Chapter 6

Resource Management

Resources required for processing maintenance tasks are defined in the maintenance order. The maintenance order contains information on the activities a certain workshop has to perform by a certain date and the resources required. Prerequisites for the efficient use of resources are transparency of the resources required for maintenance and their ensured availability. From the maintenance perspective, the following resources are of particular importance:

Work Centers

Available capacity of the maintenance workshops is defined in the SAP System using work centers. When an order is placed, it must be ensured that the planned scope of work can be carried out with the personnel available to meet the required deadline.

Material

The system automatically checks the availability of spares and reserve parts or operating supplies when the order is released.

Resources/Tools

Devices, lifting gear, transport means, special tools, drawings and so on can all be managed in the SAP System for a wide variety of purposes. Depending on your system configuration, resources/tools can be allocated to different objects and their availability can be checked.

Budgets

Financial means are monitored in separate controlling structures (projects) using the SAP Project Controlling (PS) module.

Work Center

The work center in the PM System is a spatial area (workshop), where work is carried out. Work centers can be

- a group of people (workshop)
- an individual person
- an individual machine (for example, drill in the repair workshop)

Work centers form the basis for maintaining operations in task lists.

Scheduling/ Costing/ Capacity Planning

In the work center, the maintenance planner can enter information which controls scheduling, costing and capacity planning in the operations. This information determines the formulas by which execution time, costs and capacity requirements of the operations are calculated for this work center. The standard formulas delivered with the system can be extended as required to suit company requirements using the customizing function.

Default Values The default values entered in the work center simplify and accelerate work planning. When operations are maintained, this information is copied or a reference is made in the task list or maintenance order.

Link to Cost Center The work center is allocated to a cost center and an activity type (CO), enabling internal activities to be costed and cleared on the basis of this allocation.

Work Center Hierarchies Work centers can be hierarchically structured by different criteria. This enables you to document organizational connections, for example. Furthermore, work center hierarchies can be used to summarize available capacity and capacity requirements.

Capacity and Available Capacity

Any amount of capacity with a freely definable unit of measure can be allocated to the work center. The capacity forms the basis for maintenance order scheduling and capacity planning functions.

Available capacity is specified for each capacity. In its simplest form this is standard available capacity, which is determined by individual capacity (labor / machines), number of shifts, usage time per shift and degree of utilization.

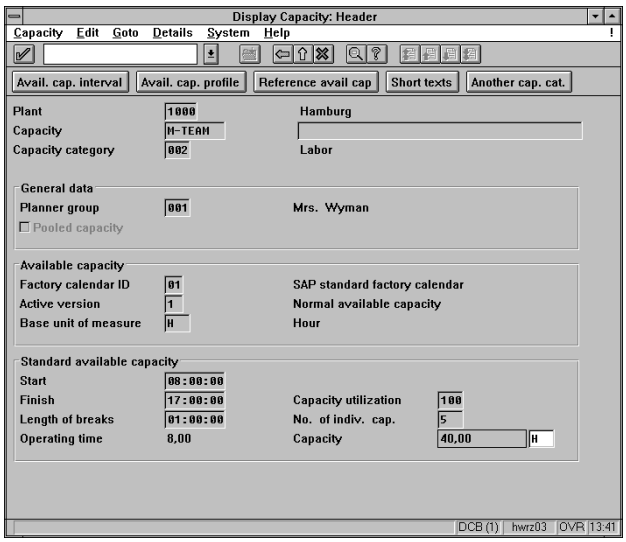

Figure 6-1: Work Center Capacity

Further details can also be added to standard available capacity if required. The chronological distribution or profile of available capacity can be derived from this information.

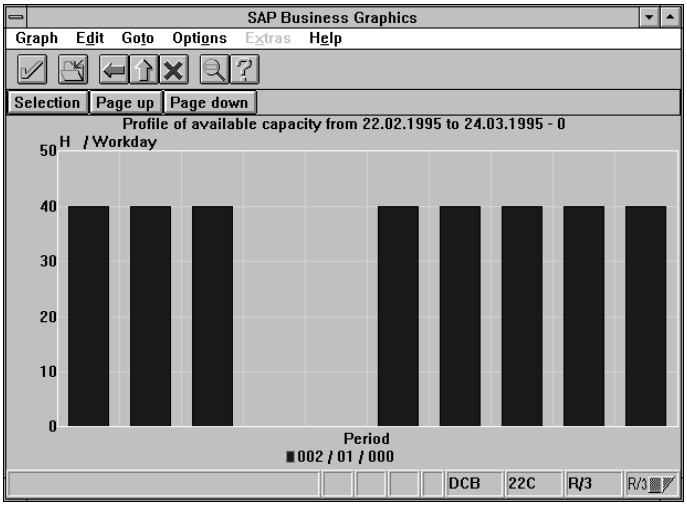

Figure 6-2: Available Capacity Profile

Capacity Requirements

Operations

Formulas

Capacity requirements for the different work centers are determined on the basis of maintenance orders. Each operation and sub-operation describes the work and from which work center it is to be performed. Furthermore, the operation contains specifications of the scope of the work (time required). The capacity requirements per work center capacity is determined using formulas from the work center.

Distribution function

The capacity requirements can be flexibly distributed over the duration of the operation using distribution functions (for example, little requirement at the beginning and increasing later).

Completion Confirmation

With completion confirmation of the maintenance order, the capacity requirements are modified accordingly. Furthermore, when you confirm the maintenance order, you can directly influence the remaining capacity requirements if deviations from the planned order occurred during processing.

Capacity Requirements Calculation

Capacity requirements are automatically updated by the system each time an order is changed or completion confirmation takes place.

Capacity Load Analysis

Available capacity and capacity requirements are compared to produce the load analysis. The capacity load analysis provides the maintenance planner with a current overview of the utilization situation of the work centers.

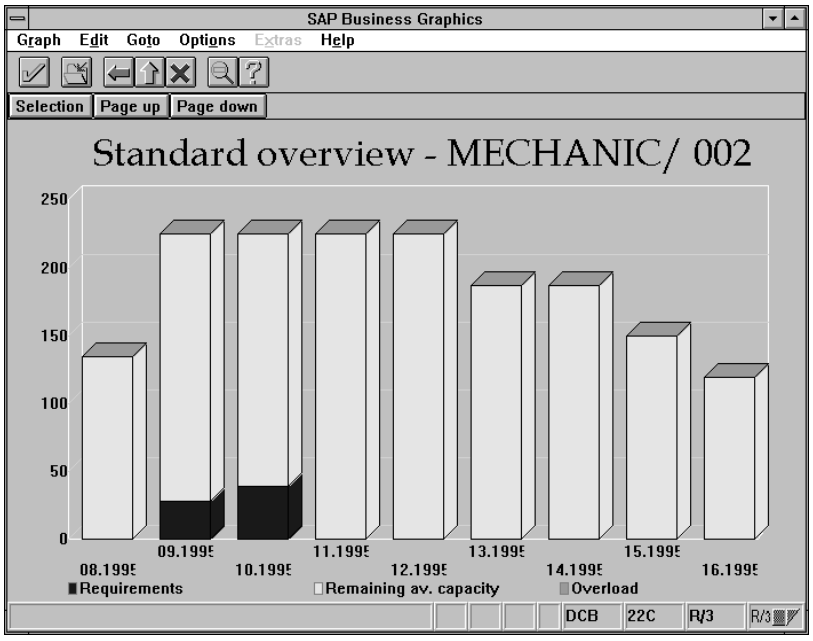

Figure 6-3: Capacity Load Situation in the Work Center

Flexible Configuration

The type of capacity load analysis can be set up flexibly to suit your requirements using the customizing function. Using profiles, the maintenance planner can specify, for example, the analysis period, the work centers and the orders to be analysed.

Summarization

In particular for estimate planning, flexible work center hierarchies can be defined as well as temporal summarization. This makes it possible for you to specify different work center hierarchies and evaluate them together.

Capacity Leveling

The capacity leveling instruments enable flexible reconciliation of available capacity and capacity requirements in each stage of planning. You can use different methods for this depending on the actual condition in your company.

Resource Planning

Resource planning is a manual capacity leveling. The goal of resource planning is to distribute only as many orders to a work center as can be processed based on the available capacity there. To do this, the orders already dispatched to a work center and the work list are displayed in a planning table. The resource planner can choose the orders/operations that are to be processed in a particular period. Extensive detailed information on available capacity and materials, on the degree of processing the previous operations and the dispatching rules simplify resource planning.

Planning Table

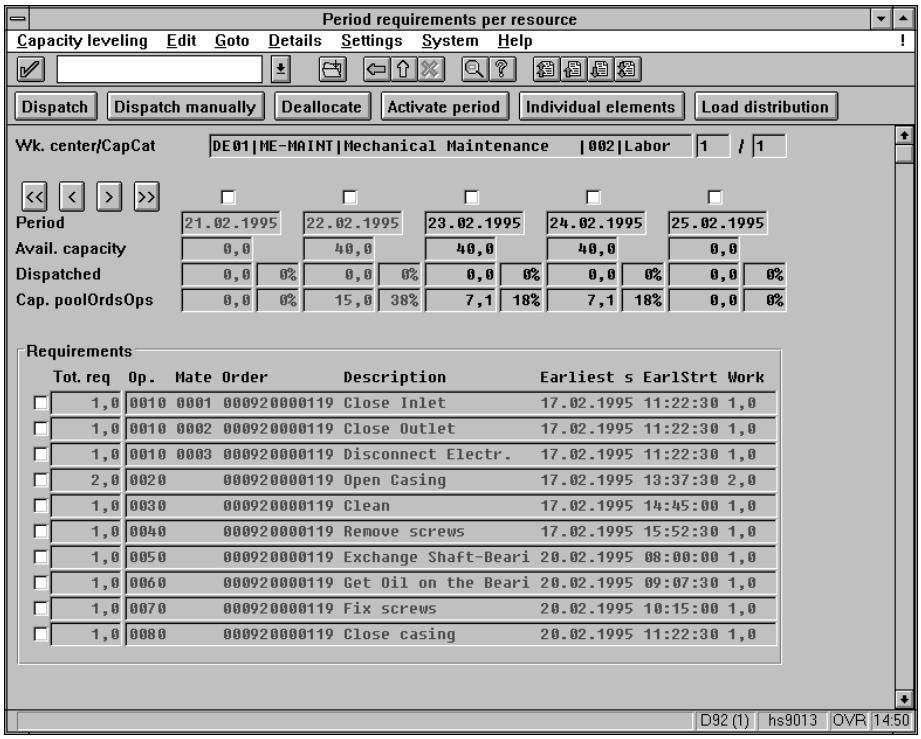

Figure 6-4: Planning Table

Material

All materials are managed in a central data base in the SAP System. They are, therefore, equally available to all company areas.

Materials are allocated to different material types depending on their usage within a company. In this way, materials can be indicated as raw material, semi-finished product, spare part, trading goods and so on. Using the material type, you can control what data is relevant for a material, for example.

The data structure of the material is flexibly built up based on the different requirements and the organizational structure of the company.

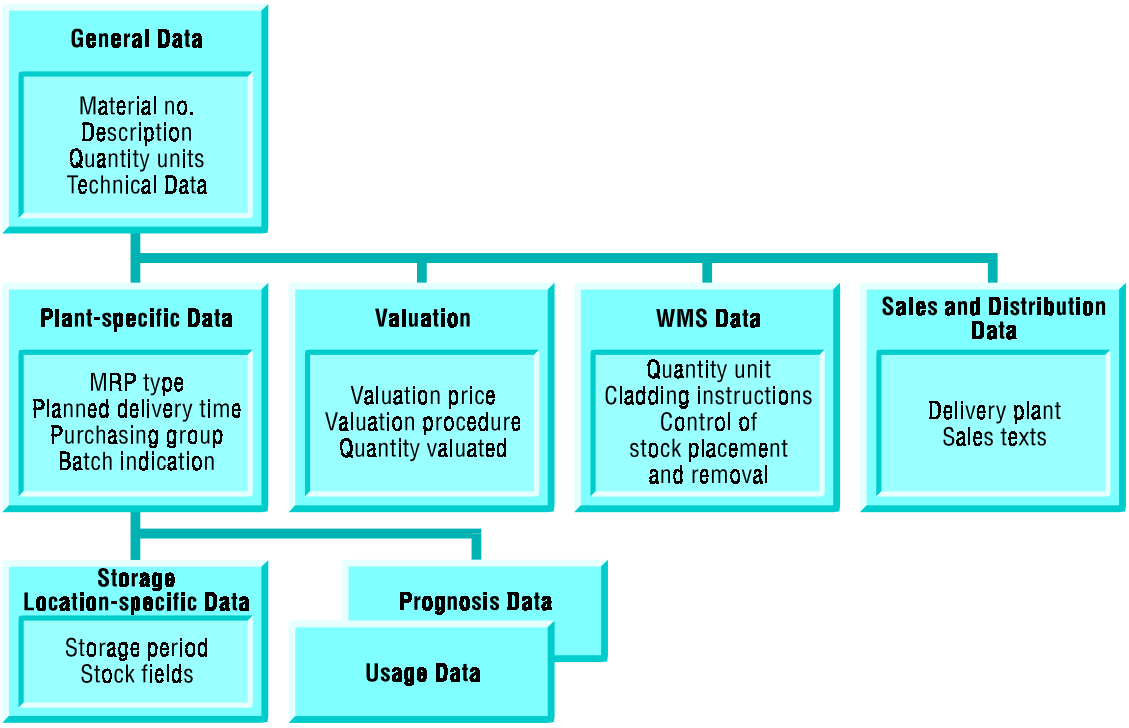

Figure 6-5: Data Structure of the Material Master Record

Using special views, you can easily and flexibly maintain data for the individual specialist areas such as construction, purchasing, planning and so on. The data is correspondingly allocated to the different organization levels.

Material Availability Check

Material reservations are created for the materials listed in the maintenance order. When the order is created or released a material availability check is automatically performed for these materials. A material availability check can also be performed manually at any time.

The material type and the material used specifies how the availability should be calculated. There are various configuration possibilities available, what stock (for example with / without safety stock and so on) and what receipts / issues (for example, purchase requisitions, reservations and so on) have to be taken into account. This enables you to structure the material availability check to suit your individual needs.

Production Resources/Tools

In addition to materials, each operation in a maintenance order or task list can be allocated one or more resources, which the worker needs to perform each of the activities. Using the production resources / tools management function, you can describe all types of tools, such as NC programs or devices, measurement and inspection equipment or processing tools.

Purchasing and Inventory Management Planning

The link to the Materials Management (MM) functions guarantees simple purchasing and inventory management for production resources / tools. Furthermore, production resources / tools can be planned within the framework of material requirements planning.

Master Records

Depending on the uses, three types of master records can be used to describe production resources / tools:

- **Material master record**

  A material master record is used if purchasing and inventory management data is to be used for the production resources / tools.

- **Production resources/tools master record**

  This “lean” master record is used when the production resources / tools are mainly used for documentation purposes in task lists.

- **Document**

  A document master record is created, if the production resources / tools are a document. A production resources / tools document could be, for example, a drawing or an NC program.

Classification

Irrespective of the type of master record being used, all production resources / tools can be classified. All the functions in the classification system are available to the maintenance planner.

Where-Used Lists and Bulk Changes

Where-used lists give an overview of the use of a tool in the task lists. The bulk changes instruments allow a central exchange of a production resources / tools in different task lists.

Documents

Documents can be described, managed and viewed using the Document Management System. The system can manage any type of document, for example drawings, graphics, contracts, patents and so on.

Describing Documents

Document Information Record

Documents are described in a document information record. In this record, you can enter information such as multilingual texts, name and department of employee responsible, document group (if the document is structured hierarchically), and an authorization group.

Classification

The full functionality of the R/3 Classification System can be used to describe documents in detail.

Allocation

Documents can be allocated to pieces of equipment, functional locations, object networks and materials. They are also integrated in other R/3 applications.

Managing Documents

Status Management

Message Control

The life cycle of a document is described by freely definable status sequences. Within the framework of message control, you can send a message to one or more employees by assigning a status. This can be useful when a drawing is released, for example.

Archiving

Documents that exist on technical storage media can be archived either in a data server or in an archiving system.

Viewing Documents

You can view any document from the R/3 Document Management System. You can either view the document in a view program, or the system can automatically start the appropriate application. This simple method ensures that practically every document is available to all work centers.

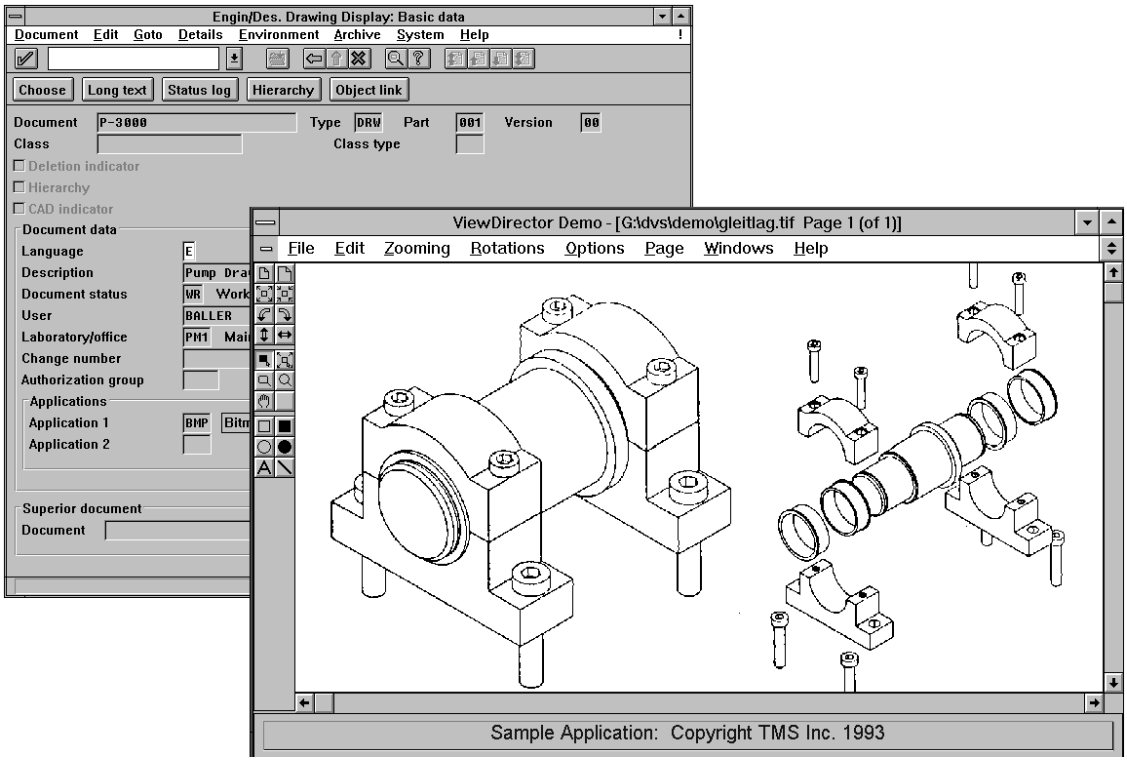

Figure 6-6: Document Management with Graphic Display

Budgets

From the co-ordination and controlling perspective, it may be useful to process a maintenance task as a project. Maintenance projects are managed in the PS System.

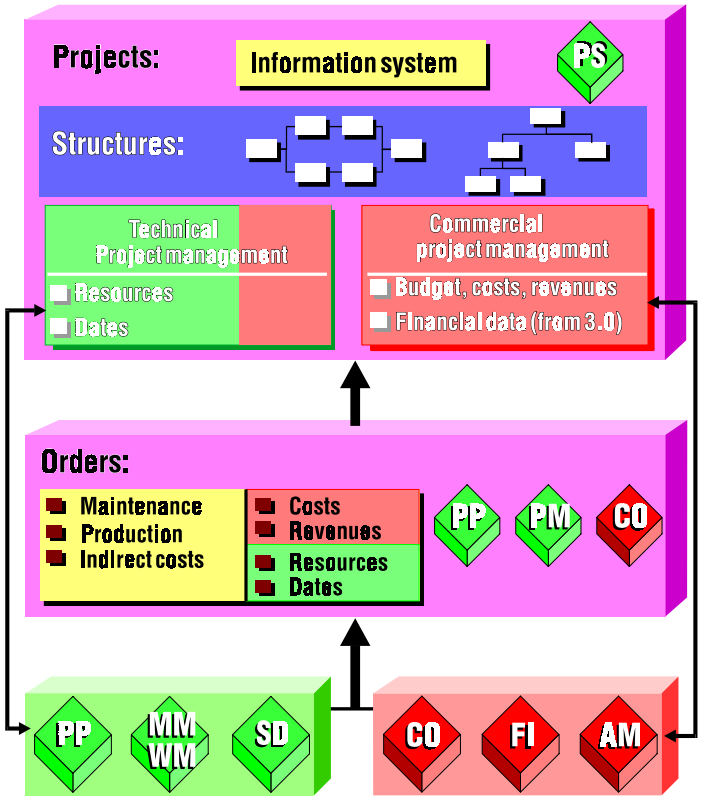

Figure 6-7: Projects and Orders

PS Architecture

The entire project is defined and described in the PS System (project definition). To give the user a better overview, the project can be divided into subprojects or a multi-level structure. Various criteria can be used for the classification (for example, system parts, activity types such as repair, maintenance and so on).

Maintenance Budgets

Date, costs and budget planning is performed top-down and bottom-up in the WBS. When the project is released, the operating tasks are performed in the maintenance order. For this purpose, maintenance orders are directly allocated to the corresponding WBS element.

Financial Means Check

The PS System checks the budget against the running maintenance costs incurred because of the maintenance orders. When the maintenance orders are allocated, a check is performed to see whether sufficient financial means are available in the project.

What uses does capacity planning have in maintenance?

- ❑ Overview of capacity load of individual or entire workshops
- ❑ Identification of capacity bottlenecks or free capacity
- ❑ Efficient planning of maintenance tasks

What is the importance of production resources / tools?

- ❑ Production resources / tools affect all business function areas from procurement, development / construction, maintenance, costing to sales
- ❑ In the maintenance area, maintenance and repair work is displayed using production resources / tools (for example, sharpening drills, aligning measuring instruments)
- ❑ Documents can be allocated as production resources / tools in the task list and printed out with the shop papers

How does the document management system support maintenance?

- ❑ Documents such as work and inspection regulations for maintenance are given a link to SAP objects (pieces of equipment, functional locations)
- ❑ Documents (for example, drawing of a pump) can be printed or displayed on the screen and help with the description of parts to be exchanged

What advantages to maintenance does the PS System have to offer?

- ❑ Large tasks can be structures into more manageable sub-tasks
- ❑ Planning can be performed centrally at a higher level.
- ❑ Individually tasks can be planned separately and allocated to the overall project

What are the uses of budget management?

- ❑ The entire costing framework can be worked out centrally
- ❑ Each individual maintenance order is checked
- ❑ Excess costs are pinpointed in time during planning or processing