into budgeting in asset maintenance and repair, presenting various approaches to implementing budgeting in asset management.

This comprehensive chapter equips readers with valuable knowledge on effectively managing costs and budgets within asset maintenance and repair processes.