The work order management (WO system) or module 2.2 is one of the API PRO basic modules. The WO system is software to run a complete work order management including unplanned, planned and preventive (interval based) work orders. Furthermore this module includes powerful tools for planning, history and analysis programs.

To run the WO system, it is necessary to have the plant structure, module 2.1, installed. You also need to enter, work suppliers (labour) account keys and other account dimensions to get correct information regarding the cost of labour and material.

The WO system does not handle inspection and lubrication rounds. For this kind of activities, you need module 2.3, Rounds.

The WO system is completely integrated with all the others modules. I.e. you have the possibility to create a WO when making feedback of a round, you can make reservations and withdrawals directly to a WO, you can also make a purchase directly to a WO in order to automatically receive all planned and used costs.

There are several add-on modules related to the WO system, e.g. Job ordering/ Production calendar, the Project Module, Advanced planning etc. For further information regarding these, please contact API Maintenance Systems.

The tutorial guide includes the following parts. For more detailed information, please read the API PRO reference guides.
1 Work Order planning

You plan/create any kind of work order such as for example Planned WO (CMP) and a WO with interval / Preventive WO (PM) in the program ‘Work Order’. The difference is that PM has a date or a counter interval which CMP does not have.

You can even create an Unplanned WO (CMU) in the same program. This is done in the same way as a planned WO with the difference that you must change “job type” to CMU. A better alternative is to enter unplanned WO’s to use module 3.1 Job ordering. Work orders ordered by job ordering will always be unplanned (CMU).

More information regarding this is to be found in the tutorial guide for job ordering or the API PRO reference documentation.

In the chapter of planning WO’s we will focus on planned and preventive WO’s.

The picture below illustrates the complete work order flow.
1.1 **Work Order**

Enter the MO key. If you know which object the job concerns, enter the field **Maint Object key** or use the browser or tree structure browser to find the MO.

When you have entered the correct object, you will receive the **account key** and **priority** from the plant structure, you can change this if it’s necessary.

**NB1!** You can enter a position key instead of a MO. The reason for this is if you do not know exactly which MO is the problem. However, you must enter a MO before you close the work order.

**NB2!** Several customers do not want to have the possibility to enter a WO on a position. This can be solved with the **API PRO** screen design. With the screen design you can remove, add, make fields required etc. Please evaluate the design possibilities before starting to use the WO system.

In the field **instruction key** you have the possibility to use an existing standard text or a complete WO instruction. **IMPORTANT!** - If you do not use instruction, you must enter a description (header) in the next field in order to get a name of the job.
Start date – End date, in these fields you must enter the planned dates for starting and completing the work order. It is possible to control the default length (no. of hours) of the WO via the system configuration. Contact your system administrator regarding this.

The Job code is a parameter to categorize the WO. It can be used to set whether this is a stop job, holiday job etc. Your organization must decide how and what to use it for.

The time you estimate for downtime of the equipment should be entered in the field Stop Time (it does not have to be equal to the working time). The Job Status will automatically be INI (initialized) when you create a WO. It means that the WO is planned, not started. The status will be changed when you start the WO to IPG, (in progress). There are more standard status codes used by the system. Please check the job status register or read the API PRO reference documentation regarding these.

As earlier mentioned the system suggests the job priority from the plant structure. If there is no priority available, the system will suggest the system default one. You can change it manually. Allowed values are 0-Z. Please note that 0 is the highest priority. Therefore it is not a good idea to have 0 as the system default.

Enter who has ordered the job. Default is your login ID. In responsible you can enter who or the department responsible for the WO. In the field project and cost purpose you can collect predestined values if the WO should be connected to a project or to get the right account code for the transaction.

On the next tab you will find the Error codes normally entered when you feedback the job. Depending on your use of error codes there is a possibility to enter them when planning the job.

Do not forget a short description of what should be done or what kind of error it is. You should add this in the description field. If there is a need for adding more notes to the WO there is also a notebook available as in all other programs.

The last two tabs are just informational, i.e. you do not have to enter any data on these. Regarding fields for intervals and counters, see section 1.4.

When you have finished entering the main screen save the WO.

1.2 Planned Labour

When a WO is planned (CMP or PM) you should normally plan a work supplier (labour). It is possible to configure the system to whether planned labour should be mandatory for starting a job.

N.B. The planned work supplier just concerns planned resources and costs. When you feed back the WO, you enter the real / used resources and costs.

Press the button Work supplier at the bottom of the screen.
Enter or select from the work supplier browser who will execute the WO. You can also use the tree structure to select a work supplier.

Then you enter the **planned hours** and **number of men**. Select the hour rate that should be used for the WO and you will get a planned cost. If you do not enter any hour rate, the system will select the rate from a higher level. This pre-supposes that you have selected this option in the system configuration.

**N.B.** Entered hours are the total no. of hours, i.e. they include all personnel you enter. There are no calculations between “planned hours” and “number of men” fields.

You can also plan in detail different hours on different dates. Then you will receive a more detailed (and more evenly distributed) work load for large jobs. Read about this in the API PRO reference documentation.

If you want to add more work suppliers, select New, and repeat the procedure.

### 1.3 Planned Material

There is no requirement to plan any material in order to start a job. The purpose of planning spares is just to get a picture of planned costs and to secure that the spares are on stock when they are needed by the reservation function.

By using module 2.5 Purchase and order purchases towards WO’s you will automatically receive ordered spares as planned spares and costs.

To plan material for the WO, select the button **Spare parts**.
Enter the spare part key for the planned spare part you want to use for the WO. You can look for spare parts by using the spare part browser or select directly from the MO’s part list.

You can plan material not pre-defined in the system by writing the name directly. In this case you must enter the cost otherwise the system will display the cost from the spare part table.

If the spare part is a stock item, you can make a reservation. For this you need module 2.4 Stock Control. In that case the spare part will be booked for this WO, and the function of purchase needs on stock will consider the reservation according to the entered date of reserved date / activate reservations.

To add more planned material press the button “New”.
1.4 Preventive Work Order

You create this type of Preventive Work order (PM) in the same program as an ordinary WO with a scheduled interval as the main difference towards a CMP. The reason for using this type of WO is that you can create them with an interval, either with a date or with a counter interval and once they are finished, they will be regenerated but with a new start date according to the interval.

You can choose whether you want a fixed interval or not. Fixed interval means that the system will calculate the repetition from “Start date” no matter when a previous job was done. If you do not use fixed interval, the system will plan the next job from the job execution date.

If you use Counter interval, you have to select an existing counter. Read the API PRO reference guide on how to enter a counter. The work will be activated when you have updated the value entered in the field Next counter value.

NB! There is also a function called roll-out, specially for PM work orders. The purpose of roll-out is if you have PM WO’s with short intervals. The risk is that the previous WO will not be fed back before the next is supposed to be started. The roll-out function will generate WO’s in advance and take care of this problem. Please read more regarding roll-out in the API PRO reference documentation.

Regarding other issues a PM work order is managed the same way as a CMP. In the rest of this guide we will only refer to planned WO regarding planning tools, feedback and history.
1.5 Other Features

The work order system and the tools included in planning a WO are quite comprehensive. In this section we will mention some of the other tools available in the planning phase. For more information regarding this, please read the API PRO reference documentation.

1.5.1 Sub Order

This function is used when you have a larger work (or a smaller project) with perhaps more than one work category involved, e.g. some kind of big overhaul, installation job etc.

Pressing the button Sub order will create the sub orders. It is possible to add 99 sub orders with the same main work order number as the parent but with suffix 01-99.

The management of a sub order is the same as for a normal WO. What makes the sub order special is the relation in the WO number and the logic between the parent order and its sub orders.

A parent work order can only be closed (and transferred to history) when all sub work orders have the status ‘Technically finished’. When the parent work order is closed, all sub work orders are closed as well. It is not possible to close a sub work order separately. This means that each working department or contractor can have their own sub WO and technically finish them when they need.

1.5.2 Work Order Log

If you press the button log you will see all the changes that have been made on the WO. E.g. who has started, stopped or planned the WO.

1.5.3 Work Order Approval

If you want to use authorization/approval of WO, you have to set up this function in the system configuration. You can choose to have approval on CMP, CMU and PM separately. If you choose to work with approval, you cannot start any WO before a responsible person has authorized the WO.
You will find the approval fields on the Costs tab.

<table>
<thead>
<tr>
<th>Budget</th>
<th>Planned costs</th>
<th>Used costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>External work</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Internal work</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Stock Material</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Other Material</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Other services</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Total</td>
<td>0.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Default currency: GBP

1.5.4 Creation Dialog

The creation dialog is used to secure that you do not create a new WO for a job that already exists or could be added to an existing WO. If you use this function, the screen below will always be shown when you create a new WO. By choosing MO or position and job type (PM, CMP, CMU, etc.) you will see all non-finished jobs. From this screen you can view or edit the selected WO. If there is no job planned according to your needs, you simply choose the new button to create a new order according to standard. The system will deliver information like Pos / MO key to the new WO.

The creation dialog can be activated as a default setup from the module configuration or each user can activate / de-activate it separately from the edit menu.

1.5.5 Copy Work Order

In API PRO there are many possibilities to copy a WO. You can copy from history or from a WO in progress, to the same or another MO. You can copy to all objects belonging to a MO code, MO group or a technical id. You can also just make a copy with a new start date.

You do this from the menu “edit” and select copy or press <F4>. Then you will get the screen Work order copy. If you want to copy from open WO’s choose the lilac browser button; to copy from history choose the yellow button.
If you have a WO you want to use as a template, you can save it like a template. You will save a lot of time and work by doing this. The status will be “TEM”.

When the WO has this status, the system will exclude the WO in the work order accumulation. If you want to use a template, select Planned Work Order and then copy. From the “point & shoot”, sort on status TEM, then you can select the template work order you want to use.

1.5.6 Planning Window

If you use this function, you will get a warning if you move the start date outside of the interval you have entered. There will also be special colours in the browser of the WO accumulation depending on whether the WO’s start date is before or after today’s date and whether it is inside or outside the planning window.

Select the actual WO, and then enter the option menu and Planning window. By changing +/- days, you can decide how many days you are allowed to move the WO.

1.6 Start of Job

To be able to make a feedback of a planned job you must start it. As mentioned before, you must plan at least one work supplier in order to start it (if the system is configured that way). If you have activated the approval function, the WO must also be approved before it can be started or printed.

There is however a separation between starting a job and printing the job card. You can print it without starting it and vice versa.

To start and print a job manually, simply press the job card button. However, the most efficient way of starting jobs is to use the WO accumulation. See chapter 3 regarding this feature.

The picture below illustrates a Crystal Reports based job card printout. It is possible to design this kind of printouts according to your requirements. Please contact your system administrator or API Maintenance Systems regarding this.
2 Planning Tools

The purposes of the planning tools are to overview your maintenance work load and to allocate your resources. This means that they are not tools for creating jobs but for rescheduling jobs/WO’s to a better point of time thus reducing your production downtime and utilizing your recourses more efficiently.

2.1 Work Order Survey

This function is a planning tool, i.e. a facility for the responsible to get an overview of the job situation and to get the possibility to reschedule the planned jobs.

In the WO survey you will get a graphical overview of started and planned WO’s. When you start the program, a selection window appears where you can make a more or less detailed selection of what you would like to see. It is IMPORTANT that you at least enter a planned date “From – To”, and a branch of your plant structure. Otherwise you will probably get too many jobs to overview.
You can choose to include **not approved** jobs and also select on different **job types**. Press OK and you will get a graphical overview according to your selection. To get the survey displayed by work supplier, tick this box. Press OK to view the survey.
You will get an overview of the next 6 weeks from the date you select as default. Alter between days, week, month or year as resolution for the chart. You can check date, availability, work load (see section 2.3) and work supplier directly from the screen, but you can also view a WO with the magnifier button and access all related information from the normal planned WO window. You can see whether the work orders have been started (green colour) or planned (red colour).

You can change date on the WO by pressing the button Dates or move/extend the WO by start/stop date by using the mouse (drag-and-drop). If you want to view or edit a WO, select a WO and press the magnifier button.

2.2 Work Order Year Plan

In the maintenance menu you will also you will find the program "Work Order Year Plan". In this program you can see all preventive WO’s that have been planned one year in advance. You can make selections as for the WO survey. If you do not make any selection, you will see all preventive WO for the total plant.
Press the print button to receive a printout of the year plan.
The idea is that you print out (or resize by copying) to an A3 or even A2 size to get a nice resolution of the chart.

### 2.3 Work Load

If this function should show the correct work load, the system work load horizon must be set to a date, which is later than today's date. You can only see the work load till this date. We suggest that you enter a date 6 months in advance and update the horizon every third month.

In work load – flat you can see all work suppliers separately in a list. It can perhaps be a better idea to use the work load – tree structure where you can see all planned hours on one separate work supplier but also have the possibility to receive the planned hours by branch level. You will see both planned and started WO’s. Below you will see an example of the work load – tree structure.
You can choose whether you want to see the work load for weeks or days. If you check the box Tree totals you will see the total planned time for each level. Select a record and press the “down button” (⬇️) and you will find all work suppliers one level down. Press the “up button” (⬆️) to go one level up.

If you mark a work supplier and press the button Plans, all WO’s planned directly to this department/group or work supplier will be presented in a browser.

When you select Load, you will see the percentage load, i.e. the planned hours divided by the available hours. If the load is over 100 % the figures will be red. To make this feature work with the basic system functionality you must enter planned hours per week on the work supplier record. Otherwise the system cannot calculate any percentage load. With the ‘advanced planning module’ or as standard from version Open.7 you can connect the work supplier to a shift pattern to get a more accurate control of work supplier availability.

**NB! Consider how to enter the available hours. You cannot put available hours on both department/group level and on included personnel. You will then receive twice as many available hours as there in reality are. Also consider how you will enter planned hours, on department/groups or on individuals. The latter will also affect the presentation of your work load.**

### 3 Work Order Accumulation

This program will display all WO’s which have not been started according to the selection you have made. The basic idea is to find out which WO’s are due, and be able to start all or several of them at the same time. This is the tool for starting work orders but also to use as a planning tool. You get a very nice overview of the situation if you make a proper selection.

There is, however, a possibility to include started jobs in the selection screen. This box is not default because the purpose of the program is to present what is not started.

Below you can see an accumulation result presented in a browser. A double exclamation mark (‼️) means that the WO has passed the planned start date and already should have been started. The green tick mark shows that the WO is approved and black WO’s are not approved. There are also colours for WO’s having a planning window and whether today’s date is in the window or not. Please read the **API PRO** reference documentation for more detailed information.

**NB! To include not approved work orders, you must check the box referring to this in the selection window.**
In the accumulation browser you can choose to **start** and print all or selected work orders and you can also stop all work orders. The option to start selected orders is only available in the options menu or when choosing the printer button.

You can also **delay** selected WO’s a fixed number of days or to a specific date. You can look at the **status**, **accumulated resources** and **work suppliers**. If you would like to look at the availability, press the button **Chk avail**. The system will show you whether there are any availability problems.

A nice option is the possibility to print a list of your accumulation selection.

Mark at least one WO record and press the **printer button**. The first option will print a job card and start the selected WO’s, the second will print a job card but not start the selected work orders, while the last two options will present a list. A simple list means just one line per WO – a simple printout of your accumulation result. A detailed list will result in a detailed printout with all planned information including planned labour and material. At the end of the report there is also a **summary of planned hours and cost**. This is a report quite similar to the history on-line, but for planned WO’s, and it is the only possibility to present this data in a report without using the query tools.

As in all other planning programs you can also view a work order with the **magnifier button**, which will take you to the WO program. When you are in that program you can reschedule or edit any parameter of the WO, provided that you have the right access.

**NB! It is also possible to feed back work orders from the accumulation program. It is done via the buttons Finish all or Finish. (Only available if the system configuration allows it).**

### 4 Job Feedback

There are several ways of making a feedback of a WO.

- Feedback a planned/started job.
- Direct feedback of a job that has not been planned.
- Just making feedback of hours without finishing the job (time registration).
- Finish directly from the WO accumulation (if the system configuration allows it). This is however a special function for finishing already reported orders. This gives no possibility for any additional feedback information.

**NB1! An existing order is not required in order to make a direct feedback.**

**NB2! Please also be aware that the screen designer tool can be used to control which functions different users are allowed to use when making a feedback and even force them to report in fields that are set as “required”. I.e. with this tool you can force users to enter e.g. error codes if your organization requires that.**
4.1 Work Order Feedback

4.1.1 Feedback of an existing WO

Open the “Job feedback by work order” program and enter your WO number (or select it in the browser). Edit the WO and fill in the execution date (and time), adjust any planned information like if the MO key is wrong, the header (WO name) is wrong, cost purpose etc. and finally enter new information like error codes and stop times before you save it.

By using Error codes 1, 2 or 3 you have the possibility to make an error code analysis (RCM) and in that way get time and costs on combinations of these error codes. The idea is that you by using the language/translation system can change the terminology of the codes to what suits your organization and then enter appropriate codes in each table.

NB! If your organization choose to use error codes, it is of the utmost importance that you decide which error codes to use and how to use them (e.g. for all WO’s or just CMU WO’s). Then we strongly recommend that you use the design tool and the system configuration to force the users to report error codes.

You can enter three different stop times in the fields, Stop time, Waiting time and Wait for spares. Stop time has nothing to do with any costs or any labour hours of the job. They are simply three different times on which you can report and look up statistics. There is no logical relation between these times and you can change the terminology to suit your own time reporting ¹.

¹) If you have the add-on module 3.6 Production calendar installed there is a possibility to get an automatic stop time calculation. In that case there is some logic based on the fact that the waiting time is part of the stop time. I.e. the stop time is calculated by the system from the time the job was ordered (if the object is stopped) till the feedback is made and the waiting time is calculated from the time the job was ordered until the WO is started. The production calendar also considers when the
The basic idea is that the stop times refer to downtime in the production. I.e. stop time that is no downtime is not of any interest and should not be included. This can be difficult for the maintenance personnel to estimate though. Therefore it is important for your organization to decide whether you want to use them and/or how you want to use them.

Next step is to register used **hours and costs of labour**. There are three alternatives to make this feedback. There is also a forth alternative in using the “Job feedback by work supplier” program, which we will explain in chapter 4.2.

1. Enter the work supplier key (<F3> for browser and PgUp/PgDn works), hours, time rate and cost directly in the browser at the bottom of the screen. Repeat for the next WS until you are finished.

   ![Transaction](image)

   **Table:**
<table>
<thead>
<tr>
<th>Date</th>
<th>Work supp. key</th>
<th>Planned</th>
<th>Used hours</th>
<th>Rate</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/08/2012</td>
<td></td>
<td>0,00</td>
<td>0,00</td>
<td>1</td>
<td>0,00</td>
</tr>
<tr>
<td>11/08/2012</td>
<td>0923</td>
<td>1,00</td>
<td>8,00</td>
<td>1</td>
<td>125,84</td>
</tr>
<tr>
<td>11/08/2012</td>
<td></td>
<td>0,00</td>
<td>5,00</td>
<td>1</td>
<td>78,55</td>
</tr>
</tbody>
</table>

2. Look in the Options menu and you will find an option called **Work supplier**. This is the old way of entering used hours and it works as in the planning of hours.

3. If the planned hours are the same as worked hours, it is possible to press the button **Planned**... and turn the planned hours into used. This function must be activated in the system setup however, and you should consider thoroughly whether your organization should allow this feature.

When the used hours have been entered, you can enter used material by choosing **Spare part** in the Options menu. Please note that if you use module 2.4 Stock and/or 2.5 Purchase, the used material has normally already been entered by direct relation from store withdrawals and purchase orders. The idea of entering used material from the feedback of WO is if you do not have these modules or if you want to add used material which is not on stock or has not been purchased.

There are three possibilities of adding used material from the WO feedback screen:

---

**object was supposed to be in production and does not include non-productive time. There is no calculation at all on the “Waiting for spares”.”**
1. Choose **Add Spare**.. and select an existing spare part. This registration will be stored as a “Direct use” transaction (U) and no withdrawal from the warehouse is made.

2. Choose **Add Spare**.. and skip the SP key field and just enter a name of the spare. This registration will also be stored as a “Direct use” transaction (U).

3. Choose **StockRemove** if you have access to this function. You will then get the possibility to make a withdrawal from stock, but only to the present work order. This registration will be stored as a “Removal” transaction (R). This possibility is very useful if you are using the “Open store” philosophy, which means that each user makes his own withdrawals because there are no dedicated personnel present in the warehouse.

It is also possible to **Add service** this way. I.e. a labour cost without any relation to a work supplier, but this transaction must be related to a purchase order.

**N.B! If you have installed and use the stock module 2.4 you can directly see all already withdrawn spares in the material browser.**

If there is any information related to the WO you want to add, you can do this in the **notebook**. You may use the plan or the history note. Both will be saved in history.

When you have entered all information and consider the WO to be finished (i.e. there is no one else who should make a feedback on the same WO and the job, press the button “Finish registration” and the work order will be moved to the history.)

4.1.2 **Related Work Order**

There is also a function called related work order which you access by choosing **button**. This will give you the possibility to enter a new planned WO (e.g. if you have found a new error on the maintenance object on which there should be a WO, especially if you execute a PM job and find a corrective error needing to be fixed).

An advantage with a related work order is that you can see from which work order it has been created (related).

In the top right corner on the planned WO screen you will find the work order number to the related work order and in the feedback screen it is located on the planning tab.
4.1.3 Direct Feedback (Emergency Job)

Direct feedback is used for unplanned jobs which have not been ordered via the add-on module 3.2 Job ordering. These jobs are normally emergency jobs registered after the job has been done, i.e. when making the feedback. These jobs will by default get the type CMU if you do not change it manually (on the planning tab).

The feedback procedure is similar to the procedure of a planned WO. The main difference is that since you do not have a WO number, you must press the new button in order to get one. Then you must enter all required information since all fields are blank. The rest of the procedure follows the same pattern as the feedback of a planned WO.

| NB! If you use direct feedback and also use module 2.4 Stock for store withdrawals, you will get problems in relating the withdrawals to the work order since you do not have any WO number until you have done the feedback. This can be solved by instructing your maintenance personnel always to enter the feedback program before they start an emergency job and simply choose new, which MO, enter a header (name of the WO), finally save and print out the order. This way they will have an order to make notes on and an order number to relate their stock withdrawals to. |

4.2 Feedback by Work Supplier

In this function you can enter hours for a work supplier. You can even enter hours directly to a MO or just an account if you do not have a WO. You can also call this program “Direct hour registration”.

| NB! You can only enter used hours by this program. To report a complete WO and finish registration, use the job feedback by work order. |

The function starts up with a browser of hours entered today. To enter new hours, press “new”. (If no hours have been entered this day, you go directly to the entering screen).

Enter Work supp. key and all other fields you want. You have up to 20 different hour rates you can use. If you do not use WO number and/or MO key, you must at least enter the account to debit. Please note that hour registrations with the time rate 11-20 are considered as non-productive hours and presented as an aggregated figure in the Work Supplier hour report.
If you have more hours to enter, press the button Save – to stay on the registration screen. When you have entered all your time, press OK and you will return to the survey screen where you will see all the records you have entered.

If you mark the check box “All days” you will see all hour registrations and by using the filter you can limit the information to e.g. just one work supplier or a specific week.

**NB!** Hours entered without a WO number will not be included in the WO history (maintenance history). If you still use a MO key you can access these hours/costs by the “Financial transaction report” grouped by maintenance object. If there is no MO key either it will just be a transaction with no relation to maintenance at all.

## 5 Job History

From the history you can evaluate all maintenance information entered in the system. There are several programs for different kinds of analysis and statistics. Please note that the history programs located in the maintenance menu only present information related to finished work orders.

Remember that you can always use the Progress query/reporting tools to access the history and present it in the way you like.

### 5.1 History On-Line

In this report you can select the on-line WO history for any finished job. You will access two screens where you can make almost any sorting/grouping of your report and select on a lot of parameters.

Independent of which sorting and selection you make, you will always get a summary of aggregated hours and costs at the end of each sort selection and a grand total for the complete selection at the end of the report.

The drop down menu to select sorting is shown below:
Once the sorting has been selected, the rest of the screen allows you to do some further selections i.e. the range of MO’s you want to see the history for. You can also filter on work supplier, job code etc. It is very important that you at least filter on the field **register date**, otherwise the system will collect information from the total database and it could take very long time and not result in the desired report.

Please note that you must check the **Notes** box in order to get the history notes included in the report and in report detail you can select whether you want to see all info or just a summary. **Only sum** will only present the aggregated hours and cost of your selection.

Below follows a report filtered on just one MO and the only sum option:
5.2 Statistics

To get any statistics you have to create a batch (collection of data) and run it. You create this from the menu point “Batch for statistics”.

Create the batch and give it a specific Batch ID. In the field Reg, Date from – Reg. Date to you enter the dates and finally you must enter which part of the plant in the Pos/MO root field. After that you can save the batch.
To relate any information to your batch, you must run it by pressing the button Run batch. To collect updated data you must always run the batch first. The statistics will only present valid information from the last time the batch was run.

**Tip!** In order always to have an updated batch it can be a good idea to use the API PRO Automation timer function to run your batches e.g. once a week or once a month. Please read the API PRO reference documentation on how to set up the automation timer.

### 5.2.1 Statistics – Top Lists

The first statistics program is the top lists. You can view several different types of top lists. First you have to select a **Batch key** to evaluate. Then you select which **type** of information you want to see by pressing the combo box type.

When you have selected the type of information, press OK and you will receive a top list.
5.2.2 Statistics – Tree Structure

This program will show a graphical survey of the job statistics. This program works like the graphical Plant structure searching. Select the batch you want to evaluate. Then you can climb up and down in the structure like in the plant structure.

The first figure on the right of the Pos/Mo key relates to the present level and the second figure is a total of the complete branch. This means that if the figures do not match, there must be objects with figures related at a lower level.

There is also a separate add-on module, “Analyse & Performance”, which analyses maintenance statistics in more detail and from different points of view. It is a very powerful tool for entering deeply into your statistics and evaluate your enterprise. The Analyse & Performance module is using MS Excel interactively with predefined templates based on your selection. Please contact API Maintenance Systems for further information.
If you have selected a batch with a longer time interval, you can see the figures per month for a selected MO by marking the check box **Trend**. If you press the button **Excel** you transfer the information to a diagram in a work sheet.

You can alter between different KPIs view from the combo box in the upper left of the screen. If you mark the check box **Top list** the system will sort the list by figures.

![Diagram of KPIs view](image-url)

### 5.3 Error Code Analysis

Error code analysis is a powerful tool for analysing what your enterprise can do to improve in maintenance and decrease production downtime. You can look at details and analyse large values for a certain combination and take action to avoid the same failure combination again.

Error code analysis implies that you are using error codes (at least one of them) when you feed back your work orders. First you have to create a batch and run it like in statistics. To see the result, press the **Analysis** button.

![Error code analysis window](image-url)
In the analysis you can select in the drop down list if you want to see number of work orders, number of working hours or costs (as on the above picture) - for the error code combinations. You can change the perspective (combination) by pressing the button **Perspective**.

If you are using Excel you can transfer your figures into a graph and modify it in any way Excel supports. If you want a simple printout of your result, simply press the printer button.

If you press the button **Jobs** you can see all work orders related to the figures that you have marked and by doing this you really have the possibility to evaluate your figures and find the detailed causes behind the figures.

### 5.4 Other History

There are several other history features to evaluate work and maintenance history some of which are mentioned in this chapter. For more information regarding this, please read the API PRO reference documentation.

#### 5.4.1 Work Order History Data
This is the program that presents the completed WO’s. If you have access rights, you can also change, delete or add history data. The program works like the planned work order program.

5.4.2 Work Supplier Hour Report

In this function you can create an hour report per work supplier.

If you select a root level (department or group) you will see all related personnel. In the report you can see productive and non-productive hours per group and person.
5.4.3 Work Supplier Hour Survey

This program gives a possibility to check or evaluate reported hours for a specific work supplier. Since all registered hours are stored as transactions, the program presents the transactions according to your selection.

5.4.4 Planned/Used Cost Report

In this function you can evaluate how well you really plan your costs according to what is really used.

Choose if you want to evaluate per an account, project or WO interval.

![Image of search criteria for job history]

The report presents figures from all work orders planned or in progress with a planned start date according to your input and finished work orders with a execution date according to the same input.

![Image of planned and used costs]

5.4.5 Financial Transaction Report

You can create an on-line financial report based on the system transactions. You will see all transactions independent of whether the related purchase orders or work orders are finished or not.

In relation to the WO system this means that you can get a “real on-line” report, including costs of not finished work orders and this is the only report that will provide you with this information!

Regarding maintenance history we suggest that you make a sorting selection on the WO number, Pos key, MO key or work supplier and then filter on date. Be very careful selecting the right transaction types though, otherwise you can get the wrong type of costs involved in your result.

Below is an example of a report sorted by WO, detail level “Only sum”:
6 JOB ORDERING

Job ordering is really a ‘reduced’ work order, which means that the user only has to enter a few critical fields. It uses the same sequence number as the work order, and will keep the assigned number all the way through the system; from job order through work order into history. The job ordering is used for emergency jobs or as an electronic ordering system.

An order created in the job order screen always has the status **unplanned** (CMU). You enter basic information about the job, of interest for the addressee (maintenance department). To start the job, and perhaps plan it more in detail, functions in the Job monitor, Work order or Job accumulation are used.

In Job ordering you have to enter a **Position key** or **MO key** (the position key can be used if the person ordering is not sure of which object that really is the problem). You can enter an error code if you want to categorize the
job into history already when ordering. **It is very important that a text describing the error is entered.** This text will be the header of the order and presented in all browsers.

You can also enter the **responsible** for the job. Responsible is the “addressee” of the order and if that is not entered, no one will receive the order.

The user who is signed on will be suggested as **ordered by**. It can be modified though.

The check boxes **stopped** and **line stopped** indicates the urgency of the order. If one of these is marked, the order will have a higher priority in the job monitor (line stopped has higher priority than stopped). It is also required that those fields are used if you want to obtain an automatic calculation of stop and waiting times.

After you have saved the job order, it is available in the system as an unplanned work order (CMU) with the status “ORD”. The latter indicates that it has been created in the job order screen.

**HINT! It is essential that the job order screen is as user-friendly and simple as possible if the users shall be satisfied with it. Use the screen designer tool to modify the screen. Change the appearance down to a minimum of necessary fields and set important fields as mandatory. The result will be a quick and easy way of job ordering.**
7 JOB MONITOR

In the job monitor you can see all ordered jobs.

At start up, you will always get the possibility to filter the monitor. The most common is to just filter on the responsible (the addressee of the ordered job), which normally is a department. You can also filter on other selections like part of the plant structure, ordered by or priority. It is even possible to include other job types in the filter, but remember – the main idea with the job monitor is to manage unplanned jobs that have been ordered.

If you are using the approval functionality there is also a possibility to filter on the approval status.

When the selection is made, the monitor will open up with a list according to the selection.
In this screen you will see a lot of information related to the work order. There are several fields available in the monitor browser. Use the scroll bar to see all information or even better, use the functionality of modifying the browser according to your desire. Move and resize the columns. The appearance you choose will be stored per user until you change it next time.

The monitor has a fixed sort ordering. All jobs that are not started are marked red. The sort order is:

1. If the work is started or not.
2. If the line (process) is stopped or not.
3. If the MO is stopped or not.
4. Priority
5. Planned start date (=Order date for ordered jobs)

_N.B. You cannot influence this sort order. Use the standard work order browser if you want to search/filter according to your own criteria. In that browser you can filter in 16 fields and sort on any of them._

From this screen you can start the selected work order by pressing the button “Start job”. Depending on how the system is configured (if work supplier is mandatory or not), a screen will appear where you have to add work resources.

Pls. also observe that the job monitor can be used to approve not-approved job orders. Use the right mouse key to see the approval options. Approved job orders are marked with a green tick mark – see above screen.

If work supplier is not mandatory, or if you start a job that already has planned work resources, this screen will not appear. In that case you will proceed directly to the printout window.
If a work supplier is mandatory and you have not added one the above screen allows you to enter one. Once you have saved the work supplier the job card print dialogue appears.

If you are using Crystal Reports, you can design the job card as you wish and you will receive a graphical preview of the work order.
If you want to re-schedule the order instead of starting it, you must use the magnifier button to open the full Work order program. If you decide that a job is not an emergency, it can be a good idea to use this feature to reschedule the order and change the job type to a planned WO (CMP). Read the tutorial guide for Work orders if you want information about how this works.

From the job monitor, you can also make a feedback of an order, but the order has to be started. Use the “Reg job” button and the program for feedback will be opened. Read the tutorial for Work order if you need more information about how this works.

The job monitoring will automatically be updated, so that new job orders will appear on the screen, with the interval that is set up in the system configuration. Check with the supervisor if you have problems with updating. You can also update the screen manually by using the “Refresh” button at the bottom of the screen.