

## Overview of Functions

In daily plant use, PP-PI is located between the business applications on higher levels and the technical operations on lower levels.

PP-PI is made up of the following groups of functions:

- Resources
- Master recipes
- Process orders
- Campaign and process planning (capacity planning)
- Process management
- Integration with laboratory information systems (LIMS) and R/3-QM (Quality Management)
- Integration with higher-level systems
- Production documentation and evaluation

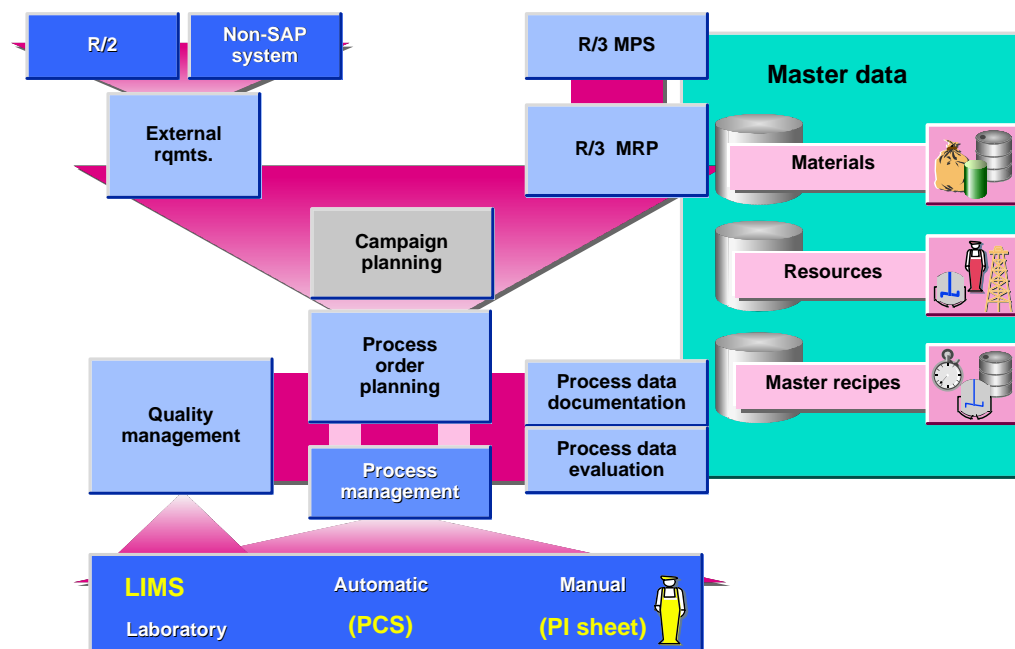


Fig. 3-1: The main functions of PP-PI

**Resources** The **resource management** component describes all resources necessary to the production of output in the chemical industry. These can be labor resources, plant equipment used, transport facilities, or recycling and waste disposal facilities. These are considered not only with respect to their productive use in a plant, but also with respect to product quality, work safety and environmental protection.

It is possible to create a network-like structure to display the sequence and relationships of resources, as well as resource hierarchies to show the dependencies.

**Master Recipes** Materials and resources are maintained in the **recipe management** component, in order to describe the steps involved in a specific manufacturing process. Recipes also contain information on all resources required and how they are related to each other in the production process, i.e. the resources are networked. For PP-PI, recipes combine all the main information on which planning, control and documentation of manufacturing processes are based.

The starting point for recipe management was provided by the proposals made by NAMUR (norms working committee for measuring and control techniques in the chemical industry). The proposals made by NAMUR for defining the structure of basic and control recipes were developed for process control procedures and will be expanded accordingly in PP-PI.

Master recipes are regarded from the planning as well as from the control aspect. In the planning phase, the user has to define the operations and phases of a master recipe, to classify the materials or substances used, to calculate the target quantities and define the inspection characteristics to be used in the quality inspection. User-defined relationships between the operations and phases can be maintained and viewed in the graphic editor.

**Process Orders** Process orders describe the specific production steps involved in creating one or several products, substances or batches. The basis for this is the information stored in the master recipe, which now contains dates and specific quantities. When an order or individual operations of an order are released, control recipes are generated, which are passed on to the process management component.

**Capacity Planning and Leveling** **Capacity planning and leveling** refers to the planning of campaigns (rough-cut scheduling) and the planning and scheduling of orders (detailed scheduling).

- Within the framework of **campaign planning**, rough-cut scheduling (to the day) is carried out for production campaigns, resources are allocated, and the availability of the allocated resources is checked.
- Process planning's** main functions are to schedule and release operations in process orders, as well as to check material and resource availability.

Campaign planning will be available after Release 3.0.

The process management component coordinates the data exchange between PP-PI and the systems involved in process control and quality assurance. Due to its flexible architecture, process management can link up to automated, partially automated and manually operated plants.

### Process Management

The data exchange takes place via control recipes sent to the corresponding control systems. In the reverse direction, process-related data is collected in the form of process messages and passed back to process management. Process messages provide information on the current status of a process, on the committed resources, material consumptions and other selected events.

By distributing process messages to predefined recipients, process management ensures that information also flows to other PP-PI functions. Process messages are a prerequisite for process documentation.

The exchange of information between production plant and lab is the task of the **laboratory integration** component. In this way, the quality of products coming out of the production process is ensured. There are the following two types of control or inspection runs:

### Integration with the Laboratory

- ❑ **In-process control**, which records process events directly during the production process.
- ❑ **Post-process control**, in which inspection results are recorded after the production run and then passed on to the laboratory.

The results of both methods are then written to the batch record.

There is no difference as to whether you use an external LIMS system or the R/3 QM System.

The **documentation and evaluation of processes** closes the cycle of data used. Production specifications from process orders are compared with actual values from production and, together with process events and analysis results, used to create batch and production records. This data forms the basis of the technical and business-related optimization of the process, as well as of the fulfillment of legal requirements coming from work safety and environmental protection regulations, such as the Good Manufacturing Practice of the US Food and Drug Administration.

### Process Documentation and Evaluation

PP-PI is integrated with all other R/3 modules, i.e. plant data is directly linked with application data on the company management level. The use of company-wide data by the plant, the integrity of central and distributed data, and the data flow between these levels are all functions carried out by PP-PI.

### Integration with Higher-level Systems

In the last few years, the issues of environmental protection as well as plant health and safety have become increasingly important in the public eye. Many laws and regulations have been passed in order to reduce the dangers in all areas of daily life. For companies, taking them into consideration has meant an increasing amount of work.

### Functionality after Release 3.0

One of the most important aspects to be considered in this context is the large number of substances which exist or are produced in a company, with their many safety-related or environmentally classified attributes. Here, the chemical industry, as well as those branches of industry processing, using, storing or transporting chemical products, are strongly affected.

### Safety, Health & Environment

Without the support of DP systems, the above tasks can no longer be carried out. Until now, this area was dominated by standalone systems or internally developed systems. However, there has been an increasing call on the part of SAP users for an integrated SAP solution in this area. In a further release of the R/3 System, the basic applications in the area of safety, health and environment (PP-SHE) will be available.

The functionality of PP-SHE, which will be completely integrated with PP-PI, includes:

- A substance and product data base, with predefined and user-defined attributes
- A phrase catalog with management of translated phrases (for example, risk and safety phrases)
- Distribution of the substance database over various separate systems (for example, head office/plant and branches)
- Reporting and evaluation (for example, for material safety data sheets, accident procedures sheets)

The functionality of PP-SHE will also be fully integrated in the R/3 applications SD, MM, WM and PM.

**The module PP-PI contains all the necessary functions for the planning and control of processes and is fully integrated with all other R/3 modules.**

What are the main functions of PP-PI?

PP-PI contains functions for resources, master recipes, process orders, campaign and process planning (capacity planning) and process management, i.e. down to the process control level.

What links exist from PP-PI to other systems?

There is an integration with laboratory information management systems (LIMS) and to the R/3 Quality Management System (QM), to higher-level and external systems (for example, R/2), as well as to process data documentation and evaluation.

