



TM Master 2.655

MAINTENANCE FORECAST

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Maintenance Forecast: Overview

The *Forecast* section serves a useful tool to analyse your jobs' data and build a forecast for your maintenance routines and relating costs for a desired period of time.

Use the forecast to get the following information on your forthcoming maintenance activities:

- [Jobs to be carried out during the selected period of time.](#)
- [Required spare parts and manpower resources along with their costs.](#)
- [Costs allowed for inflation or wage increase.](#)
- [Shortage of spare parts](#) or [manpower resources.](#)
- [Graphs for total costs and manpower resources for the selected time frame.](#)

To use of the Forecast section, apply the common workflow of the Due list section:

Step 1. Use the filter bar to [create the forecast for the desired time interval and job parameters.](#)

Step 2. [View the created forecast.](#)

Use Case 1

The screen below shows the maintenance forecast for the Electric Department for the current year. The forecast report signals the shortage of abutment rings: the department has to change 10 rings monthly, whereas they currently have only 9 of them in stock. The shortage will become evident on the nearest maintenance day – April 29.

Name	Qty	Price	Curre...	Cost	On Or...	In Stock	UOM	Due date	Maker	Part no.
Abutment ring	10	NOK	0	0		9	PCE	29.04.2014	Yanmar	170325
Abutment ring	10	NOK	0	0		0	PCE	29.05.2014	Yanmar	170325
Abutment ring	10	NOK	0	0		0	PCE	29.06.2014	Yanmar	170325
Abutment ring	10	NOK	0	0		0	PCE	29.07.2014	Yanmar	170325
Abutment ring	10	NOK	0	0		0	PCE	29.08.2014	Yanmar	170325
Abutment ring	10	NOK	0	0		0	PCE	29.09.2014	Yanmar	170325
Abutment ring	10	NOK	0	0		0	PCE	29.10.2014	Yanmar	170325
Abutment ring	10	NOK	0	0		0	PCE	29.11.2014	Yanmar	170325
Abutment ring	10	NOK	0	0		0	PCE	29.12.2014	Yanmar	170325

Figure 1. The Maintenance Forecast on spare parts for the current calendar year for the Electric Department.

Use Case 2

The screen below shows the maintenance forecast from 10/24/2014 to 11/24/2014 for the M/S TM Bounty Junior ship. There are 3548 jobs for 6,646.40 NOK to be carried out during this period. The upper pane lists all these 3548 maintenance jobs. The lower pane shows the details for the selected "Check battery electrolyte" job: its next dues within the set timeframe, as well as required spare parts and manpower resources and their costs on the adjacent tabs.

Forecast - TM Bounty Junior 3548 jobs; 46.0 man hours; 40 spare parts; 6,646.40 NOK Total costs

Time period: Date from-to: 10/24/2014 to 11/24/2014
 Department: _____ Category: _____ Inflation (% per year): 0.00
 Job type: _____ Priority: _____ Wage increase (% per year): 0.00
 Code from: _____ to _____ Assigned: _____

Use unit personnel hours Use crew sea service hours

Jobs: Spare Parts | Manpower | Cost Graph | Man hours Graph

Job name	Code	Man hours	Component	Job type	Job no	Personnel ma...	Class...	Int	Due date	Job number	Pri	Departm
Check back-up time	408.11		UPS 1 for DP...	Chc	5				6M 10/24/2014	1	0	Electric
Check back-up time	408.13		UPS 3 for DP...	Chc	5				6M 10/24/2014	1	0	Electric
Check battery electrolyte	501.04.01		FRC Engine	Chc	2	1			1M 10/24/2014	1	9	Electric
Check battery electrolyte	501.04.01		FRC Engine	Chc	2	1			1M 11/24/2014	2	9	Electric
Check boiler water side	641.01		Oil Fired Boiler	Chk	152				6M 10/24/2014	1		Engine
Check boiler water side	641.01		Oil Fired Boiler	Chk	152				1Y 10/24/2014	1		Engine

Occurrences | Spare Parts | Manpower | Other costs | Costs Summary

Name	Qty	Price	Curre...	Cost	In Stock	UOM	Due date	Maker	Part no.
Abutment ring	10	NOK	0			PCE	10/24/2014	Yanmar	170325
Abutment ring	10	NOK	0			PCE	11/24/2014	Yanmar	170325

Figure 2. The main Maintenance Forecast view with the Details pane open for the selected job.

Occurrences | Spare Parts | Manpower | Other costs | Costs Summary

Name	Qty	Price	Curre...	Cost	In Stock	UOM	Due date	Maker	Part no.
Abutment ring	10	NOK	0			PCE	10/24/2014	Yanmar	170325
Abutment ring	10	NOK	0			PCE	11/24/2014	Yanmar	170325

Figure 3. The Details pane shows the spare parts info for the selected job.

Occurrences | Spare Parts | Manpower | Other costs | Costs Summary

Crew type	Hour r...	Est m...	Cost	Curre...	Due date
Project Engineer	100	1	100 NOK		10/24/2014
Project Engineer	100	1	100 NOK		11/24/2014

Figure 4. The Details pane shows the manpower info for the selected job.

Step 1. Create/Re-create a Forecast

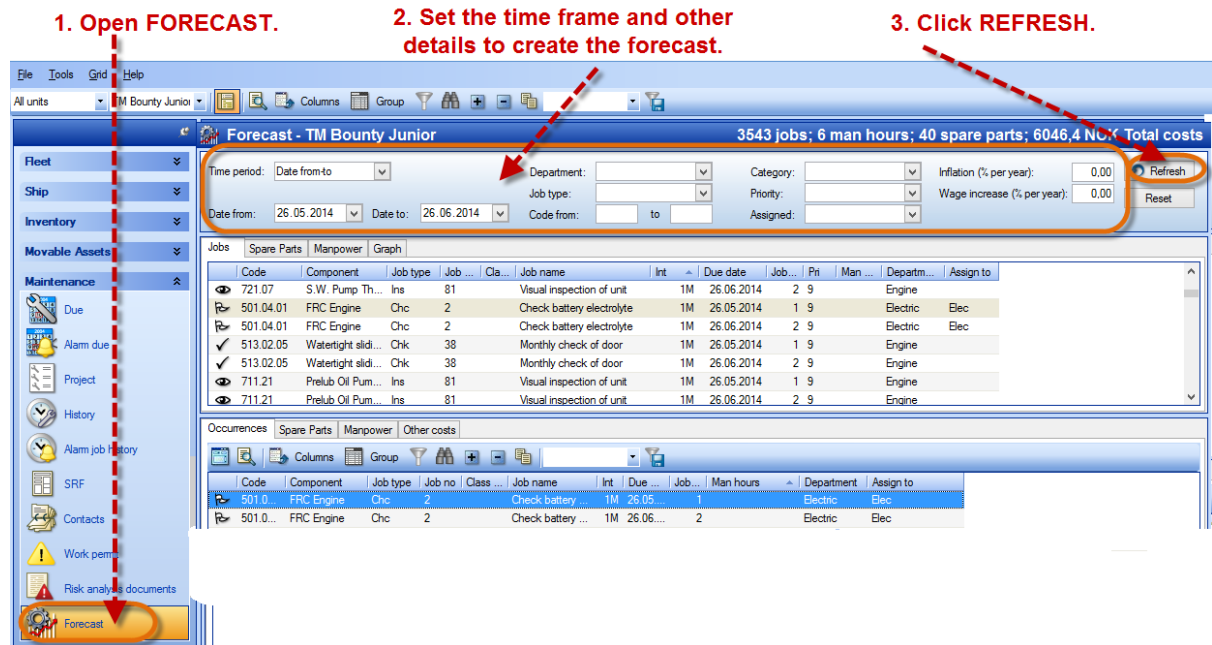


Figure 5. The basic routine to create the maintenance forecast.

1. Open the **Forecast** section:

- To open Forecast for a ship selected in the top menu, click **Maintenance -> Forecast**.
- To open Forecast for a unit/fleet selected in the top menu, click **Fleet -> Forecast**.

2. (To change the default filter forecast parameters) By default, the forecast is displayed for the currently selected fleet or ship for a month ahead of the current date, for example from 19 of May to 19 of June.

To create a forecast for other time intervals or job parameters, use the filter bar. (See The Forecast Grid Tabs and Columns details for details.)

The steps to create a forecast for costs allowed for inflation or wage increase are described in the [corresponding section](#).

(If necessary) Use the top menu selectors to choose another fleet or ship for the forecast.

(The ship selector is available only if the Forecast is opened via **Maintenance -> Forecast**.)

3. Click **Refresh** to create the forecast report.

Use the grid in the central part of the screen to view the created forecast (see [How to view a forecast](#)).

The Forecast Filter Bar Fields Details

(The fields that are missing from the list below are referenced in the How to use the “Due” list filter bar section of the TM Master User Manual.)

- **Time period:** Use the field and the available choices to set the time interval or voyage (if the latter is applicable) for which to create the forecast:
 - a. **Date from-to** - Select the value, and then set any date in the **Date from** and **Date to** fields that will appear.
 - b. **Current calendar year** - Select the value to view the forecast for the period from the current date to December 31 of the current year.
 - c. **Next calendar year** - Select the value to view the forecast for the period from 1 of January to 31 of December of the coming year.
- **Inflation** - Enter the annual inflation rate to calculate the spare parts costs and price allowed for inflation. To view results, use the **Cost** and **Price** columns on the **Spare Part** tab of the Forecast grid.
- **Wage increase:** Enter a percent of wage increase to calculate manpower costs allowed for wage increase. To view results, use the **Cost** column on the **Manpower** tab of the Forecast grid.
- **Use unit personnel hours:** Use the option to calculate Man Hours and Personnel man hours based on the info on the newly added **Unit Personnel** tab (**Ship** -> **Details**).

- **Use crew sea service hours:** Use the option to calculate Man Hours and Personnel man hours based on the data from the Crew module.

How to Create a Forecast for Costs Allowed for Inflation or Wage Increase?

There is an opportunity to account for annual inflation and wage increase when calculating forecast costs on spare parts and personnel.

To calculate inflation costs for spare parts:

1. When creating the forecast, set the desired percent of inflation in the **Inflation** field of the filter bar.
2. Use the **Spare parts** tab to view results.

Note: The Costs info must be filled out on a spare part.

To calculate personnel costs accounted for wages increase:

1. When creating the forecast, set the desired percent of wage increase in the **Wage increase** field of the filter bar.
3. Use the **Manpower** tab to view results.

Note: The Hour rate field must be filled out on the Personnel tab see How to register personnel requirements for a job? for details.

Step 2. View the Created Forecast.

Once you [create](#) the forecast, use the tabbed grid in the central part of the screen to view the forecast information and plan your activities and resources or deal proactively with discovered shortage.

- [How to view the forecast job data?](#)
- [How to view the forecast spare parts data?](#)
- [How to view the forecast manpower data?](#)
- [How to view the forecast totals?](#)
- [How to view your forecast costs and manpower resources via the visualized graphs?](#)

Switch tabs to view specifics for the selected time frame.


Code	Component	Job type	Job ...	Cl...	Job name	Int	Due date	Job...	Pri	Man ...	Depa...	Assign to
558.07.02	Drying Tumbler 2 Lau...	Cle	30		Check/Clean drying tumbler	1Y	20.05.2014	1	9		Electric	
571.01.01	Control Panel, AC Co...	Ren	26		Renew battery	2Y	20.05.2014	1	9		Electric	
408.01.06	Fanbeam, 408.06	Lub	13		Grease the shaft	3M	20.05.2014	1	9		Electric	
411.04.01	Furuno 2835S Radar...	Chk	60		Check bolts & nuts	6M	20.05.2014	1	0		Electric	

Occurrences Spare Parts Manpower Other costs

Code	Component	Job type	Job no	C...	Job name	Int	Due ...	Job...	Pri	M...	Department	Assign to
571.0...	Control Panel, AC ...	Ren	26		Renew battery	2Y	20.05...	1	9		Electric	

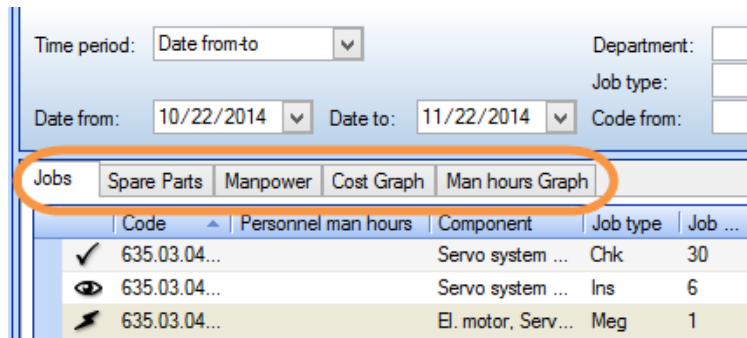
View details for the selected item.

Figure 6. The basic routine to view the maintenance forecast.

- Switch the tabs to view the list of jobs and corresponding spare parts and manpower resources for the defined period of time. Refer to The Forecast Grid Tabs and Columns details for details.
- Values in red on the **Spare Parts** and **Manpower** tabs signals the shortage of the resources. Use the column description The Details Pane Tabs to know how to overcome the shortage.
- Double-click the selected job or spare part to open the **Job details** or **Spare part** details window, respectively. Use this windows to modify the job or spare part data.
- Consider using the grouping functionality to get more structured look of your maintenance schedule.
- Use the  **[Show details]** button to view additional information on your job/spare part/manpower resources selected in the grid. Refer to The Forecast Grid Tabs and Columns details for tabs' and columns' meaning.

The Forecast Grid Tabs and Columns details

The section details the tabs of the main grid:



- [The Jobs tab](#)
- [The Spare Parts tab](#)
- [The Manpower tab](#)
- [The Cost Graph tab](#)
- [The Man hours Graph tab](#)

Note: The columns below include the columns that have not been described before in the manual or have additional meaning to the one described before.

Jobs:

Shows all the occurrences of the maintenance jobs for the time interval and job parameters defined in the [filter pane](#) based on the jobs' details, such as scheduling interval, running hours, etc.

Job name	Code	Man hours	Component	Job type	Job no	Personnel ma...	Class...	Int	Due date	Job number	Pri	Departm...
Check back-up time	408.11		UPS 1 for DP...	Chc	5			6M	10/24/2014	1	0	Electric
Check back-up time	408.13		UPS 3 for DP...	Chc	5			6M	10/24/2014	1	0	Electric
Check battery electrolyte	501.04.01		FRC Engine	Chc	2	1		1M	10/24/2014	1	9	Electric
Check battery electrolyte	501.04.01		FRC Engine	Chc	2	1		1M	11/24/2014	2	9	Electric
Check boiler water side	641.01		Oil Fired Boiler	Chk	152			6M	10/24/2014	1		Engine
Check boiler water side	641.01		Oil Fired Boiler	Chk	152			1Y	10/24/2014	1		Engine

- **Due date:** Shows a job's due date predicted according to the job's details, such as scheduling interval, running hours, etc. (Requires that **Data interval** and/or **Hour interval** as well as **Last done** fields are properly filled and maintained.)
The today's due date also shows overdue jobs and jobs with no interval defined (i.e. with "0" in the **Int** column).
If a job has more than one frequency defined, only its instance with higher frequency will show (e.g. if a job is set to run once a year and once every 10000, the job with the one-year interval will show in the list).
- **Occurrence no:** Indicates the number of the occurrences of the job in the list (first due occurrence of the job during the defined period is labelled "1", the next due after that is labelled "2", etc.).
- **Personnel Man Hours:** Total man hours for the job based on the **Personnel** tab of the job details.
- **Man Hours:** Man hours for the job based on the corresponding field on the General tab of the job details.
- Use the status bar on the [Details pane](#) to view costs for the selected job

Costs: 0.00 NOK spare parts; 200.00 NOK manpower; 0.00 NOK other; 200.00 NOK total

Spare parts:

Lists all spare parts required for the jobs listed on the **Jobs** tab based on the spare parts information for the jobs.

Name	Qty	Price	Currency	Cost	On Order	In St...	UOM	Due date	Maker	Part no.
Profibus Com Card	1		NOK	0.00			PCE	10/24/2014	LÖNNE Scandinavia As	9001934
Return filter, Parker	2		NOK	0.00	1	12	PCE	10/24/2014	Wärtsilä Propulsion Netherlands B.V.	PXX 2A-10 ...
TU 831V1	2		NOK	0.00			PCE	10/24/2014	North-Western Ship Repairs	TU831 V1 B...
Short side screw for main b...	2	315.20	NOK	630.40			PCE	10/24/2014	Wärtsilä Finland Oy, Ship Power	100014
A0 810V2	3		NOK	0.00	1	8	PCE	10/24/2014	ABB	AO810V2 An...
Valve seat insert exhaust	4		NOK	0.00			PCE	10/24/2014	Wärtsilä Finland Oy, Ship Power	120022
Shim 90-327B	5	1,000....	NOK	5,000....	16	7	PCE	10/24/2014	Yanmar	170327
Abutment ring	10		NOK	0.00		109	PCE	10/24/2014	Yanmar	170325
Abutment ring	10		NOK	0.00		99	PCE	11/24/2014	Yanmar	170325
Abutment ring	10		NOK	0.00		89	PCE	12/24/2014	Yanmar	170325

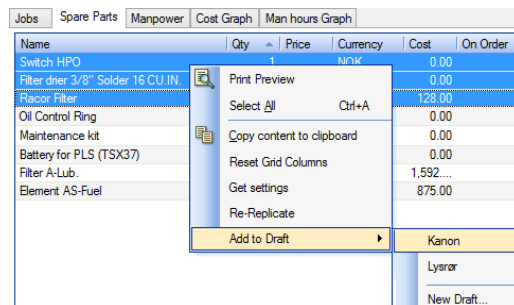
- **Cost** (Available if the **Price** field for the spare part is set. Otherwise, the value is 0.) Shows the total cost for all spares required for a job in the ship's currency and in the base currency if multiple vessels are selected.

If a value is set in the **Inflation** field of the filter bar, the **Cost** field displays yearly inflated cost of the spare.

- **Qty** (Available if the **Items** section for the corresponding job is set.) Shows quantity of required spares for the exact job.
- **In Stock** (Available if the corresponding field for the spare part is set.)

The item in red indicates that the required spare quantity for the exact job is lower than the current stock level on board.

To add spare part(s) to draft: select (or multi-select) the spare(s) and then use the right-click menu to select **[Add to Draft]** button and select the draft or create the new one.



To overcome the issue, double-click the spare and then use the **[Add stock]** button in the spare part details window that opens.

To modify the orders' data for the selected spare, [use the Orders tab of the Details pane.](#)


Manpower:

Lists all disciplines required for jobs with total number of hours and total costs per discipline based on the personnel information of the jobs.

Jobs	Spare Parts	Manpower	Cost Graph	Man hours Graph	
Crew type	Est man hours	Cost	Currency	Due date	Av... ▾
1st Engineer	1	108	NOK	10/24/2014	0
1st Officer	8	0	NOK	10/24/2014	0
2nd Officer	1	300	NOK	10/24/2014	0
Project Engin...	1	100	NOK	10/24/2014	0

- **Available man hours** Shows available man hours based on service records per discipline/date. The item in red indicates that required crew types and relevant man hours are less than planned/onboard crew for the selected time period.
To assign the required personnel and increase the available man hours, use the **Crew** module (for reference, go Help-> How to -> Crew to access the "How to.." for TM Crew? guide.)
To modify the manpower data for the job, use the job details window.
- **Cost** (*Available if the corresponding data is set on the Personnel tab of the job. Otherwise, the value is set to 0.*) Shows the manpower cost required for a job in the ship's currency and in the base currency if multiple vessels are selected.
If a value is set in the **Wage Increase** field of the filter bar, **Cost** displays an increased wage costs.
To modify the manpower data for the job, use the job details window.

The Details Pane Tabs

Use the **Show Details**  button to access the details view for the selected element in the grid or graph (except the Man Hours Graph). The tabs of the detailed view grid are referenced below.

(Note: The section describes only tabs, refer to The Forecast Grid Tabs and Columns details for detailed column description.)

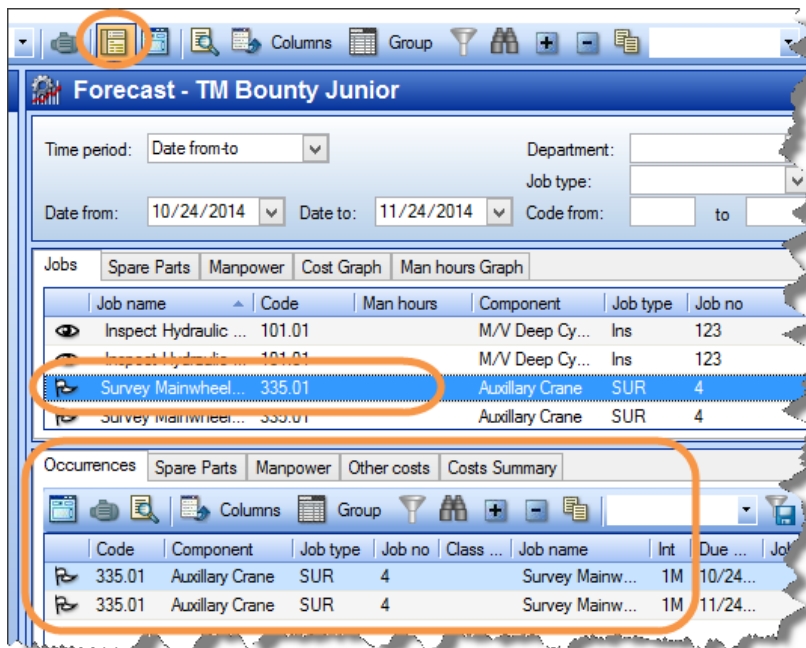


Figure 7. The **Show Details** button switch on/off the detailed view for the selected item in the grid

Jobs:

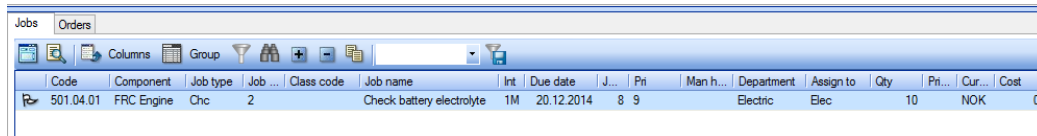
The details pane for the Jobs tab selected in the main grid shows the following data:

Occurrences									
Spare Parts									
Manpower									
Other costs									
Costs Summary									
	Code	Component	Job type	Job no	Class ...	Job name	Int	Due ...	Job no
	101.01	M/V Deep Cy...	Ins	123		Inspect Hydra...	7D		1
	101.01	M/V Deep Cy...	Ins	123		Inspect Hydra...	7D		1

- **Occurrences** Lists all occurrences for the selected job during the set time frame. The occurrences are calculated based on the job's intervals.
- **Spare Parts** Lists all spare parts required for the selected job. (Available if the corresponding data for the job is set.)
- **Manpower** Lists personnel required for the selected job. (Available if the corresponding data for the job is set.)
- **Other costs** Lists other costs (Available if the corresponding data for the job is set.)
- **Costs Summary** Lists the costs for the job.

Spare Parts:

The **details** pane for the Spare Parts tab selected in the main grid shows the following data:

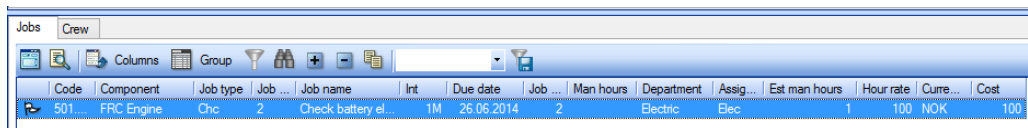


Code	Component	Job type	Job ...	Class code	Job name	Int	Due date	J...	Pri	Man h...	Department	Assign to	Qty	Pri...	Cur...	Cost
501.04.01	FRC Engine	Chc	2		Check battery electrolyte	1M	20.12.2014	8	9		Electric	Elec	10		NOK	0

- **Jobs** Shows the job that requires the selected spare part with the required quantity and cost.
- **Orders** Shows the list of related orders. (*Available if the corresponding data for the spare part is set.*)
Double-click to edit the selected order draft or create a new one.

Manpower:

The **details** pane for the Manpower tab selected in the main grid shows the following data:



Code	Component	Job type	Job ...	Job name	Int	Due date	Job ...	Man hours	Department	Assign...	Est man hours	Hour rate	Curre...	Cost
501	FRC Engine	Chc	2	Check battery el...	1M	26.06.2014	2		Electric	Elec	1	100	NOK	100

- **Jobs** Shows the job that requires the selected discipline with the number of hours and cost. Double-click the selected job to open the job details window and modify the job's manpower information.
- **Crew** Shows the exact person assigned for the job (*Available if the corresponding data for the job is set.*)
Double-click to edit the selected team crew or create a new one.

How to View the Forecast Totals?

Use the ribbon to view the totals of the forecast you [created](#):

- Total number of jobs to be carried out, e.g. "3543 jobs";
- Total number of personnel man hours, e.g. "6 man hours";
- Total number of spare parts required. e.g. "40 spare parts";
- Total cost for all jobs, e.g. "6046,6 NOK total costs"



Forecast - TM Bounty Junior				3543 jobs; 6 man hours; 40 spare parts; 6046,4 NOK Total costs				
Time period:	Date from-to	Department:		Category:		Inflation (% per year):	0,00	Refresh

Figure 8. The ribbon with forecast totals.

How to Read the Visualized Graphs (Cost Graph and Man Hours Graph)?

Once you [create](#) the forecast, the two graphs - **Cost Graph** and **Man hours Graph** tabs help to visualize the information in the grids:

- The **Cost Graph** visualizes the total costs for all jobs for the selected time period.
- The **Man Hours Graph** visualizes the required and available manpower resources for all jobs for the selected time period.

Use case for the Cost Graph

The screen below is the total cost graph for 2 dates (circled orange) – 19.05.2014 and 20.05.2014. The total cost of all jobs for 20.05.2014 is 5100 NOK: the topmost red diamond (equals to 5100 on the Costs axis) above 20.05.2014 stands for the sum of the manpower cost (represented as blue diamond and equals to 100 on the Costs axis) and the spare parts cost (represented as orange diamond equals to 5000 on the Costs axis), i.e. 100 NOK+5000 NOK=5100 NOK.

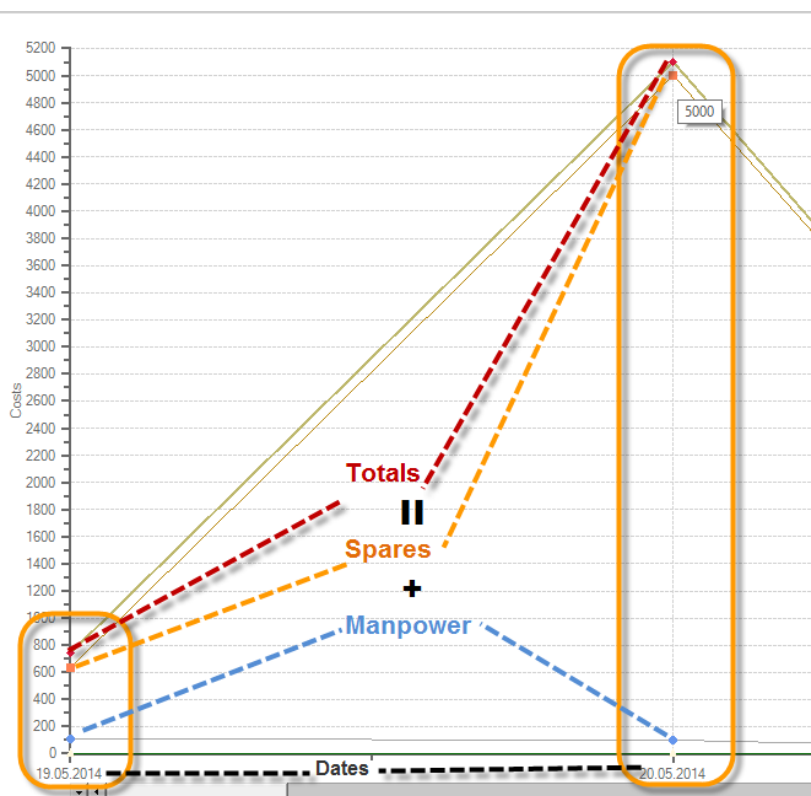


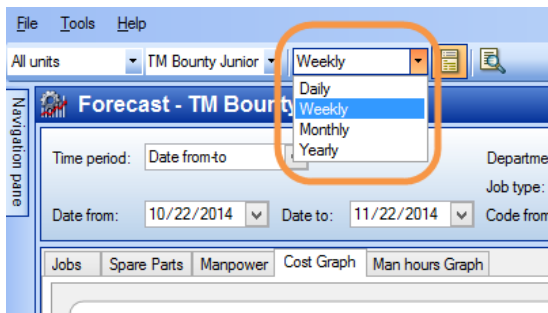
Figure 9. The explanation of the total costs graph for 19.05.2014 and 20.05.2014

While the two graphs differ in vertical axes functionality, the time period horizontal axis functionality is the same.

The **Date** axis shows the timeline that is set on the filter bar.





- Use the selector next to the scroll bar to vary the timeframe displaying data per day, per week, etc.
 - 1:1 fits the whole timeframe (set on the filter bar) into your screen
 - 1:2 fits the half of the timeframe into your screen
 - etc.
- Use the horizontal scrollbar to move along the timeline.

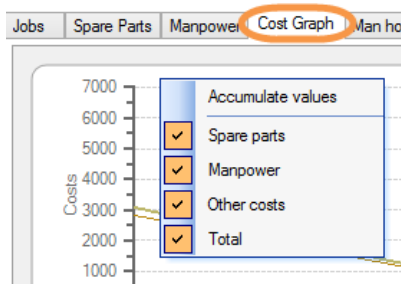
- Use the dropdown on the main toolbar to set the timeline to display daily, weekly, monthly, or yearly intervals.



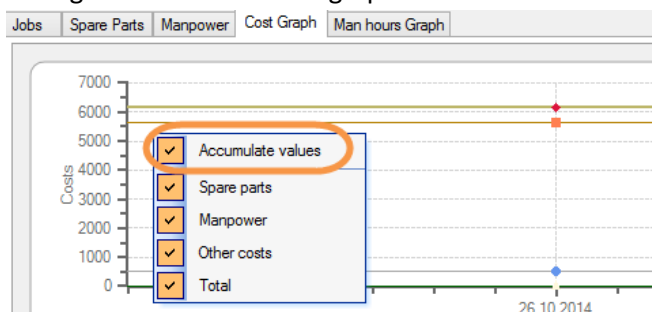
The Cost Graph

The **Costs** axis shows the following:

- Every red “diamond” value (—◆—) shows the total cost of all jobs for one date. The sum of these values makes the total costs for all jobs (displayed on the ribbon).
- The most expensive “date” makes the top value of the scale.
- Hover the pointer over a symbol to know the exact cost value it represents.
- The symbols represent the following costs per one date:
 -  **Spare parts** - The orange square stands for spare parts cost.
 -  **Manpower** - The blue circle stands for manpower costs.
 -  **Other costs** The green line stands for “other costs”. (Comes from the **Other costs** tab of the Job.)
 -  **Total** - The red diamond stands for the sum of the costs for spares, manpower, and other costs.
- To switch off/on cost graphs, right-click anywhere within the graph and check/uncheck on desired item(s)






- To switch to the total accumulative cost for the period, use the **Accumulate values** option of the right-click menu of the graph.



Man Hours Graph

The symbols represent the following manpower data per one date:

-  Job man hours
the total man hours for jobs based on the **Man hours** field on the component job.
-  Personnel man hours
the total man hours based on the **Personnel** tab of the job.
-  Available man hours
the total available man hours based on crew sea service.