M-Prog
From
TECHMAR SYSTEMS

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System introduction

Introduction

This program is designed to support planning, controlling and analysing of maintenance. The program is developed in close co-operation with experienced end users in several different business areas.

The system is specially designed for use in small and medium sized organisations and onboard ships.

The maintenance system contains support for:

- Planned maintenance
- Corrective maintenance
- Maintenance status and workload graphs
- Maintenance history
- Budget and accounting (optional)
- Spare parts & Spare part planning
- Purchase orders
- Document archive
- References to laws and regulations.
- Various standard and user defined numbering systems.
- Dealers
- Contact persons
- Economical reports
- Continuous Survey (ship version)
- Waste log (ship version)
- Certificates (ship version)
- Crew lists and crew certificates

Use of lists and views

All lists and views have the same basic functionality.

A tool bar exists in all lists:

Add a new record to the database

Copy selected record

Delete selected records

Print selected records

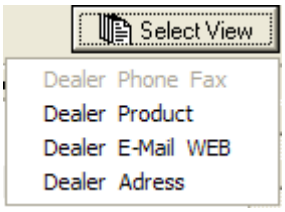
Copy selected lines as text to the clipboard

Copy selected lines as text to Excel

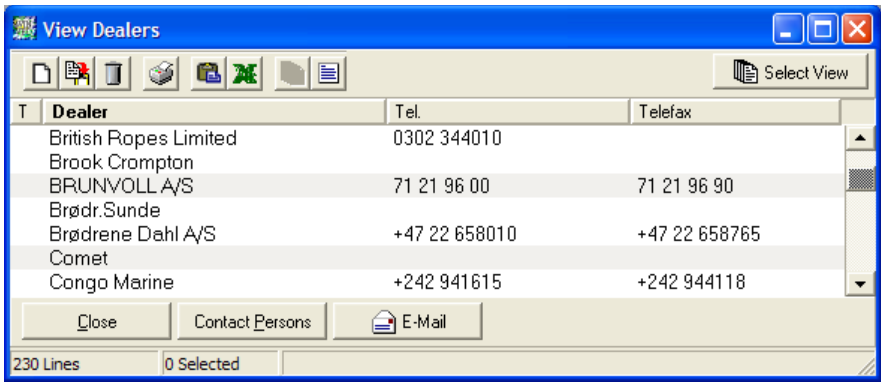
Add an extra page of text to the record. Extra text can be added to components, jobs and history.

Access documents for the selected record. You can add, delete or view documents.

You can select several predefined column layouts by pressing the

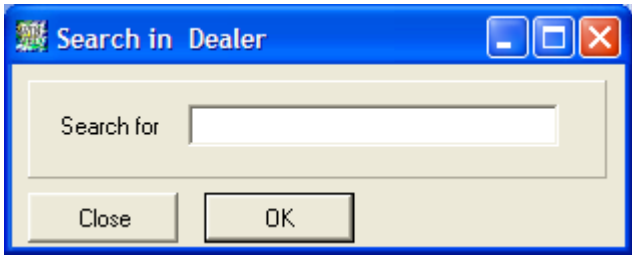


What's special for this particular view is show as easy to understand buttons in the bottom of the view. In this view this includes accessing any contact persons assigned for the selected dealer, or to send an email.



To sort a column click on the column header. If clicked again it will sort in the opposite order.

To search for text in any of the columns, click on the column header with the right mouse button :

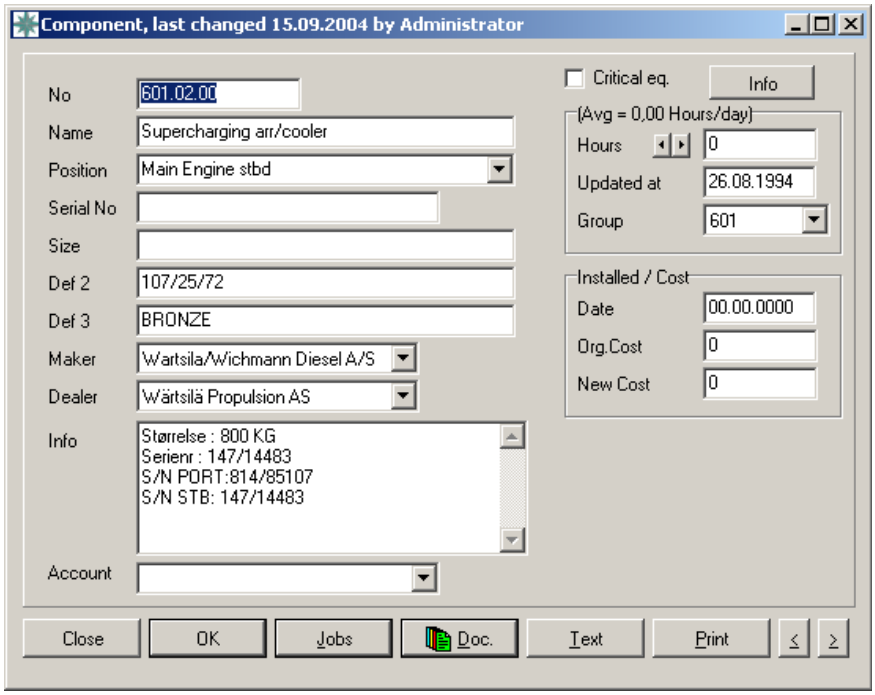


The lines which has a text match in the selected column will be grouped at the top of the view and selected.

The size of the view can be changed by resizing the window, the with of the columns will adjust accordingly.

Component

A component is the object to be maintained, such as a pump, engine, first aid pack, certificate etc.



No (component number)

A component number consists of letters and numbers grouped by dots, hyphens etc. There is no specific limit on the length, but I advise to keep it reasonably short, and to avoid characters. You define your own format before you start to register the data. Contact IndustriData if you want to change the format later. The system supports the SFI format for ships and other standards for numbering maintenance objects.

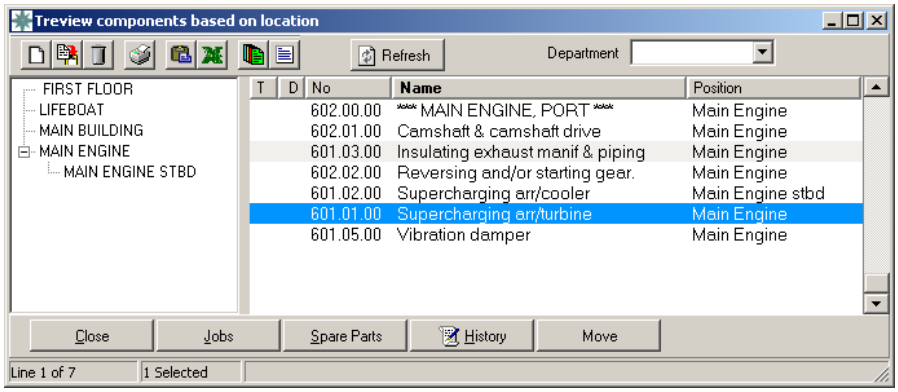
Samples of number formats:

Simple with numbers	601.00.00
Department + numbers	01-601.00.00
Letters + numbers	A1.A0Z.TG.00

The component number has to be unique. If you change the number or the name of an existing component the history will be updated.

Position

Gives the location of a component and is used to generate a tree view that is used for easy browsing of components according to their location.



To make a good browsing tree you should describe the location in a structured way. Like this (each line represent one component):

Building A, Floor 1, room 23

Building A, Floor 1, room 24

Building A, Floor 2, room 12

Building B, Floor 0, room 43

Building B, Floor 2, room B2

This will make a tree with building A and B as top nodes and floors and rooms as sub nodes.

Optional information

You may define tree fields to register information that are of special interest for your line of business. Use the *File, Setup, User define fields in component* menu to name the fields.

Maker and dealer

Gives a link to the maker and dealer database.

Hours

Running hours / km / miles / trips / count for the component. Use the *Maintenance, Counters* menu to view or update component counters.

If you want to increase / set the number of hours for a group of components :

In *File, Setup, Codes, Hour Counter Group*, create a new group.

Select this group on all components belonging to this group.

Use *Maintenance, Update Counters, Group* to set / increase the running hours / km etc on the whole group.

Critical Equipment

Indicates that this component is critical to safety or operations. It is possible to limit component listings, maintenance plans and history listings to only view critical equipment.

Ship version

This is a requirement of the ISM Code

Account (optional)

The account entered here will be used for budget planning based on the actual maintenance cost and spare part usage for this component.

Ship version

This functionality is a requirement according to the ISM code for ships.

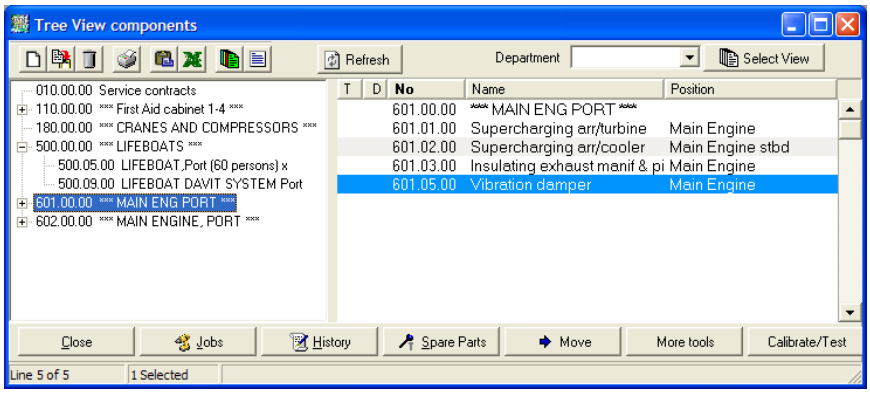
Continuous Survey

Ship version

In the ship version of the system it is easy to generate a list of equipment that are under continuous survey.

Component Tree-View

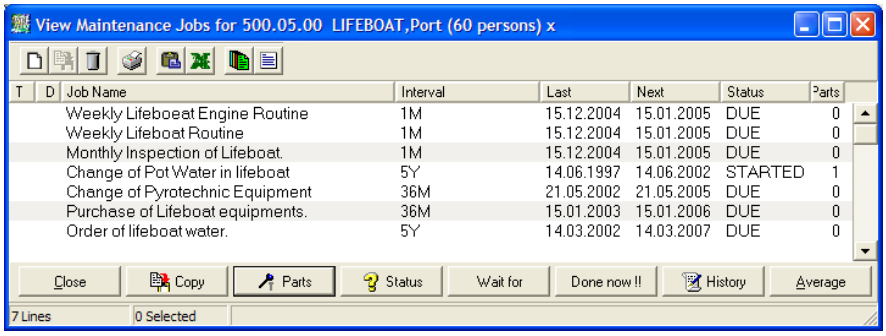
This is the standard view of components. When any part of the tree is clicked, all components under this position is shown as a list on the right side.



If the user is assigned to a department (vessel) this will be pre-selected.

Jobs

Components normally have a link to one or more jobs. Each job gives a description of how to maintain the component. The maintenance of one component is often divided into several jobs.



The jobs will appear in the maintenance plan when they are due. A job may be due by:

- **An interval**. Defines how often a job is to be done. Valid interval types consist of a character and a number D-Days, W-Weeks, M-Months, Y-Years and H-Hours.
- The job **condition**. Based on a judgement or a measurement of the condition.
- A **corrective** job with a due date witch is to be done only once.
- When the date assigned to a “wait for item” is within the time scope of the maintenance plan.

In the list of jobs for the component, you can :

- Add a job - a job is created and put in the job database. A link is made between the job and component and you set the due date.

- Delete job – actually only the link between the job and the component is deleted.
- Copy – you can make a link (*link*) to an existing job, or you can copy a job and then make a link (*copy*) , or *link jobs* from a selected component. If you need to modify a shared job you can easily make a copy of the job using *Replace selected jobs* with a copy.
- Change the due date
- Let the job wait for an incident (Docking, Service man etc).
- Report the job as done, regardless of the job being due or visible in the maintenance plan.
- View the history for the selected job.

History

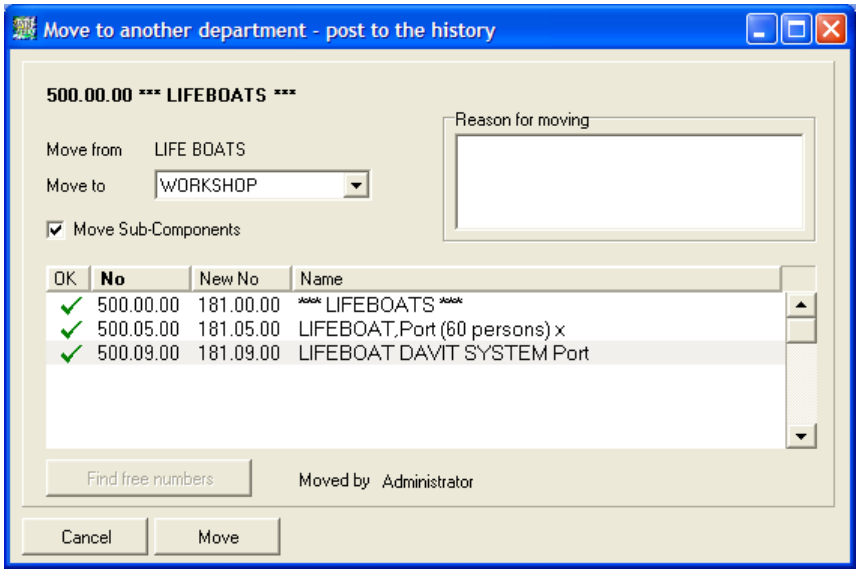
Every time you report a job as done it will be saved in the history database. A history record contains the job description and the maintenance report. In addition a special tracing report may be added to the history database.

Spare parts

Spare parts are connected to jobs, which in turn are connected to the component. The spare part button will display all parts referenced by the jobs for this component.

Move

A section of the component tree can be moved to another department. This is useful if a main component with sub-components is moved from on vessel to the other, or moved from a main location to a storage location.



More tools

Functions for setting parameters on selected components :

- Hour counter group

- Daily average hour count
- The actual hour count
- Account group
- Set multiple jobs
- Set multiple documents

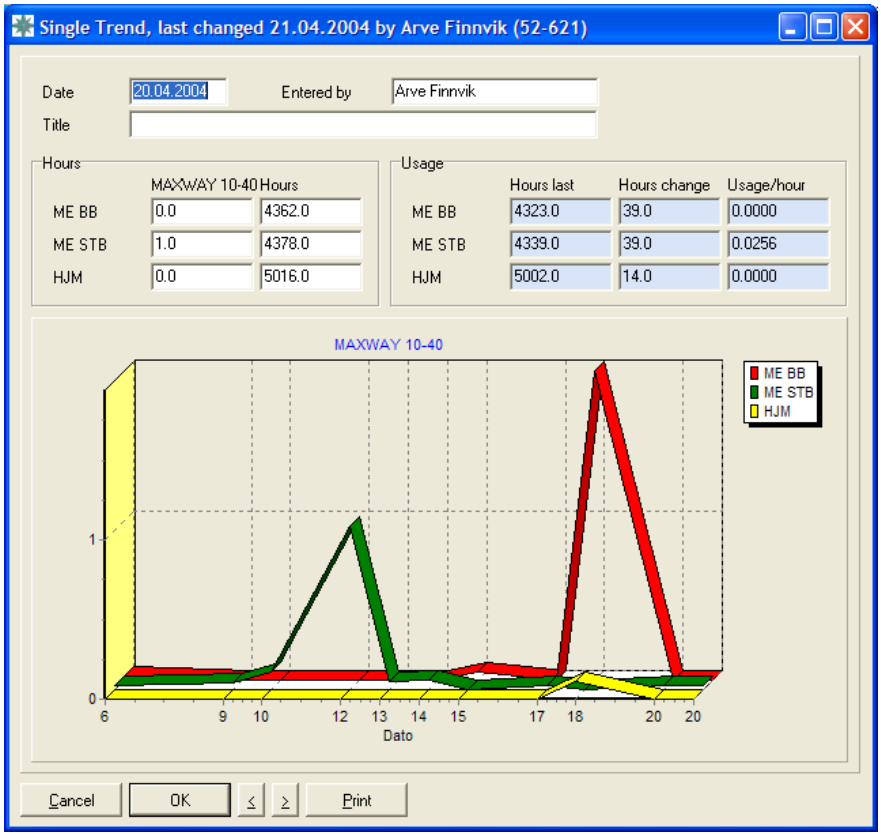
And there is a function for rotating equipment (with history), e.g. replacing a cylinder liner with a liner from the spare pool.

Trend - Separate

For equipment which has a hour counter (hours, km etc) a graph of usage of some item can be made. Up to three components using the same item (diesel, water, parts) can be plotted in the same graph. The item consumed can automatically be booked out.

Setup : *Component, Separate Trend, Add/Setup*

Add Record*:* *Component, Separate Trend, Add/Setup, select correct trend, New bunker*

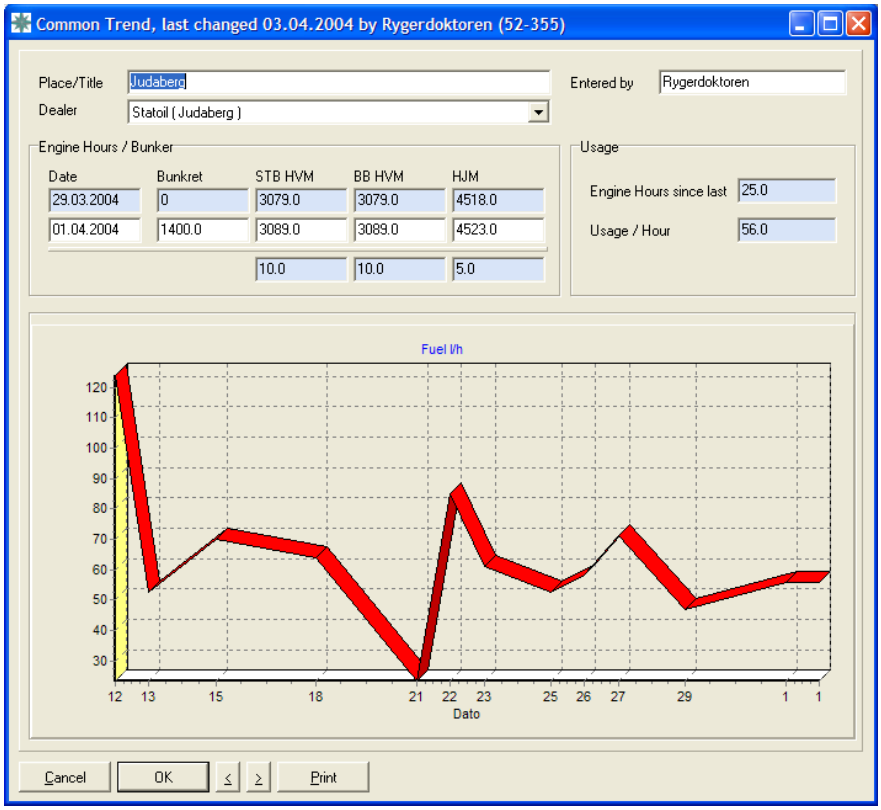


Trend - Common

For equipment which has a hour counter (hours, km etc) a graph of usage of some item can be made. Up to three components using the same item (diesel, water, parts) can be plotted in the same graph. The item consumed can automatically be booked out.

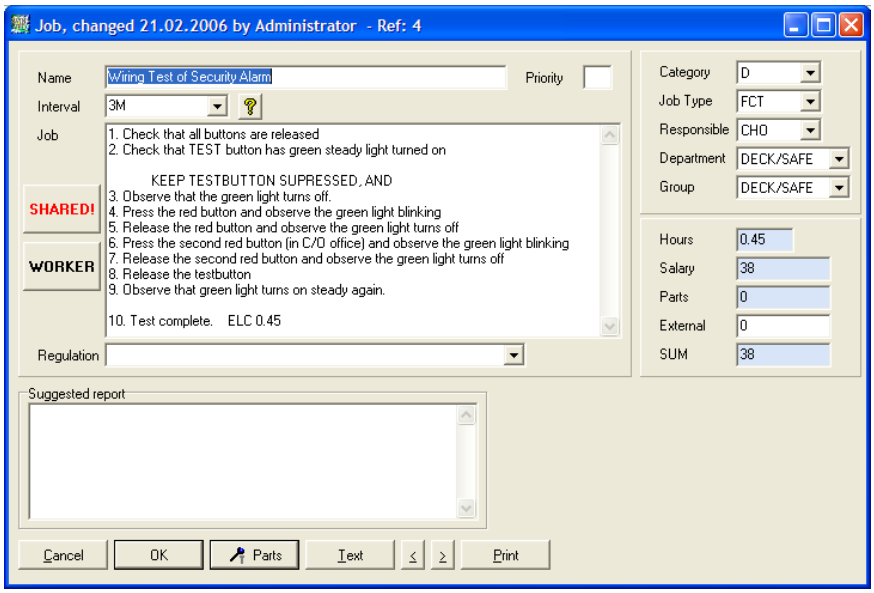
Setup : *Component, Common Trend, Add/Setup*

Add record: *Component, Common Trend, Add/Setup, select correct trend, New bunker*



Job

A job is a description of how to maintain a component. The maintenance of one component is often divided into several jobs. The job contains information about how to do the job, who responsible for doing it and much it will cost.



Shared!

Informs you that this job is used by more than one component, and you must take care when editing this job. If you make changes to the job, it will affect all components which uses this job.

Category

A category is a user defined abbreviation used to separate maintenance into groups. You may limit a maintenance plan to just one category, e.g. "E" for electrical work. When the cursor is in the category field, you may access the abbreviation description by pressing the "alt" key.

The maintenance plan can be sorted by Category.

Job type

User-defined abbreviations distinguish between different types of maintenance, e.g. PM for Planned Maintenance. When the cursor is in the Job type field, you may access the abbreviation description by pressing the "alt" key.

Job type is also to group cost when analysing the history. Take care to define groups that can provide you with valuable information, e.g. groups like Corrective Maintenance, Inspection, Certification, Surveys, replacing broken windows etc.

The maintenance plan can be sorted by Job Type.

Responsible

A user defined abbreviation used to identify the person who is responsible for this particular job. When the cursor is in Responsible field you may access the abbreviation description by pressing the "alt" key.

The maintenance plan can be sorted by Responsible.

Department

Only users belonging to the department stated in the job description are allowed to edit or delete the job. Note that users without a department defined may access all jobs. When the cursor is in the Department field you may access the abbreviation description by pressing the "alt" key.

The maintenance plan can be sorted by Department.

Priority

You may prioritise jobs by numbers or letters. It may be useful to sort the maintenance plan by the importance of the job.

Interval

Defines how often a job is to be done. Valid interval types consist of a character and a number D-Days, W-Weeks, M-Months, Y-Years and H-Hours.

The interval can be combined : 12M/100T.

A job may also be due by:

- The components **condition**. Based on a judgement or a measurement of the components condition.
- A job waiting for an incident, which will occur within the maintenance plan time scope.

Regulation

A job can be linked to specific rules/regulations. Possibly, certain regulations describe how certain components must be serviced or maintained.

Hours, Salary

Total number of hours and the cost of the job are calculated from the workers and the hours defined in the job description. The hours are calculated as hours and 60 minutes. You can enter a valid code for a worker and the number of hours directly in the text, or using the worker button. The hours and the salary is a calculated value that you cannot enter directly.

Extern

The external costs can be entered here.

Parts

The spare part cost field value is calculated from the parts defined for the job.

Sum

A calculated value which is the sum of salary, external costs and spare parts.

Suggested report

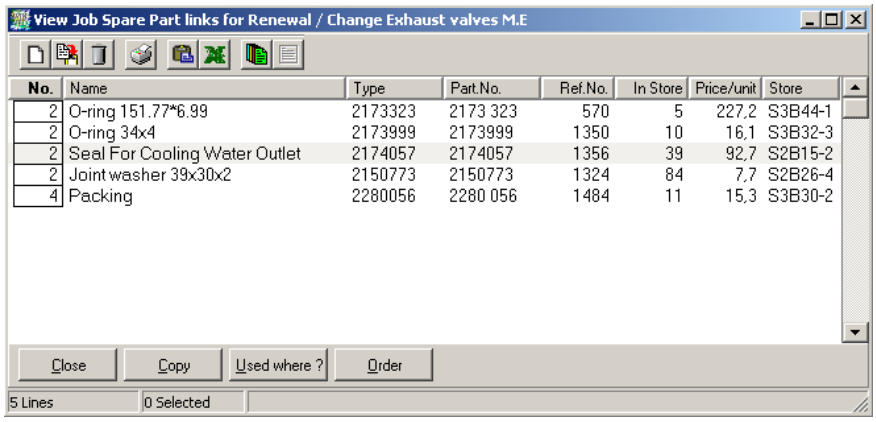
You may want to apply some structure on the maintenance reporting or to remind the performing person what to report. Example:

How much sediment in tank : _____ mm

Inspected filter pressure : _____ psi

Parts

Displays a list of all parts defined for the job. The part can be a real part from the spare part database, or a virtual (temporary) part, which are not in the spare part system. You define the numbers of each part to use.



A part is available if we have enough in store, or if you have ticked of *the Part is available (override).*

The number of parts intended to use can be changed directly in the list by clicking in the No. column.

This enables us to do part usage planning according to due dates and the numbers of parts in store.

When the job is reported as done you should check the number parts actually used by using the part button on the Report form.

Maintenance plan

A view of all the maintenance jobs that are due before a certain which contains the tools you need to manage the maintenance.

The maintenance plan can be selected on the following criteria :

- Time, all jobs which are until the specified date, including all overdue jobs.
- Department (is set automatically if the user is a member of a department)
- Category
- Job type
- Responsible

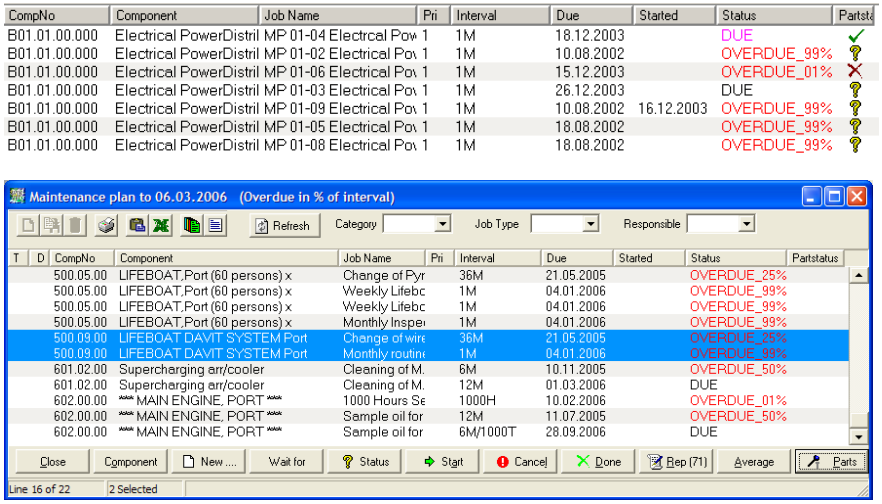
The last column indicate spare part status .

Spare part status :

Enough parts in stock to do the job

There is enough parts for this job, but there are other jobs competing for the same parts, and there is not enough parts for all of them.

Not enough parts for the job



Component

Shows the components that are due for maintenance.

New

Add a single job (to be done once) or a corrective report for the selected component.

Wait for

Lets the maintenance job wait for a defined event (where time might not be known), e.g. a docking or a maintenance stop.

You may choose from a list of events, and the maintenance jobs will be displayed when the date for the event is within the time scope of the maintenance plan.

Status

Lets you set the next due date.

Start

Starts the job by setting status to “started”. You will be prompted to print work orders. Useful to know which jobs are started, where the worker has received a work order.

Cancel

Will let you cancel selected jobs. If you cancel one or more jobs the next due date will be incremented by one interval. Use this option to document why the job has not been done.

Done

Calculates the next due date and creates a maintenance report You can update the report before pressing OK. During reporting you can correct or add parts used, and add a corrective job if required.

Work order

You can print a work order by selecting the relevant jobs and do a full print, or by using Start and accept the printout.

Planned Part Usage

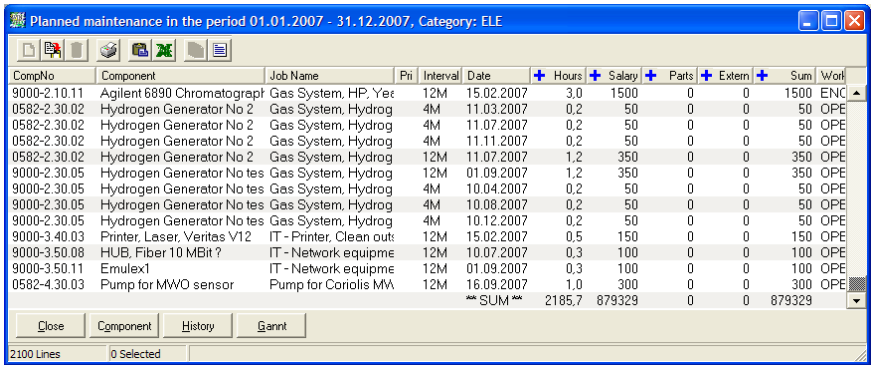
Find out your planned part usage in a period. The status indicates if you have enough in store. *Maintenance, Planned Part Usage*

Part	Type	Part Number	Dealer	Store	In Store	Usage	Status
O-Ring Power distribution 1		12345	Brevini Sing		7	4	✓
O-ring Power distribution 2		1234566	Brevini Sing		0	26	✗
O-ring Power distribution 3		1234577	Brevini Sing		0	28	✗

Select the parts to order and press the Order button

Maintenance Analasys

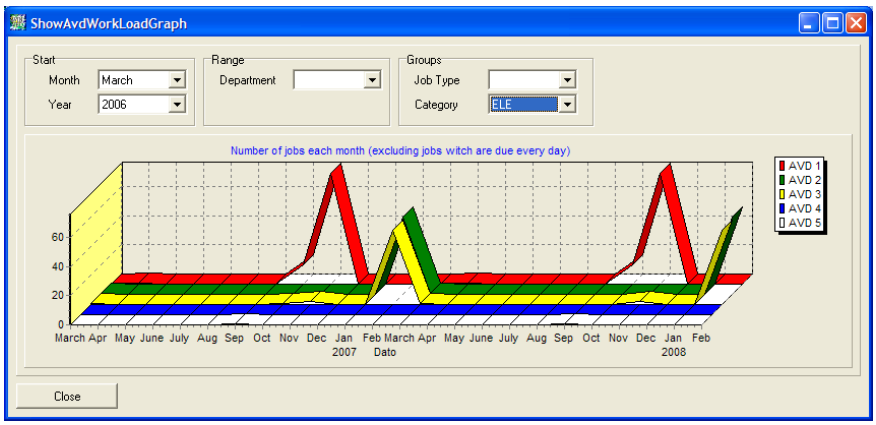
Maintenance analysis will list all the jobs in a specified time window. The main difference from the maintenance plan is that the start time of the time window can be specified, and each job will be show reoccurring for each interval within the time window. *Maintenance, Maintenance Analysis*



A gannt diagram can be made from this list.

Maintenance Workload

This is a tool to identify work load peaks, the number of jobs for the selected department, Job Type or Category is show as a graph . *Maintenance, Workload*



Here we can easily indentify that electrical work is peaking in November and February each year. If the graph is clicked, the maintenace jobs for that period will be show.

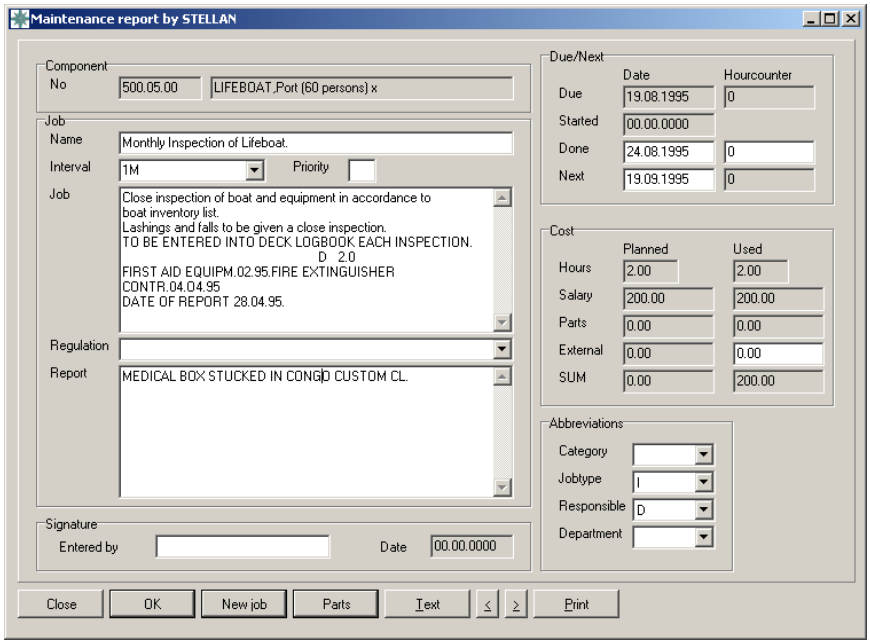
History

Every time you report a job as done, it will be added to the history database. This also applies to planned maintenance, planned corrective maintenance and corrective maintenance and cancellation of jobs. If job interval or due date is changed, this is also logged in the history database.

The history may be viewed on the base of:

- Component number (from / to)
- Time scope
- Category
- Job type
- Responsible
- Department

The history documents the maintenance and is the basis for maintenance reports and analyses.



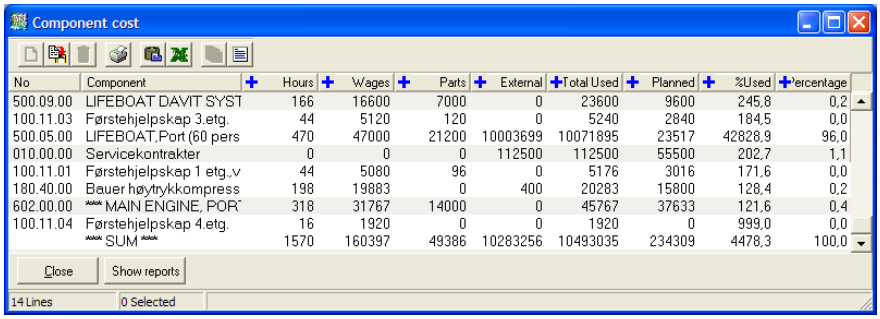
Corrective reports

The corrective maintenance report has a feature that makes it possible to follow up errors to prevent them from occurring again. In the report you may describe the error and the cause of the error, how it was repaired and how the error should be avoided in the future. The report will be listed in the outstanding corrective reports view until you have implemented the improvement. *History, New*

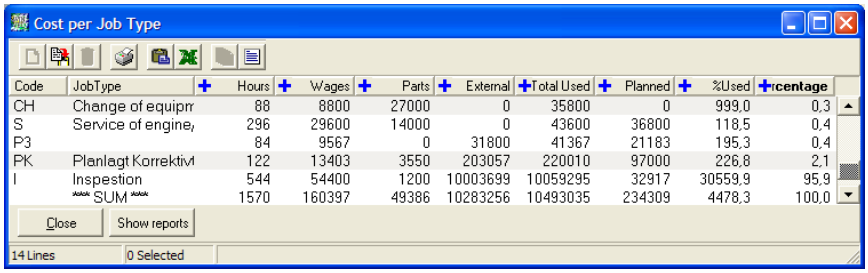
Reports

There is already defined a set of reports that will be sufficient for most maintenance management operations. If you need special reports please contact your dealer. A special report may be developed and implemented in your system in very short notice and to a low cost. *History, Reports*

This is the Component Cost Report, which also can show costs over the last 8 years:



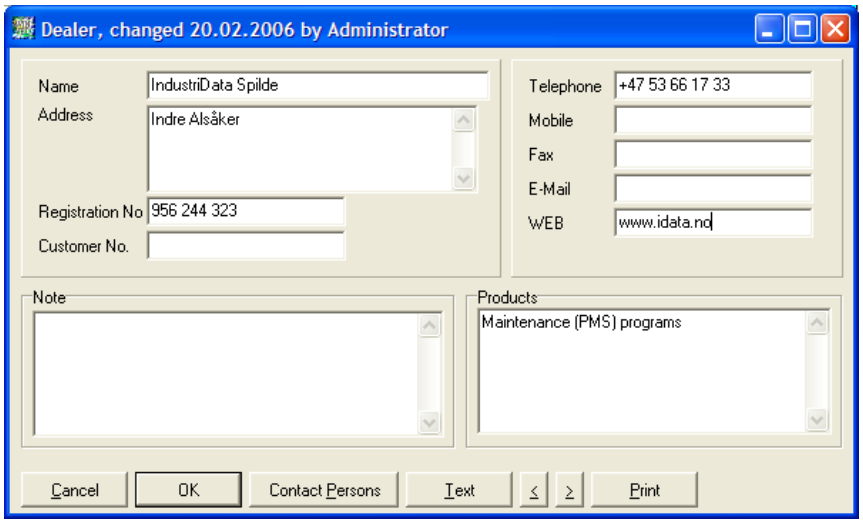
This is the Cost Per Job Type report, which also can show costs over the last 8 years:



There is also a condensed report, which is a text report containing Component No and Name, Job Name and any comments.

Dealers

You can build your own dealer database and connect each one with a code witch you may use later to refer to this dealer. Dealers (makers) are connected to components, spare parts and persons.

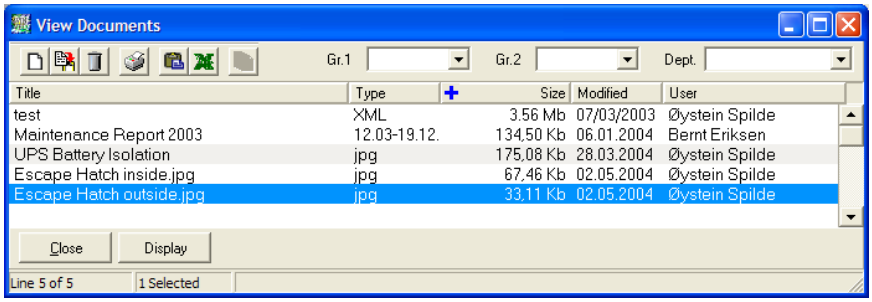


You can add your Customer No to the Dealer, which will be used when making a PO.

Documents

The system has a document database where you may import all types of documents that are relevant for components, jobs or history.

The document will be stored and manage from the maintenance system and may be accessed from relevant views and the special document view.



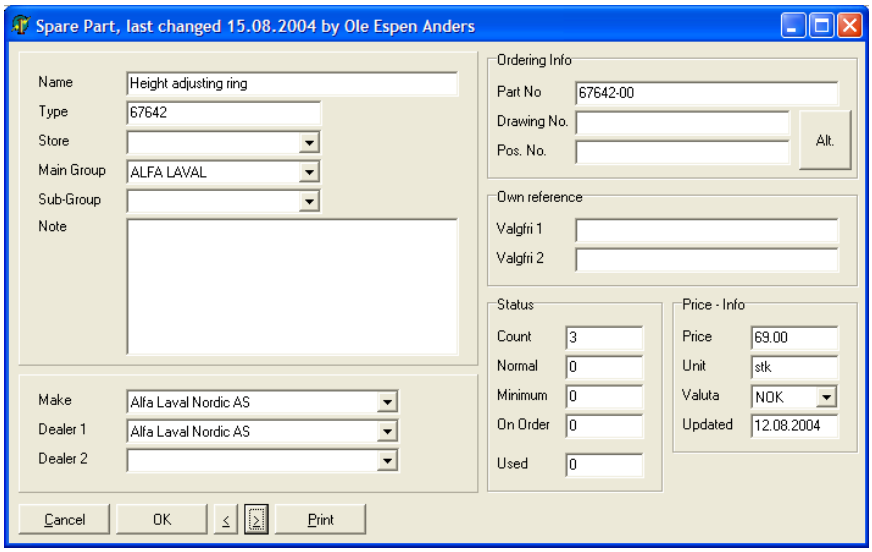
Document types that is recognised by Windows will be viewed in the standard viewers installed on you computer.

The documents are also available through the maintenance systems internal web server.

Note that the local clients will cache the files in the local DOC directory. To save bandwidth when you have many large documents, the DOC directory can be primed. If a new file or the file size changes, the file will be downloaded again.

Spare Parts

Spare Parts can be connected to jobs, which in turn are connected to components. The spare part together with the component forms the basis for an automatic purchase order.



The same part can be connected (linked) to more than one job; making it is easy to know what the parts are used for. The part can be booked in and out from any job that used the part, or directly from the spare part menu. The parts ordered in a PO can be booked in as a group to automatically update the store.

In Store

Number of spare parts in the store

Minimum

When to book more parts.

Normal

The number of spare parts to be in stock after ordering.

On order

Shows the number of parts on order.

Usage

Shows the total usage of a part.

User defined fields

The two first fields are for PO's , and should be Draw/Fig and Pos No.

The two last fields may be used to any spar part information you need to document.

Draw/Fig and Pos No

Often a drawing and a position number are used to identify parts in a purchase order. The same part may have several drawings and position numbers because they are described in several drawings. To avoid duplicated records of the same part it is possible to register alternative drawings and position numbers on one part.

Price

The price can be set up in different currencies.

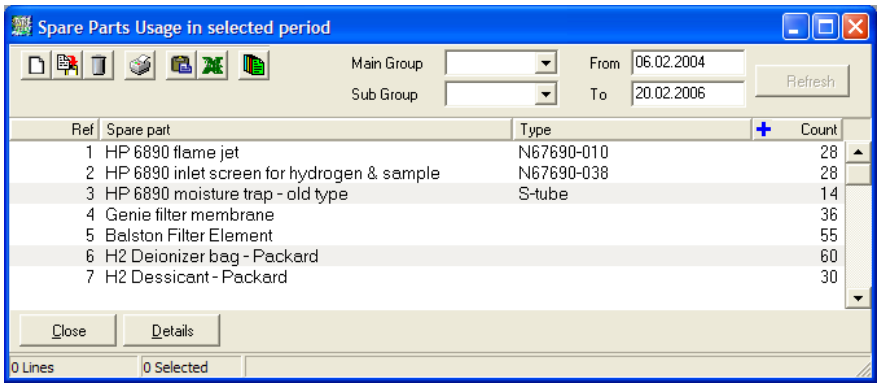
Low Stock

Shows a list of parts where the number of parts in store is less than the minimum.

Select parts to order and press the PO button.

Part Usage

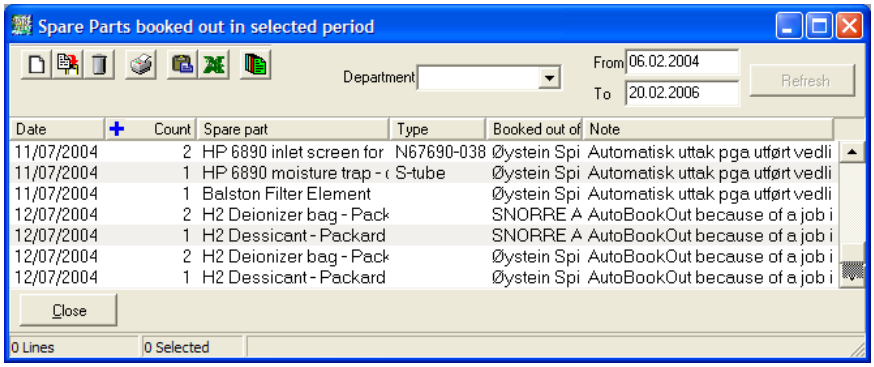
Shows the parts used in a time period.



Select one part and press the Details button to show when the parts where used.

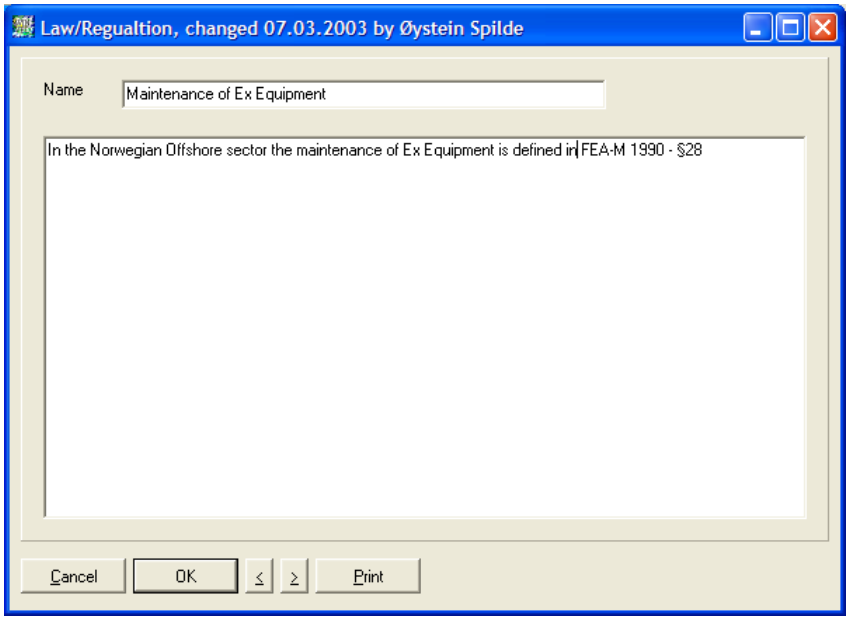
Part History

Shows a detailed list of when and what parts are booked out.



Regulations

Your own database over regulations and laws, which can be connected to maintenance jobs when the maintenance is caused by regulation.



The regulation view provides an easy way to show and document all maintenance history and plans that are regulated by law and other regulations.

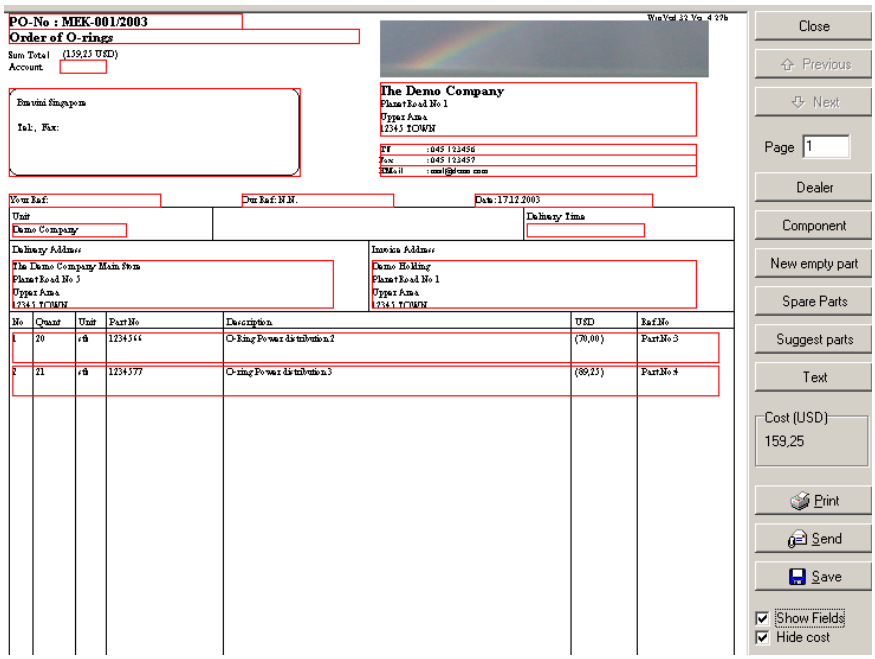
Purchase Order (PO)

The Purchase Orders (PO) tool is a structured, flexible and user friendly system to build Purchase Orders. You are working in a ”what you see is what you get” mode. By double clicking in the red frames (not shown on print – can be hidden while editing) on the PO you may add, edit or delete items.

Standard values for owner, address, fax should be registered in the *File, Setup* menu. If PO values are entered in the user setup, these will override the standard values. These values may be changed individually while editing the PO. If a user is allowed to send a PO this must be indicated in the user setup, and he can have some overrides for the PO as well, such at telephone, address etc.

The PO and the receive parts tool are linked to the spare part database ensuring that the number of parts in store and in order are updated. The cost of all parts is calculated.

If an account is selected, a posting will automatically be made for the PO on this account. If the PO is changed the posting will be updated. The posting can be fixed when the PO is received. This applies only to the versions of the program were the account system is included.



The PO can be sent as via e-mail as an PDF attachment.

When the PO is sent the PO is locked for further editing, except for changing the Account Number and receiving parts.

PO number

Define your own PO order group number system. A running number with your user-defined number of digits can be pre fixed and post fixed with a constant value. Every time you create a new PO using this PO order group the running number is increased by one. The number can be overridden.

If the text $(ACC) is included in the format string it will be replaced by the actual account selected for the PO.

Example:

- M-0001/2004
- 0001/M-2004
- MEK-00001
- M-@(ACC)/0001-2004 could result in M-5100/0001-2004 if the account 5100 is used for the PO.

The running number will not be set before the PO is sent. .

Component field

You may fetch component data from the component database if that is relevant for the PO.

Dealer

You may get the dealer name and address from the dealer database, or you may type the information. This field will always be printed, even if it is empty, so you may handprint the name and address. The dealer field fits a standard envelop window.

Suggest parts

While ordering one or more parts from a supplier, the system can suggest more parts from the same supplier to top up the store. This will reduce the number of PO to be processed and reduce the risk of running out of parts next day.

Spare parts

You may get the spare parts data from the spare parts database, or you create a virtual part for this PO. The number in stores can be automatically updated when you receive the part from the dealer.

The order of the parts on the PO can be changed by selecting a part by clicking once with the left mouse button, changing the red frame into green and exercising the spin button which appears.

New empty part

To format an order of a part which is not an item in stock.

Text

A large text field which might extend several pages.

You may start the PO-tool from three different views:

- **Component view**
  In the component view, select a component, press the ”spare parts” button and select the parts that you wish to order. Then press Order. A PO with all relevant information will then be generated.
- **Maintenance, Planned Part Usage**

  Shows a list of the planned part usage in a period.. Select parts and press order.
- **Spare parts view**
  Select the part that you wish to order. Then press PO. A PO with relevant information will then be generated.
- **PO view**
  Open a new PO and add all items manually

Certificates

Extremely simple list of certificates with expiry dates and renewal window found in *Doc, Certificates*.

A status column will indicate if the status of the certificate:

- Certificate is valid
- Certificate should be renewed (date is inside renewal window).
- Certificate expired

Logs

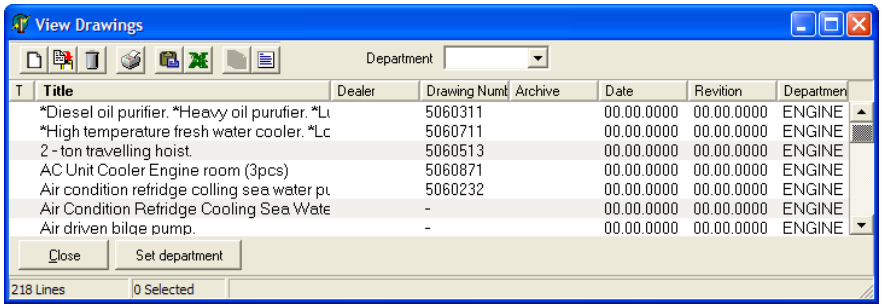
Waste log

Simple log of waste disposal, found in *Doc, Logs*

You must set up the codes (abbreviations) for Garbage type and Disposal methods. This can be done in "File, Setup, Categories / Codes or by pressing the ALT button while the Garbage Type / Disposal method has the input focus.

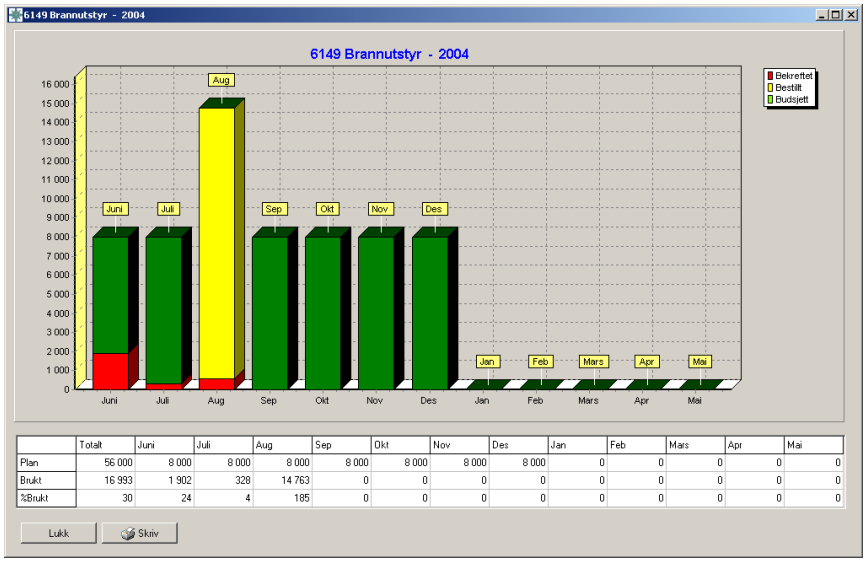
Drawing Index

An easy to use list of drawings which is useful for searching and locating drawings. Found in *Doc, Drawing Index*



Budget (optional)

The budget module is very powerful and it's integrated with the purchase order system, and the components.



Green is the budget for each month.

Yellow is planned cost based on outstanding purchase orders.

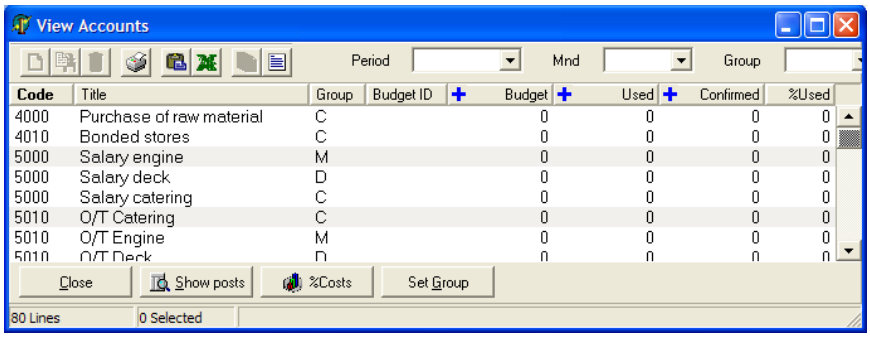
Red is actual costs from the purchase orders when posted, or from direct postings.

Direct postings can be done from:

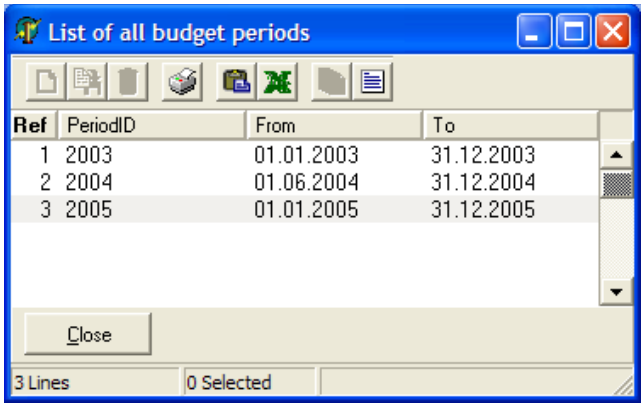
Budget, Accounts, Select an account, Show postings, Add

Budget, Postings, New

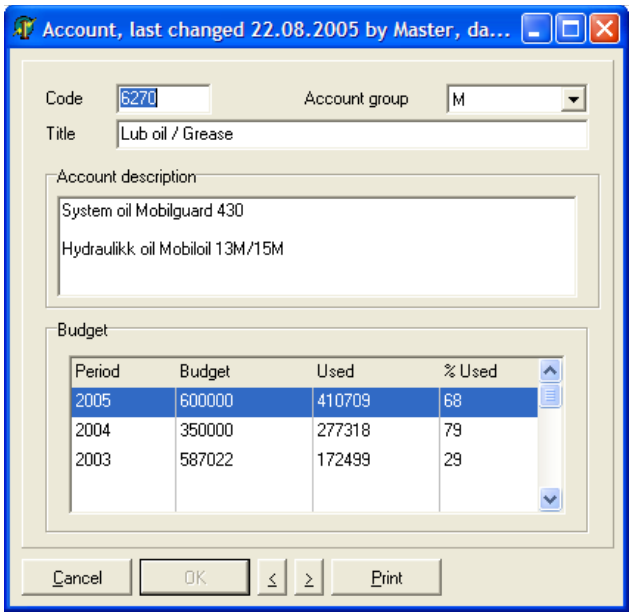
The account listings will show the planned and used costs for each account.



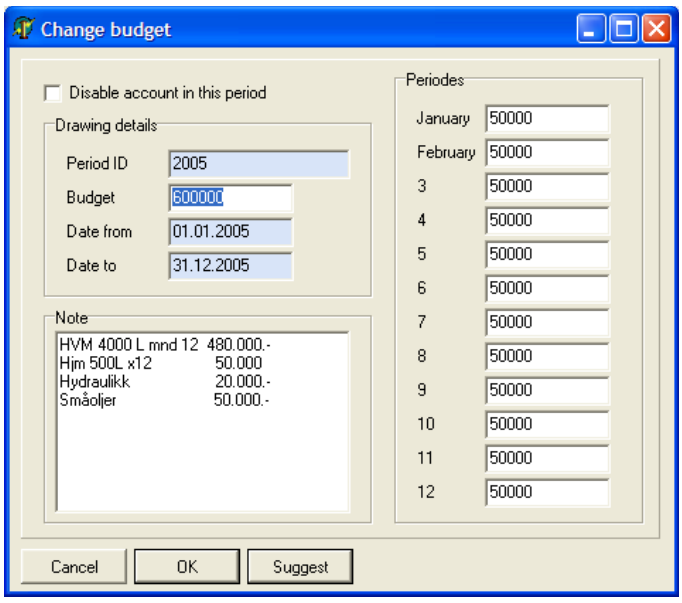
Budget periods are set up in Purchase, Budged Periods, the previous years budget can be copied.



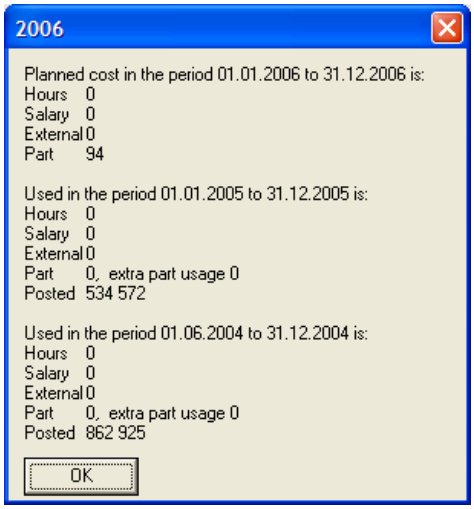
Then the budget for each account is set up in *Purchase, Budget.*



Double click on a period to change the budget.



For new budgets the program can suggest cost based on actual maintenance costs the last two years. This is based on the used cost in the history and all spare part usage.


2006
Planned cost in the period 01.01.2006 to 31.12.2006 is:
Hours 0
Salary 0
External 0
Part 94
Used in the period 01.01.2005 to 31.12.2005 is:
Hours 0
Salary 0
External 0
Part 0, extra part usage 0
Posted 534 572
Used in the period 01.06.2004 to 31.12.2004 is:
Hours 0
Salary 0
External 0
Part 0, extra part usage 0
Posted 862 925
OK

Setup

Installation

You will probably be able to install and set up the maintenance system by yourself, but there are a lot of choices you have to make to tailor the system for your use. It may be wise to ask the dealer to support you in the start-up process.

Install

Insert the CD and follow the instructions. The first time you will have to log in with the administrator username and password.

Logo

You may use your own logo on all paper prints from the system. You then have to put two logo files in the program catalogue for the system:

Logo normal prints:

Name	Logo1.bmp
With	300 or 600 pixels
Height	300 pixels

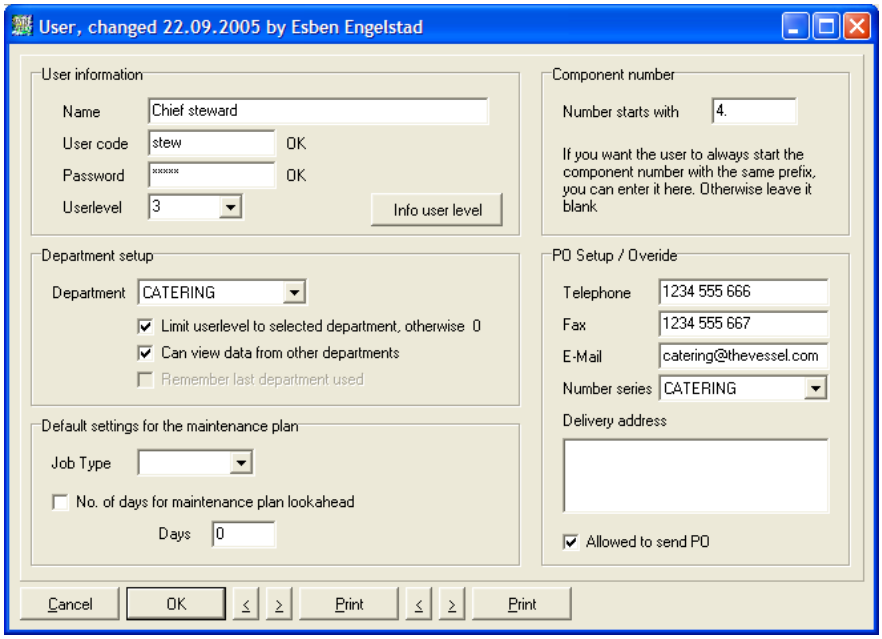
Logo for PO prints:

Name	Logo2.bmp
With	350 or 2000 pixels
Height	350 pixels

The logo files must be located in the maintenance directory.

Users

Go to the menu *file, setup, users*. Create users and select appropriate user access level and department.



Assigning a user to a department allow for more fine-grained user access restriction.

A component number prefix can be set, which saves the user from having to write the same first characters of the component number every time, it will be automatically filled in. This also avoids the user to create components that does not belong to the users department. When a department is selected, a component number prefix is automatically created.

User access level - Department

Use of the department feature will:

- Restrict the user to only change data that belongs to the users department.
- Automatically selects data which is relevant to the users department.

User department setup:

If the user work with a continuous range of components, he can be assigned to this range of components by defining a department, which he will be assigned to.

1. Make a department and select the component number range that are relevant, e.g. from 200.00.00 to 210.99.99 *(File, Setup, Codes, Department)*
2. Link the user to the department *(File, Setup, User)*

Component number Setup

Go to *file, setup, component number* and select the format that is best for your use.

The component number plays an important role in the maintenance system. You should use some time to consider the best format, and if necessary ask your dealer for support. It may be a large job to change the format on a system with a lot of data. If you need to change number format later you should contact your dealer to confirm that the change you are planning is possible. The dealer and the system developers will normally be able to support the change.

Format examples:

940.01

122.01.00

1.100.300.001

A.10.C100.001

Categories and codes

Categories and codes are used to tailor the system to your type of business and to optimise both the daily use of the system and the analysis. We can assist in categorising the system.

The codes normally have two fields, one for the code and a description that explains it.

Categories and codes:

Department	Defines the departments that are relevant for the maintenance in your business. A continuous component number sequence may be linked to a department to restrict views and user access to relevant data. You can define overlapping departments.
Category	A category is used in jobs to separate groups of maintenance. You may limit a maintenance plan to view just one category, e.g. "ELE" for electrical work.
Job type	Used in jobs to distinguish between different types of maintenance, e.g. PM for Planned Maintenance. The Job type are useful when you whish to analyse maintenance history.
Responsible	Used in jobs to identify the person who is responsible for the job..
Worker	Used in jobs and history to identify the persons who performs the maintenance jobs. Its possible to link man hour cost to the worker in jobs and history for budgeting and report the real costs
Store	Identifies the stores you manage with the maintenance system.
Currency	You may define the relevant currencies and rates. May be used inn spare parts and PO records. Your default currency value should be set to 1.

The Spare parts and documents databases also contains two user definable categories for master / slave categories.

When the cursor is in a category or code field you may access the abbreviation description by pressing the "alt" key.

Setup example

1. Component number *(File, setup, component number)*

Component number parted inn tree number groups with two digits for sub components e.g. 601.00.00.

The setup mask will then be "000.00.00".

2. Department *(File, setup, Categories/Codes, Department)*

Links departments to sequences of component numbers. You may have as many departments as you wish, and the component number series may overlap.

Main Engines	601.00.00 to 602.99.99
Life boats	501.00.00 to 509.99.99
MS ”Big ship”	000.00.00 to 999.99.99
Deck	700.00.00 to 999.99.99

3. Users *(File, setup, Users)*

The user level is valid for the users department (if defined).

Name	Code	User level	Department
Chief Officer	bigchief	8	Ms “Big Ship”
1st Engine Officer	firstoff	4	Main Engines
…			

4. User defined fields in components *(File, setup, User defined fields in components)*

You may setup tree user defined fields in the component views and database. This could be material, size, old reference etc.

5. User defined fields in Spare parts *(File, setup, User defined fields in Spare parts)*

You may setup four user-defined fields in the spare parts views and database. The two first fields are normally used for PO information and often set to: Draw/Fig and Pos no. The two last fields may be used to what ever you like.

6. Category *(File, setup, Category/Codes, Category)*

MEK	Mechanical
ELE	Electro
INS	Inspections

7. Job type *(File, setup, Category/Codes, Job type)*

PM	Planned Maintenance
CM	Corrective Maintenance
INS	Inspections

8. Worker *(File, setup, Category/Codes, worker)*

MEK Mechanic

ELE Electrician

…

9. Currency *(File, setup, Category/Codes, …)*

If you have the full version of the program and want to use spare parts and the PO system you should set up your default currency and any other currencies you are using. Example:

Euro = 1 (Your default currency should be 1)

NKR = 0,15

GBP = 1,3

10. Other codes *(File, setup, Category/Codes, …)*

Setup other codes to fit your needs. Consult your dealer if you need support.

11. PO default *(File, setup, PO defaults) (not lite version).*

Setup relevant addresses and contact information.

Client / Server setup

This chapter applies to users of the network version.

Definitions

Client program WinVed32.exe or M-Prog.exe

Server program WinServ32.exe or WinServ32_Service.exe.

Server IP address

The IP address of the PC running the Server Program.

Server Port

The standard port which the server listens to is 5001. This can be changed by the file ServerPort.cfg in Config directory for both the server and the client program.

Client – Server communication.

The client program (WinVed32.exe) uses an IP address and a TCP port number to establish a connection with the server program. The user does not need access to the server program itself or the directories where the server program or data is located.

The server program is started when the PC boots, and the client program is started whenever the user wants access to the maintenance data.

Server installation

The server program comes as a service (WinServ32_Service.exe).

Normally the program comes with a installation program. Tthe system does not rely on shared DLL's or other dependencies, so it's easily to set up manually.

Copy the server program, and any DATA and CONFIG directories to a suitable location.

The InstallService is used to install and start the service.

The most important directories :

DATA	Contains the database, can be emptied to remove demo data.
CONFIG	Contains defaults and user settings.
DOCS	Where all documents gets stored.
UPGRADE	Used for automatically updating the client program, logo files or help files.
TMP	Temporary files, maintained by the program.
LOG	Log filers, maintained by the program

Client installation

The client program is easy to maintain, since it does not rely on any shared DLL's or any special setup. The program can be copied from one PC to another and restarted.

The client program can be started from a common server, but the client should be installed on each users PC, this will improve startup speed and the user settings will be local.

The easiest method for distributing the client is to do a complete setup and test on a common file server, and then distributing the directory to each user PC.

CONFIG	Contains defaults and user settings.
DOCS	Local document cache, can be primed with documents if used over low bandwidth.

Securing the installation

Do not give the users any file access to the directory where the server program is located. The server program can even be installed on a server PC where no user has any access.

A local firewall might be used, remember to open the port used by the server which normally is 5001.

If access to the maintenance program is possible over the internet, the company firewall might limit the source IP addresses.

Automated Backup

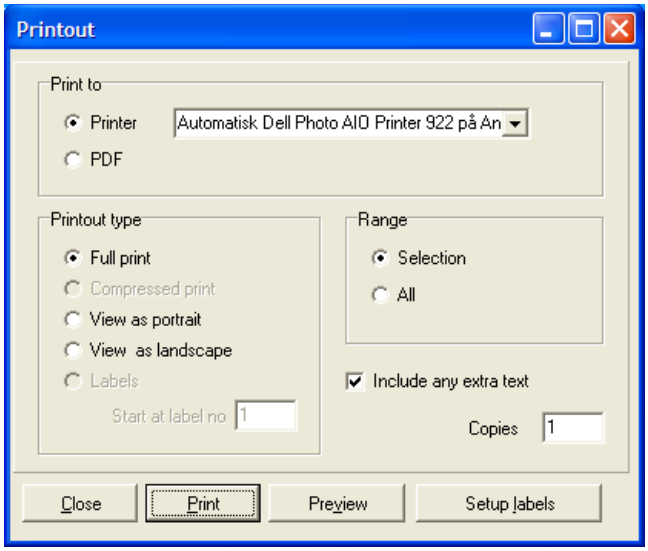
The server program can be set to make an automatic backup one a day. A full backup will be made, the files zipped and stored into a new directory formed by the date.

If data needs to be restored, you have to replace the files in the DATA directory,

User guide

Printing

It is possible to do printouts from all views. You may select one or more records for printing using the mouse to mark records.



In most views you may select several print formats:

Full

One record on each page. If any extra text is associated with the record it also will be printed.

View Landscape

All or selected lines from the view. The columns will seldom be truncated.

View Portrait

All or selected lines from the view. The columns may be truncated.

Labels

You can print labels from nearly all databases: components, dealers, spare parts, drawings etc. Spare Part labels can be printed as double labels. The labels can be printed on a sheet with many labels, or on a tractor feed matrix printer.

You can use setup labels to configure the size and layout of the labels.

The maintenance program supports two printers:

1. Windows' default printer for full printout, and printing of views (Landscape, Portrait).
2. A second printer if you use a separate printer for printing labels. This could be a dedicated matrix printer.

Label setup

Setup the labels (File, Setup, Setup Labels) to fit your label printer. Set values for label size, label margins, label spacing, number of labels and font size (measurement millimetres).

When you do a label printout you may chose to start the printout form any label.

How to register a component.

Go to Component, Tree View and click on the icon at top left side of the view.

Fill in the fields and press OK to save.

Register a job on a component.

Go to Component, Tree View.

Find the component and select it by clicking once with the left mouse button and press the button Jobs, A view of the jobs (if any) will appear.

Click the new icon , and a new empty job will appear. Fill out the fields, make sure you enter a useful name, an interval and a due date, and press OK to save.

Planned - Used Costs

Planned cost

The planned cost for a job is calculated from the workers and the hours you specify in the job description, together with parts cost and external cost.

Used costs

When a job has been reported as done, a report will be created with the planned cost from the job. You can edit the costs and these will become used costs (in the report), and you will get deviation between the planned and used cost.

How to add planned costs to a job

1. Find the job via Component, Tree-View, select the component, and press Jobs.
2. Double click on the job to edit it.
3. Add one or more workers to the job description by typing a valid worker code and hours. The cost fields will be updated when you change focus to another field and press OK
4. The part cost is based on the parts assigned for job.
5. Add values to the Extern field.

How to add used costs for a job

When the job is reported as done:

1. Go to Maintenance, Maintenance plan.
2. Select the job and press Done.
3. A report is created with data from the job and the component. The used cost is initially the same as the planned cost, which you may edit. The original job will not be changed.

How to use an existing job for a component

1. Go to the *Component, Tree View*, and select the component.
2. Press Jobs to display a list of the jobs for this component (if any).
3. Use *Copy, link jobs from the job database* and select the job from the list of available jobs.
4. Use the status button to set the next due time.

How to find which jobs are due

Go to *Maintenance, Maintenance plan*, and you can select how far ahead the plan is to cover.

You can also use the Due Jobs next 30 days shortcut on the main window.

How to report a job as done and report it to the history

1. Go to *Maintenance, Maintenance plan.*
2. Select the job and press Done.
3. A report filled with data from the job and the component is created. The part usage for the job can be adjusted. If required a corrective job can be made for the component.

How to schedule maintenance using running hours?

1. Go *to Component, Tree View*, and locate the component, press jobs
2. If you haven't already done so, create the job(s) with interval on hours (e.g. 100H or 3M/100H).
3. At regular intervals the hour counters should be update from *Maintenance, Update Counters.*

Corrective maintenance

Corrective maintenance can be handled in two different ways:

1. Corrective maintenance report
2. Corrective maintenance job (Single job)

Corrective maintenance report

Unscheduled maintenance, which has been executed, can be reported as corrective maintenance. The report can be connected to a component.

The report can be registered by choosing one of the following menu options:

- History, New,
- History, View, New
- Component, History, New
- Maintenance Plan,

and select New Corrective report

Corrective maintenance job

A corrective maintenance job is to be performed one time only.

It will appear in the maintenance plan and you can print a work order. When you report it as done, and the report is saved, the job will be deleted.

You can make a single job in two ways:

From the maintenance plan:

Press the

button, select single job and fill out the fields. Confirm the due date in the maintenance plan.

From the component:

In the list of jobs for the component, select Add and set the interval to SIMPLE. Fill out the other fields and press OK. Activate the job by specifying the due date.

While reporting maintenance as done:

When editing the maintenance report, use the New Job button to add a corrective job for the component.

Control of the maintenance

You may ask the program to check your maintenance setup, and it will report an error if it finds any of these circumstances:

- The component or the job doesn't exist.
- The component number or name is empty.
- The component number is duplicated
- Maintenance interval not valid (e.g. 0, 100, 56N)
- Next due time is too far ahead (> 2 * Interval)
- You will be notified about any inactive jobs.
- You will be warned if a hour counter is not updated recently.

Maintenance Analysis

You may look at the planned cost for any period. What differs it from the maintenance plan is that you can select the start date and that every repeated due time will be shown. The maintenance plan only shows the first due time of each job. Maintenance, *Maintenance Analysis*.

You can generate a Gannt diagram by selecting the records of interest and press Gannt.

Gannt Diagram Maintenance

Gannt diagrams are made from *Maintenance, Maintenance Analysis*. In the view you select the records of interest and press the button for Gannt.

A gannt diagram can be used to:

- Get a visual plan when the maintenance is to be done.
- Show time and workload for the workers.
- Show workload and time for your categories.
- Show workload and time for your categories.
- Visualise projects.

The vertical axis contains components and jobs. The horizontal axis will show dates. The coloured bar in the graph will show the time period for the job, and includes the worker code (if any) together with the number of hours for the job.

Continuous Survey (Ship version)

The components, which have the continuous survey option, will participate in continuous survey list.

When a survey is reported done you have to make a survey report and decide next due date.

Hist(ory)

Shows all history for the selected component.

Survey History

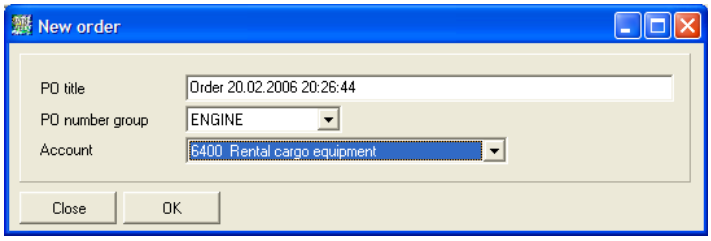
Shows all survey history for the selected component.

PO, create and send an order

A purchase order can be sent from :

- *Components, Tree-View, Select Component, Parts.* Select the parts of interest and press order.
- *Spare parts, select parts of interest and press order.*
- *Purchase, View, Add*

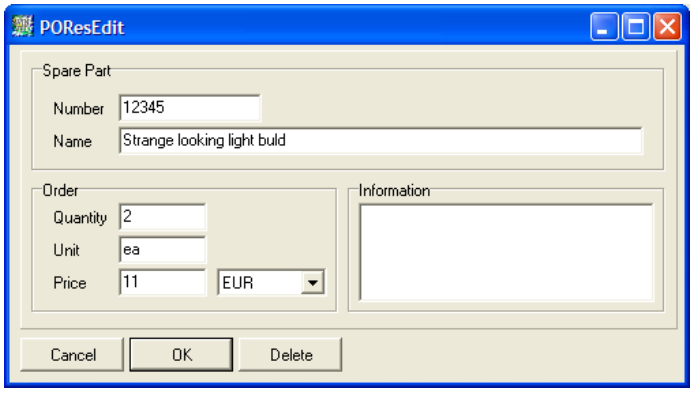
To create a new PO we must first enter som vital parameters :



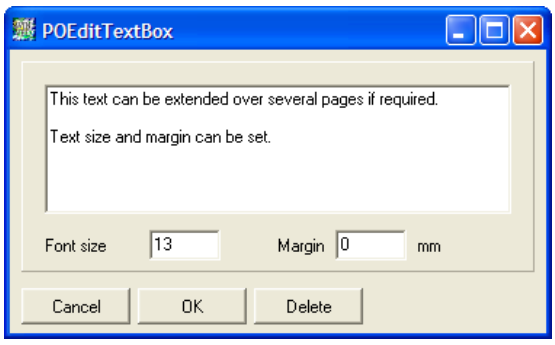
If your user profile is set up with a default order number group, it will be filled in automatically.

Edit the PO by double clicking inside the red frames or new using the buttons on the right side. Order information from a main component, dealers, or spare parts can be included in the PO.

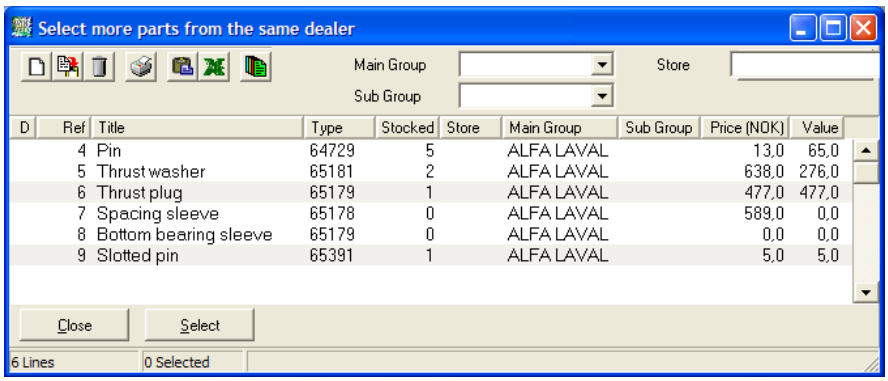
Even virtual parts (parts not in store) can be added to the PO :



A field for pure text can be added :



If a dealer is selected, the system can suggest other parts to order from this dealer, this will be parts which are below normal level.

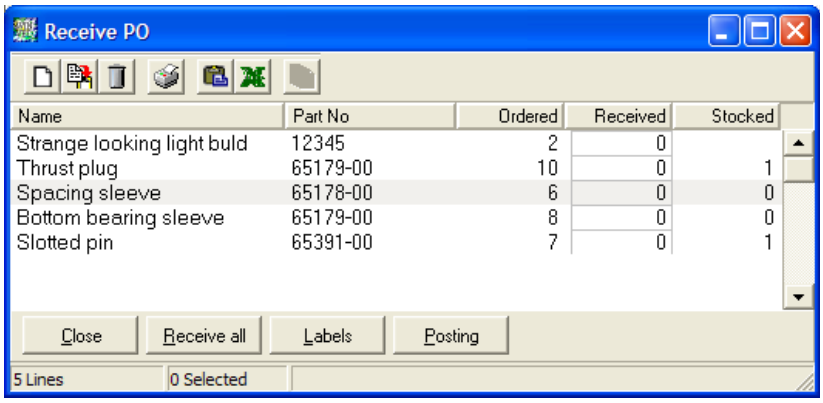


You can send the order as a price inquiry, or to the dealer. If sent to the dealer the PO is locked for further editing. The PO can be send as a PDF email attachment.

PO, receive an order

When an order is received, you can use the system to automatically add the parts to the store, and to post the final sum.

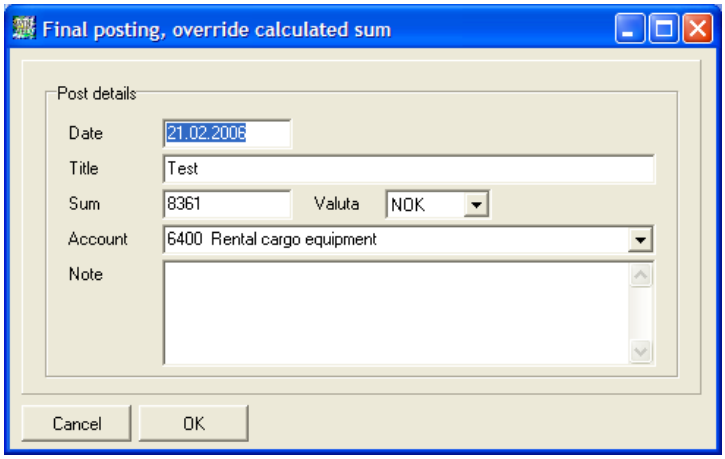
In the Purchase view, select the order and press receive:



Either use the Receive all button or adjust the received amount manually.

PO, Post a final sum

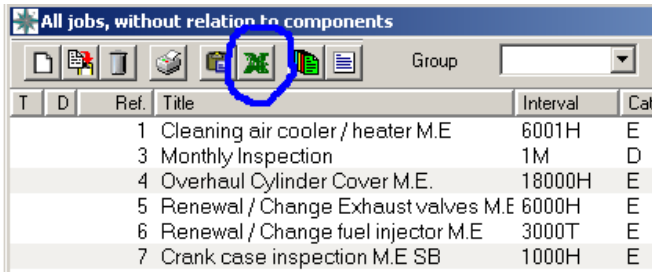
When a PO is received, the final sum can be posted. This will change the status for this cost in the budget, and the graphical representation of this cost will change from yellow to red (confirmed).



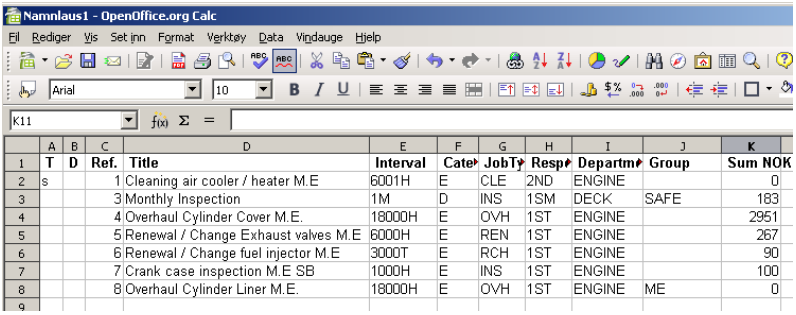
Import / Export

Export to spreadsheet

All list / views of data can be exported directly to Microsoft Excel or OpenOffice Calc. Select lines to be exported and press the calc symbol at upper left in the view. The view type and sorting order is preserved during the export.



Excel / Calc will start with the selected data :



XML Import / Export

There is a well-formed XML import / export specification for import / export of part or complete maintenance data sets. The specification is available upon request. Here is an example of a job in XML format :

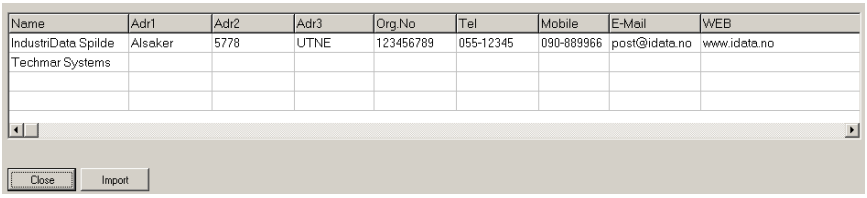
```
<JOB>
  <SYSTEM_ID>20143</SYSTEM_ID>
  <ID>232</ID>
  <MODIFIED>38121</MODIFIED>
  <USER>John Smith</USER>
  <NAMEY>Yearly control of compressor</NAME>
  <PRI>1</PRI>
  <EXTERNCOST>1100,00</EXTERNCOST>
  <INT_STR>1Y</INT_STR>
  <INT_INTTYPE>Y</INT_INTTYPE>
  <INT_INT>1</INT_INT>
```

```
    <JOBTYPE>PM</JOBTYPE>
    <RESPONSIBLE>CHI</RESPONSIBLE>
</JOB>
```

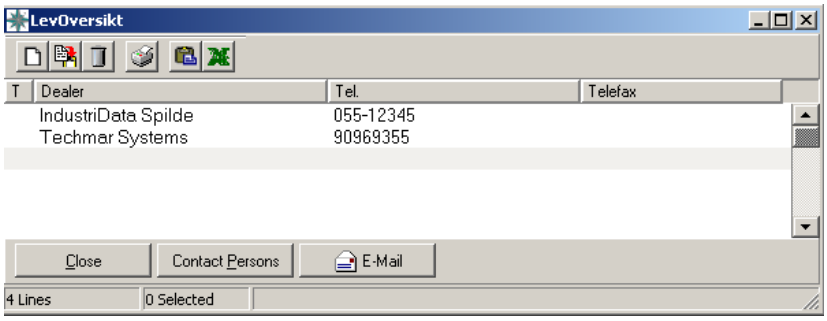
This format can be used to export /import a set of components complete with jobs, parts and maintenance history.

Spreadsheet Import

Components, Jobs, Suppliers and User data can be imported from spreadsheets. A wizard will guide you through the import process by pasting columns of data into the application.



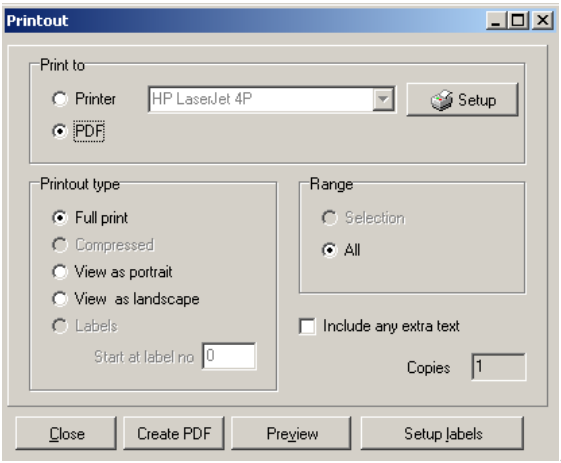
At any time you can test the import and a view of the imported lines will be shown.



The records can be edited here, or you can delete all lines and try the import again.

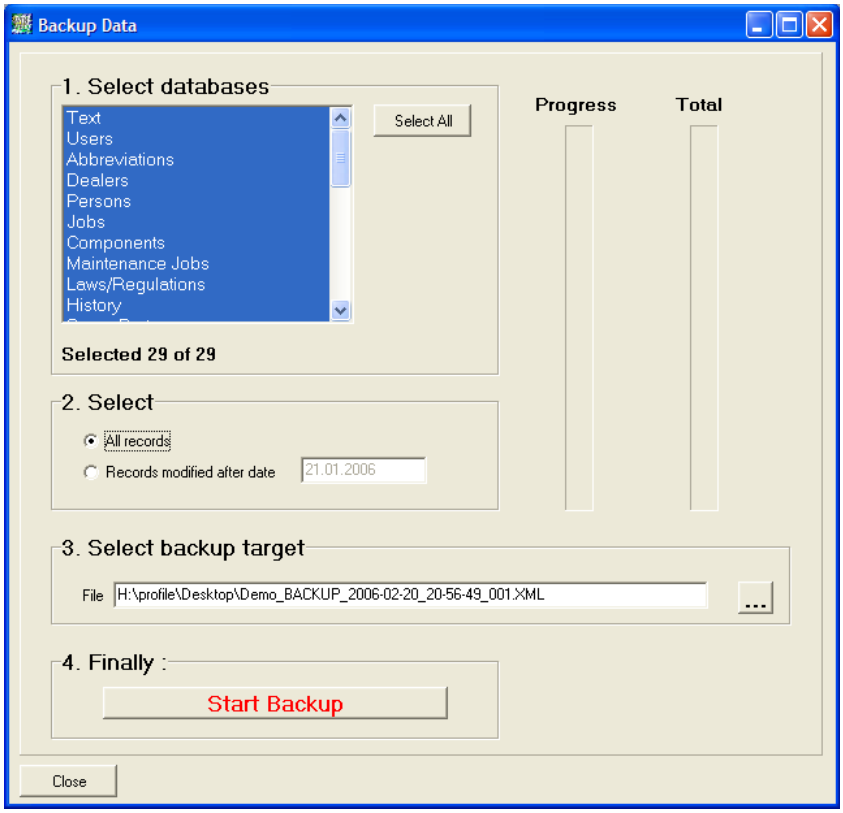
PDF Export

All printouts can directly be exported as a PDF document by the build-in PDF generator. Just select PDF instead of you normal printer:



Backup / Restore

Backup of selected databases to an XML format.



To restore data, use the File, Backup/Restore, Restore program. Select the XML file of interest. Check the content of the file before restoring.

Each maintenance program has its own system number, and together with the record numer this forms a unique ID. A record will be overwritten if it has the same ID. A restore of the same data will overwrite the existing data, while restore of data from a different system will add to the data.

You can take ownership of foreign data (data with different system ID) by using *File, Database, Update Record ID's, All Records.*

Replication

The program support offline replication between a standalone client and a central server program. This is an special version of the program. Replication can be carried as XML email attachments, or via our Replication Server.

IndustriData will assist in setting up replication.

Export Component with data

Found under *Filel, Backup, Exporter Components with data*

This function can be used to export components with complete maintenance setup, which can be imported into a different maintenance system.

If a pump is to be moved from one vessel to another, and both vessels have the maintenance program, complete maintenance setup can be copied from one vessel

to the other. The second boat can maintain the pump, and add to the history. If the pump comes back to the first boat, they can import the complete maintenance setup from the second vessel, which will replace and update the system onboard.

Internet

The Client - Server version of the program can communicate via the Internet with a modem or an ISDN line. The communication between the server and the client is very efficient, most operations are very quick. Compression can be enabled in the user setup. Even if the communication line support compression, we have found a 50% decrease in transfer time when compression is activated.

Running over ADSL at 384 kB is almost as sitting on your internal network.

This will allow you to access all the maintenance data at your office from any location, which makes it ideal for travelling support technicians, or maintenance supervisors, which are working from the home office.

Problem solving

Date problems

The program will try to use the date format DD/MM/YYYY or DD/MM/YY depending on the windows setup.

If the date format in Windows is set to something very different the date routines might fail.

Make sure the date on your PC is correct, otherwise reporting maintenance as done can lead to strange results if the finished date is not corrected.

Floating numbers

The programs uses a period '.' or a comma ',' to separate the decimal part from the main part.

Check the windows international setup to ensure that period or comma is used in number setup.

Specifications

System requirements:

- Windows version 98 or newer
- Enough memory to make Windows useful

For the network version we recommend Windows 2000 or XP for the server program.

Screen resolution: The program is barely usable at 600x800, we recommend at least 1024x768, but the system will take advantage of resolutions up to 1280x1024.

Client – Server Program

The maintenance program can be delivered as a true multi-user client - server program that runs under TCP/IP.

The efficient communication allows a client program to attach to the server via your office network or the Internet with modem / ISDN or better. ADSL with 384 kbits performs really well. The client program supports online connection over GPRS.

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