PUZZLE - MAINTENANCE APPLICATION

Employee is the greatest asset of the company

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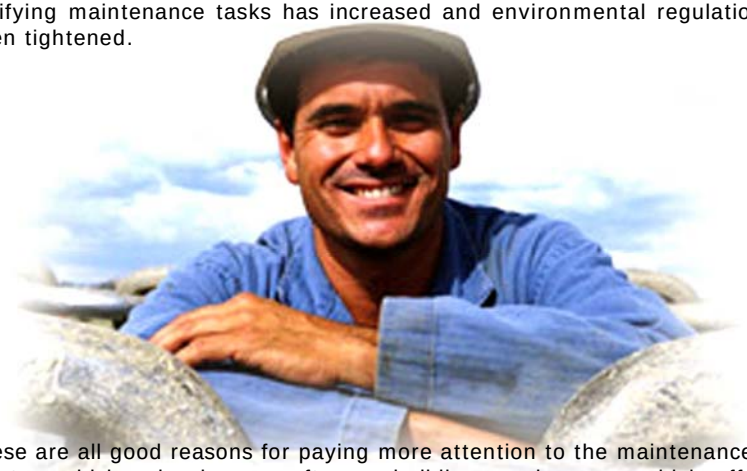
Puzzle- Maintenance Application

Overview

Maintenance is becoming more technology-oriented. The degree of automation and complexity is continually increasing, and the quality assurance of products and services of the market are becoming more stringent. The optimum condition and usage availability of maintenance systems, vehicles, hardware, software, buildings and so on, play a decisive role in the success of a business. At the same time, the number of legal stipulations affecting planning, execution, and verifying maintenance tasks has increased and environmental regulations have been tightened.



These are all good reasons for paying more attention to the maintenance of your plants, vehicles, hardware, software, buildings and so on, which affect your company as both an internal organization and as an external service provider. Equally as importance are suitable instruments that support the planning and processing of tasks, as well as managing objects.

Puzzle-Maintenance application as one of the many Puzzle product applications which using high technology, have capability to give a solution of problems covering for the maintenance of your production systems, vehicles, buildings and so on, across all branches of industry.

Puzzle- Maintenance Application

Maintenance Business model of Puzzle-Maintenance application provides you with a comprehensive software solution for all maintenance activities that are performed within a company. Puzzle-Maintenance application comprises of two categories; Breakdown Maintenance (Unplanned task) and Preventive Maintenance (Planned task).

Maintenance processing for unplanned tasks consists of three essential elements:

- Maintenance notification
  - Reports a malfunction at a technical object
  - Requests maintenance tasks
  - Describes the condition of a technical object
- Maintenance order
  - Plans the execution of maintenance tasks
  - Monitors the work progress
  - Allocates the costs for the maintenance task
- Maintenance history
  - Stores important maintenance data on a long-term basis
  - Makes this data available for evaluations at all times

The most important task in preventive maintenance is to ensure the long-term, continued availability of the objects. Effective preventive maintenance planning will not only prevent system breakdown, but will also reduce unnecessary costs arising from repairs or system replacement and production loss.

What is Puzzle-Maintenance Application?

Puzzle-Maintenance application is a product application built for supporting the enterprise's Maintenance information system.

The flexibility and easiness implementation make Puzzle-Maintenance application suitable to be applied in many kind of company from small, middle or even enterprise that have more than one subsidiaries.

The system is built on Oracle database with multi platform that can be deployed easily on any server and any operating system, which make this system so powerful to keep huge number of data for further needs of analysis. This application using client server concept, which's so many user in the same time can access the system with each their authority. And whenever you need, this application can also be deployed on the web, so it is can be accessed from many place in the word using any internet browser.

Functionality

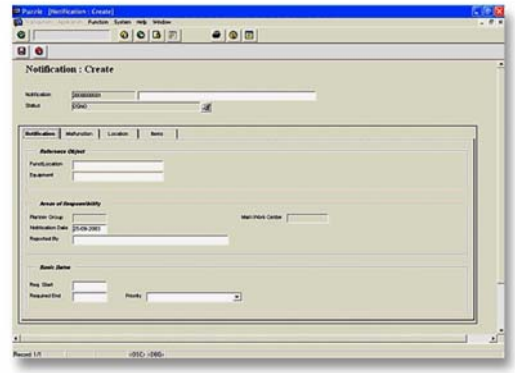
Puzzle-Maintenance application system supports the entire maintenance department in planning, processing and settling maintenance tasks. You can enter, plan, monitoring and report all task to be carried out by the maintenance department. This includes both tasks that are not planned or that are due to malfunction, and regular maintenance and inspection measures.

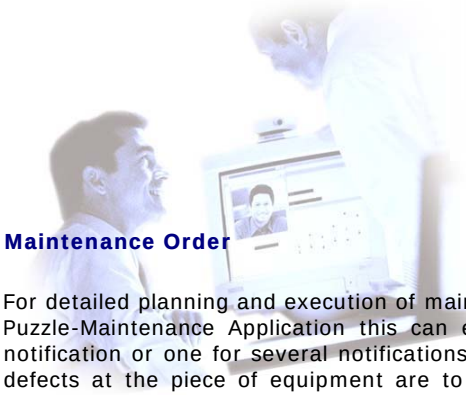
Maintenance Notification

Maintenance notification in Puzzle-Maintenance application is used to describe the condition of a technical object in the Maintenance system, to refer the maintenance department to a task that needs to be carried out and to document the work performed.

When creating notifications, the following two types of notification are used:

- **A malfunction report** describes a malfunction at an object that limits its performance in some way. For example, an employee in the production department would use a malfunction report to notify that a maintenance object's performance level has declined, that it is not functioning at all, or that its output is poor quality.
- **Maintenance request** are maintenance notification for which no malfunction exists. They request particular tasks of the maintenance department, such as request involving investment, renovation and conversion work.





Maintenance Order

For detailed planning and execution of maintenance task you need maintenance order. In Puzzle-Maintenance Application this can either be an order for a single maintenance notification or one for several notifications. For example, there are cases where several defects at the piece of equipment are to be repaired during a particular maintenance schedule, or where a particular maintenance operation is to be carried out on objects connected in series on a particular date.

When you release a maintenance order, the system checks the availability of materials. The material reservation is applicable to MRP and can be withdrawn, and the purchase requisition is created at the latest when the order is released.

Puzzle-Maintenance Application can carry out the following activities once you have released an order:

- Printing shop paper
- Issuing material
- Posting goods receipt
- Entering confirmations of times required for the job
- Completing the maintenance task

Maintenance Task List

You can use task lists in prepared maintenance as the basis for a maintenance order. The following types of maintenance task list are available in the Puzzle-Maintenance Application system:

- **General task list**

  Task list of this type can be used universally. However, general task lists that refer to particular assemblies can only be entered for technical objects that contain these assemblies.

- **Object task list**

  Task list of this type can only be used for the individual technical object for which they were created. Here, we differentiate between:

  - Equipment task lists
  - Task list for Functional Locations

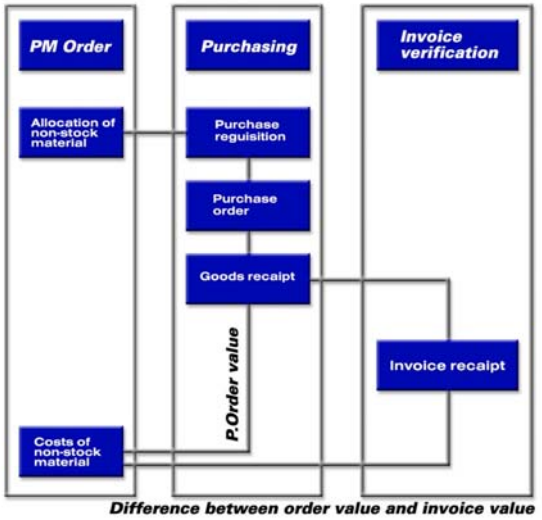
Confirmation and Completion

As soon as maintenance order has been released and you start to carry out the maintenance tasks, the employees involved can enter confirmations in the system. These serve to document:

- That operations or sub-operations were started or carried out
- The progress made regarding time and degree of completion
- What material were used
- What measurement and/or counter readings were entered for technical objects during or after order execution
- The extent to which the order has been processed
- Where additional capacity is needed and where surplus capacity can be reduced

Settlement

When a maintenance order is processed by your maintenance staff, costs are incurred. Theses costs are collected initially on the maintenance order itself. Puzzle-Maintenance application can display the costs and their causes in detail, allowing you to monitor your internal business processes more effectively. Maintenance consumption can be measured and charged to the maintenance order in terms of material and labor costs, external services and so on.



Difference between order value and invoice value

Maintenance Planning

There are two type of Maintenance Planning, i.e.: Time-base Maintenance and Counter-Based Maintenance.

Time-Based Maintenance

With time-based maintenance plans, maintenance occurs at specific intervals, for example every two months, every six months, and so on.

Counter-Based Maintenance

Counter-based maintenance planning allows you to plan regular maintenance on the basis of counter reading maintained for measuring points assigned to pieces of equipment and functional locations.
With counter-based maintenance plans, maintenance occurs when the technical object's counter has reached a certain reading, for example every 100 operating hours. This may occur after two weeks or four weeks, depending on the counter reading at the time of scheduling, and the annual estimate that has been defined for the counter.

Counter

If you implement counter-based maintenance, you will need to enter at least one counter in your maintenance plan. A counter is a means with which object wear, consumption, or reduction of a working supply can be represented. Counter are represented in the Puzzle-Maintenance Application as a special form of measuring point.

Scheduling

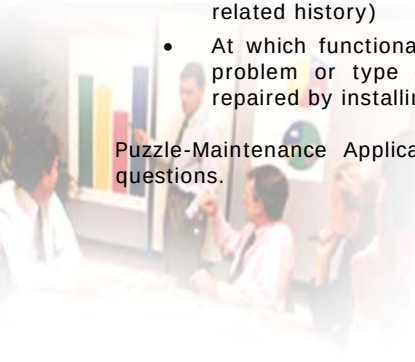
When you schedule a maintenance plan for the first time in the system, the start date entered initiates the maintenance cycle on the time axis and the system uses the scheduling information to calculate the due date for the next maintenance order. Furthermore, if you specify a scheduling period in the case of a time-based maintenance plan, the system will forecast the due dates for this period of time. For example, you could enter a scheduling period of 365 days to obtain an overview of the due dates for an entire year.

Maintenance History

A good maintenance history must facilitate a differentiated analysis that is object-specific, function-related or task-oriented and thereby provide answers to the following:

- At which functional location was a particular piece of equipment installed in recent years? What was its breakdown behavior in relation to the usage site? (Object-related history)
- What pieces of equipment were installed at a particular functional location in recent years? Were pieces of equipment from different manufacturers suited equally well to this functional location? (Function-related history)
- At which functional locations or pieces of equipment was a particular problem or type of damage established in recent years that were repaired by installing a replacement material? (Task-related history)

Puzzle-Maintenance Application system enables you to answer all of these questions.



Integrated Maintenance

The Puzzle-Maint
enance component is integrated with the other applications such as management of parts or materials. This also includes the external procurement of materials and services, as well as inventory management functions. In short, Integrated Maintenance will help you to manage your complete maintenance processes chain.

Procurement

Using the integrated Puzzle-Maintenance with procurement process is a major step towards optimizing the purchasing function. All routine tasks– from the entry of requisitions to the generation of purchase orders – are handled automatically, without significant user intervention. The buyer or user needs to act only in exceptional situations.

Purchasing documents, such as purchase requisitions or purchase orders, can be created by referencing data that already exists in the system. This simplifies the process considerably, while at the same time preventing errors by copying data that might otherwise require data entry. Reference to the purchase order also simplifies the creation of goods receipts, again saving time and effort.

The following functions are used in Puzzle-Procurement:

- Purchase requisition
- Purchase order
- Condition and Price Determination
- Purchasing info record
- Release procedure
- Vendor evaluation

Purchase Requisition

A purchase requisition is a request or instruction to the purchasing department to procure a certain quantity of a material or service on or by a certain date. Purchase requisitions can be subject to a release (clearance, or approval) procedure.

Requisitions can be created either directly or indirectly. "*Directly*" means that someone from the requesting department enters a purchase requisition manually. The person creating the requisition determines what and how much to order, and the delivery date. "*Indirectly*" means that the purchase requisition is initiated via maintenance order. Requisitions are generated automatically from maintenance orders if:

- A material component with non-stock material has been assigned to an operation, or
- An operation with the control key for external services has been created.

Purchase Order

You can use purchase orders to cover your requirements using external sources (i.e. a vendor supplies a material or performs a service). You can also use a purchase order to procure a material that is needed in one of your plants from an internal source, i.e. from another plant. The activities following on from purchase orders (such as the receipt of goods and invoices) are logged, enabling you to monitor the procurement process.

In the ordering phase, the buyer's goal is to process purchase orders with a minimum of time and effort. For this reason, when creating POs, you reference data that already exists in the system. Referencing means that you take an existing document, such as a purchase order, copy it, and change it to create your new PO with relatively little effort. When creating a purchase order, you can reference a requisition. You can select requisitions from a list and generate PO items. Same as purchase requisition, purchase order can be subject to a release (clearance, or approval) procedure.

The item overview contains the most important data required for the creation of a document item. This data includes the material number, PO quantity and price, as well as the plant and storage location. Consequently, you can enter many items very quickly on one screen.

Condition and Price Determination

This component enables you to store pricing stipulations agreed with the vendor (such as applicable discounts or surcharges, or stipulations regarding the payment of freight costs) in the system. You can enter these conditions in info record. The system then applies the conditions in determining the price in purchase orders (POs). You can enter further conditions in the PO itself.
Example of condition types:

- Gross price
- % Discount
- Amount Discount
- Additional Charges
- % PPN

Purchasing Info Record

The purchasing info record establishes the relationship between a vendor and a material or service. It contains data such as a vendor's material prices and conditions and is an important source of information for purchasing. It also stores the vendor's current pricing. The purchasing info record can be updated when you create a purchase order. When a PO item is created, data (such as valid conditions) is copied from the info record. It is only necessary to enter the material number, order quantity, and delivery date.

The info record allows buyers to quickly determine:

- Which materials have been previously offered or supplied by a specific vendor
- Which vendors have offered or supplied a specific material

Release Procedure

All purchase requisitions and purchase order document can be made subject to a release procedure. The aim of this procedure is to replace written authorization procedures with electronic signatures, while maintaining the dual control principle. The person responsible processes the relevant document in the system (thereby marking it with an electronic signature) which legitimizes the document.

When a document is created, a release strategy is automatically assigned based on certain conditions (for example, the value). The release strategy defines which release points are needed to release (approve) the document, and in which order. Release points are individuals, departments, or other organizational units. When all release points have

released the document, more processing can take place. For example, purchase requisition can be converted into a purchase order.

Each person involved in the release procedure effects release (signifies approval) via a release transaction, using his or her release code. Once effected, a release can also be cancelled with the same code (that is to say, the original status is reinstated).

Vendor Evaluation

Vendor evaluation feature supports purchasing by optimizing procurement operations. It simplifies the process of source selection and permits the continuous tracking and review of existing supply relationships. It facilitates the selection of sources and the ongoing surveillance of existing supply relationships for both materials and services.

Using the vendor evaluation system ensures more objective ratings. All vendors are evaluated based on uniform criteria and their scores are calculated by the system. Therefore, subjective impressions and judgments of individuals can be removed.

- ***Scoring System***

  A scoring system, based on a scale of 1 to 100 points, is provided. The performance of your vendors is measured against three main criteria. The overall score gives the purchasing staff a general idea of how their vendors are performing and permits comparative vendor appraisal.

- ***Main Criteria***

  The main evaluation criteria in the standard system are:

  - Price
  - Quality
  - Delivery

  You can weigh the influence of the individual criteria on the overall score.

- ***Calculate Score***

  The scores criteria are calculated in different ways:

  - Automatic calculation
  - Manual input

  Automatic calculation means that scores are determined based on data that already exists in the system. Manual input means that you enter a vendor's score for main criteria on a global basis.

- ***Analysis***

  Reports can be run to analyze the results of vendor evaluations. For example, you can generate ranking lists showing the best vendors based on their overall scores, or ranking lists of vendors supplying a certain material.

Puzzle-Inventory Management

Puzzle-Inventory Management supports the following tasks:

- Management of material stocks by quantity and value

  All transactions which bring about a change in stock are entered in real time, as well as stock updates resulting from these changes. This means that the physical stock shown is always accurate. You can obtain an overview of current stock levels of a particular material at any time. When a goods movement is posted, the stock value is also updated.

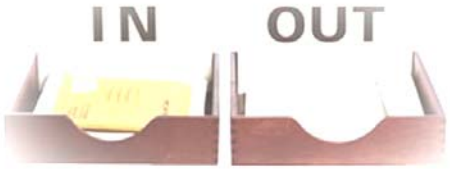
- Planning and data entry of goods movements are recorded as documents

  When goods movements are carried out, documents are created which form the basis for updating amounts and values. Planning of goods movements may be done through reservations. The material document posted for a goods movement can be printed out as a goods receipt/issue slip. This is used to carry out physical movements within the warehouse.

- The physical inventory is used to compare physical stock with the book inventory balance.

  The comparison of stocks physically on hand with book inventory balances can be done using different physical inventory procedures.

Goods Movement



Transaction resulting in a stock movement:
When goods movement entered, you start the following chain of events in the system:

- A material document is generated, which is used as proof of the movement and as a source of information for any other applications involved.
- The stock quantities of the material is updated
- The stock value in the material master record is updated.

Structure of goods movement:

- **Goods Receipt**

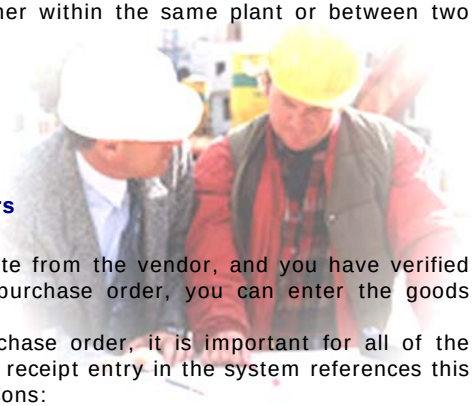
  A goods receipt (GR) is a goods movement with which the receipt of goods from a vendor is posted. A goods receipt leads to an increase in warehouse stock

- **Goods Issue**

  A goods issue (GI) is a goods movement with which a material withdrawal or material issue, a material consumption. A goods issue leads to a reduction in warehouse stock.

- **Stock Transfer**

  A stock transfer is the removal of material from one storage location and its transfer to another storage location. Stock transfers can occur either within the same plant or between two plants.



Goods Receipt for Purchase Orders

If you have received the delivery note from the vendor, and you have verified that the delivery was based on a purchase order, you can enter the goods receipt in the system.
If a material is delivered for a purchase order, it is important for all of the departments involved that the goods receipt entry in the system references this purchase order, for the following reasons:

- Goods receiving can check whether the delivery actually corresponds to the order.
- The system can propose data from the purchase order during entry of the goods receipt (for example, the material ordered, its quantity, and so on). This simplifies both data entry.
- The delivery is marked in the purchase order history. This allows the Purchasing department to monitor the purchase order history
- The goods receipt is valuated on the basis of the purchase order price.

Goods Issue

Postings of material withdrawals mean a reduction in the quantity and value of warehouse stock. All transactions are treated as planned or unplanned withdrawals. Accordingly, planned and unplanned consumption is updated separately in the consumption statistics. When withdrawing components for an order, the system distinguishes between the following types of goods issues:

- **Planned Goods Issue (for Reservation/Order)**

  With this type of withdrawal the system automatically creates a reservation for the components planned in the order. When you enter the goods issue, you can reference the order or the reservation. The system determines all components to be withdrawn.

- **Unplanned Goods Issue**

  With this type of withdrawal, it is determined if goods issue has not been planned (for example, urgent request of a material), you enter the goods issue without reference. This withdrawal is unplanned because there is no reservation to be referenced. You enter this withdrawal as a goods issue without reference.

Stock Transfer

In a company, goods movements do not only occur in the form of goods receipts and goods issues. Depending on the organization of the company and its sales policy, internal stock transfers might also be necessary.
Stock transfers can take place on three levels:

- **Storage location-to-storage location**

  A stock transfer from storage location to storage location in the same plant simply causes an update of the stock quantities in both storage locations. The stock value remains unchanged, and the event is not relevant for accounting.

- **Plant-to-plant**

  A stock transfer from plant to plant generally takes place within a company code. A stock transfer from plant to plant leads to a change in stock quantity in both plants.

- **Company to Company**

  A stock transfer from company code to company code corresponds to a stock transfer from plant to plant, with both plants belonging to different company codes.

Reservation

With this component, you make a request to the warehouse to keep materials ready for withdrawal at a later date and for a certain purpose. The purpose of a reservation is to ensure that a material will be available when it is needed. It also serves to simplify and accelerate the goods issue process and prepare the tasks at the point of goods issue. Reservations can either be entered manually, or they are generated automatically during creation of an order.

Physical Inventory

This component allows you to carry out a physical inventory of your company's warehouse stocks for balance sheet purposes. Regardless of the physical inventory method, the process of physical inventory can be divided into three phases:

- **Physical Inventory Preparation**
  - Create a physical inventory document.
  - Blocking Materials for Posting
  - Print and distribute the physical inventory document.
- **Physical Inventory Count**
  - Counting stocks
- **Physical Inventory Analysis**
  - Entering the result of the count into the system
  - Initiating a recount, if necessary
  - Posting inventory differences

Puzzle-Warehouse Management

Computer support for the organization and management of warehouses has become imperative for timely, effective processing of logistic requirements within a company. Puzzle-Warehouse Management (WM) application provides flexible automated support to assist you in processing all goods movements and in maintaining current stock inventories in your warehousing complex.

Although it is possible for you to manage warehouse inventories using the Inventory Management (IM) application component, the primary difference between managing stock in WM and in IM is that in IM, the system can only display the total stock of a material for a storage location. If a warehouse is small and easily manageable, then the use of IM may be sufficient to fulfill your needs.

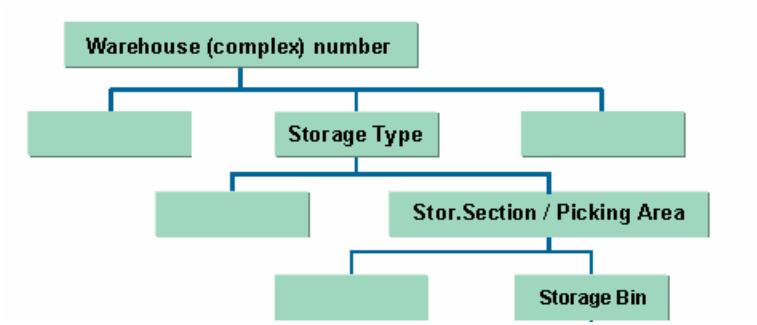
WM, on the other hand, offers the capability to manage stock quantities in each individual storage bin in highly complex storage facilities. This means that, with WM, you can optimize the use of all storage bins, mix pallets belonging to several owners in randomly slotted warehouses and know exactly where a particular material is located in the warehousing complex at all times.

Warehouse Structure

You can design the warehouse structure to match your individual requirements. The physical storage facilities of a company may exist in one or more physical buildings. It can consist of several types of storage (for example, high rack storage, bulk storage, picking areas). When you implement the Warehouse Management System (WMS) in a plant, you define the individual warehouses (high-rack storage, block storage, picking area, and so on) as storage types within a warehouse complex and group them together under a warehouse number.

Warehouse Number

You can define an entire physical warehousing complex in the Warehouse Management application component using a single warehouse number.



Storage Type

Each of the storage facilities or areas that make up the warehousing complex can be defined as a type of storage area or storage type by its spatial, technical, and organizational factors.

Storage Section

Each storage type can be divided into storage sections. A storage section generally includes all bins that have certain characteristics in common (such as bins for fast-moving items near a goods issue area). You can set your criteria for grouping bins into a storage section.

Storage Bin

Each storage type and section consists of several storage spaces or slots. These are called storage bins in the WM application component and are the smallest addressable unit of space in a storage type. Storage bins are identified by coordinates that refer to the exact position where goods can be stored in the warehouse.

Interim Storage Types/Areas

The *Inventory Management* (IM) application component communicates with the *Warehouse Management* component through interim storage types. Goods receipts and issues posted in IM are automatically updated in WM in these interim storage types.
Example of interim storage types/areas:

- Goods receipt area
- Goods issue area

Transfer Order

Transfer orders used in the WM application component are move orders that contain all the information needed to carry out the physical movement of goods from one place to another in the warehouse.

Transfer orders contain the following information:

- Material number or designator
- Quantity to be moved
- Source and destination storage bins