WinPump

IMO AB Pump Selection Program
## Manual from version 3.7.11

General

WinPump is a software tool to select and calculate performance data for IMO pumps and drivers. Although inherently intuitive, some guidance may help you master all the features of the program.

WinPump covers all the technical aspects of a pump selection, including performance calculation and check-ups of operational limits. However, it is always the responsibility of the user to ensure that the selected pump type is suitable for the specified application, incl. compatibility with fluids and its possible contaminants, suitability of physical dimensions, duty pattern, environment etc. For such details, please see Product Descriptions, Installation and Maintenance Manuals and other literature that may apply to the specific product. These documents are available from the IMO AB website, www.imo.se (this reference is also shown on the 'Material Report', which is one of the reports available from WinPump).

1. User interface

When WinPump is started, the user interface looks like this:
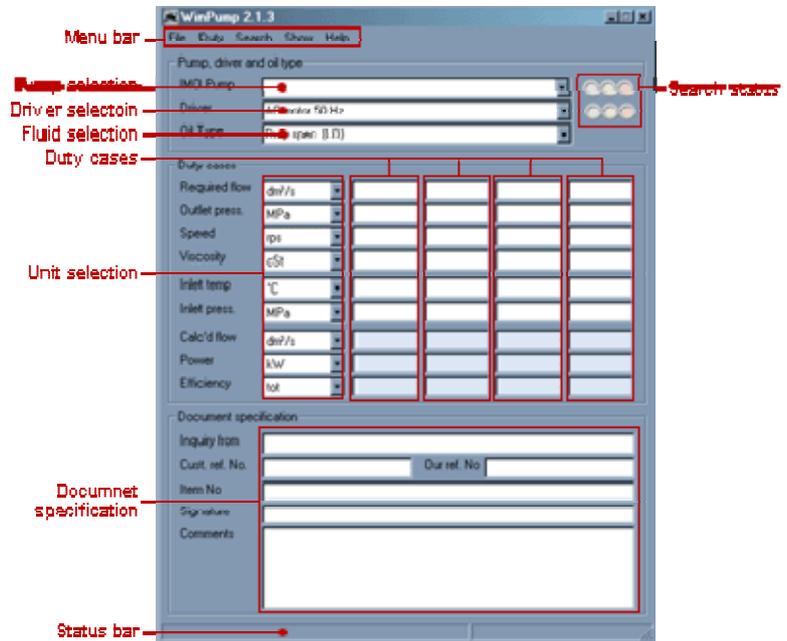
- The menu bar provides functions such as clear, load and save, but also convenient ways to select pumps.

- The <u>pump designation field</u> contains the name of the currently selected pump. The field also has a drop-down list containing pumps suitable for the current duty cases.

- The pump <u>search status</u> indicates whether suitable pumps are available, or, if a pump has been selected, how well the pump matches the duty cases.

- The <u>driver designation field</u> contains the name of the currently selected driver. The field also has a drop-down list containing drivers suitable for the current duty cases and the selected pump.

- The driver <u>search status</u> indicates whether suitable drivers are available, or, if a driver has been selected, how well the driver matches the duty cases.

- The <u>fluid field</u> presents the name of the currently selected fluid. The associated drop down-list contains categories of pre-defined alternatives.

- The <u>duty cases</u> contain user requirements and the calculated output.

- The <u>unit selection fields</u> show the currently used unit of measurement for the corresponding row. The unit selection fields have drop-down lists containing alternative units of measurement.

- The document specification fields contain user supplied information about the current session. The information in these fields is not used for calculations, but is shown on the printed reports.

- The status bar shows miscellaneous information about the currently selected pump and the availability of pump alternatives.

1. Pump selection

Pumps can be selected in four ways:

- By operating data
- By designation search
- By text entry
- By family

Technical data for a selected pump (incl. article number for fully specified, i.e. non-generic pumps), are shown on menu item 'Show/pump info'.

2.2 By operating data

Enter the following data into Duty1:

- Required flow
- Discharge pressure
- (Optional: rotational speed)
- Fluid viscosity (see"Fluids")
- Inlet fluid temperature (see below on "Fluids")
- Inlet pressure

On a green "search status" indicator pumps are available for selection on a drop-down menu from the Pump box. The pumps are sorted on a priority basis and normally the top pump is the most suitable. Additional pump versions – family members – of a pump shown in the list may be selected separately ('Show/Pump family'). If no drive speed value is entered, WinPump will suggest a suitable speed.

On the list the Opti Line pumps are shown on a ==yellow background== and pumps not entirely compliant to required operating performance are shown on a <mark style="background-color:red">red background.</mark> If above entry data are changed, WinPump will modify the contents of the Pump drop-down menu, but a selected pump will be retained until a new selection is made.

Basic pump performance data is shown on the WinPump main window. Additional info on each duty case can be obtained from the menu item 'Show/Duty case info'.

2.3 By text entry

Enter a designation text string by typing it into the Pump Box. The string does not need to be a complete designation and is not case sensitive. The text will turn red if you enter a text string that does not match any pump. Pumps matching the text string will be available in the Pump drop down box.
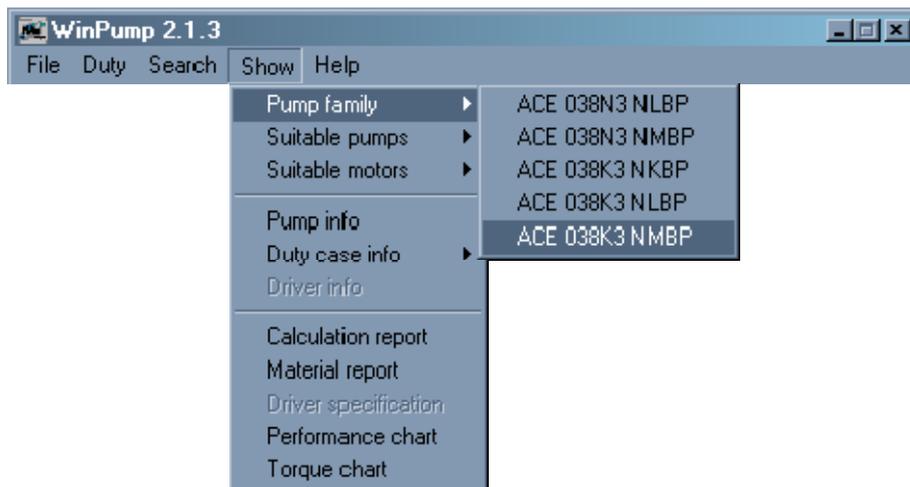
2.3 By designation search
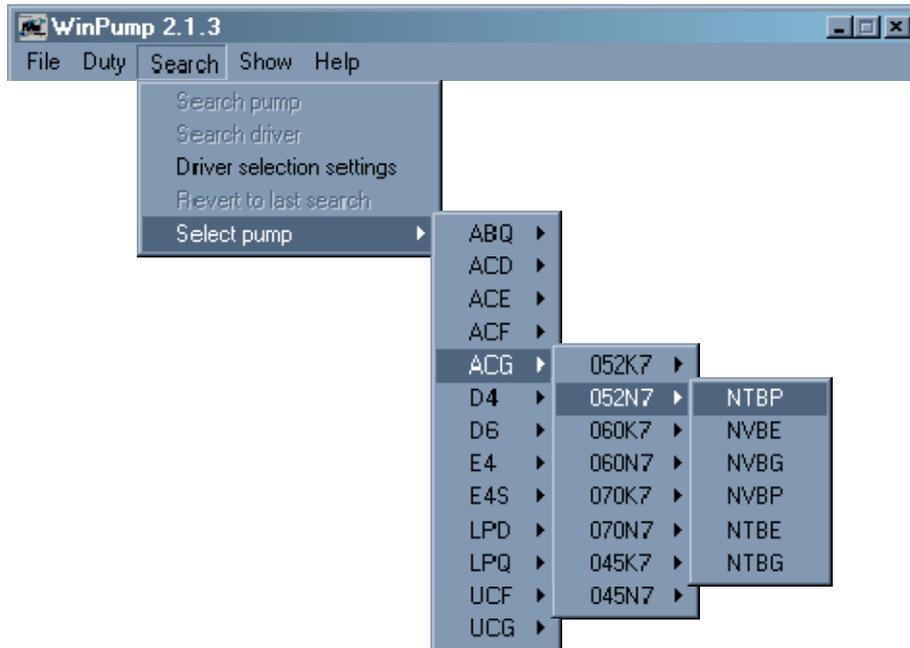
From menu "Search /Select pump" available pumps may be selected by in turn

- Family designation
- Size and lead
- Version

In order to calculate the pump, duty conditions must be entered into the Duty specification boxes.

2.4 By Pump family

After selection of a pump <u>by operating data</u>, only the immediately best suitable pump version is shown in the Pump drop-down list. All other available versions of a selected pump, however, can be selected from the menu item "Show / Pump family".

3 Pump calculation

The pump can be calculated in up to 4 operation points, which could represent e.g. Normal operating, Auxiliary operating, Starting and Extreme operating points.

A light blue duty box indicates that the box is for output only and displays the result of the calculation. Note that Speed becomes a result box and marked blue if a driver is selected.

If no speed is entered WinPump will use the following values:

- with 'Fixed speed' option selected, the speed to give exactly the required flow

- with "AC 50Hz" option selected, each pump is calculated with the 2-, 4-, 6- or 8- pole 50Hz- speed, that best fits the flow requirement

- with "AC 60Hz" option selected, each pump is calculated with the 2-, 4-, 6- or 8- pole 60Hz- speed, that best fits the flow requirement

4 Units

For each duty parameter a number of units can be selected from the respective drop-down menus. The selected units will be used in all diagrams and reports. If changed, an entered value will be recalculated to the new unit. This feature can be used as a stand-alone unit converter.

5.1 Driver selection

WinPump will pre-select a number of suitable drivers automatically, which are available on the Driver box drop-down menu. If motors are available on the drop-down menu a green light will be lit in the driver search status indicator.

Motors will be selected from the highest power requirement of Duty1 – Duty4, starting with a motor at least 5% above that value, but listing also next smaller and next bigger motors. Preferred motor selections (= motors stocked by IMO AB) will be shown on green background and, if selected, indicated by a green "search status". Non-preferred motors are indicated by a yellow 'search status', when selected.

If input data is changed, the pre-selected drivers in the drop-down list will change accordingly, but the selection in the motor box will be retained.

Please note that WinPump does not consider the motor physical size, e.g. for use with ACD or LPD pumps or for the availability of connection frames to a particular pump.

5.2 Driver selection filters

In a dialogue box, selected from the 'Search / Driver selection settings' menu or from the Driver drop-down menu, filter parameters for motor selection can be entered:

- Manufacturer (only one at a time can be applied). A brand on green background includes preferred (stocked) motor types.

- Voltage combinations:

  50Hz: 380, 400, 380&400, 380&400&690,

  60Hz: 440, 460, 440&460, 690)

- Number of poles (only if WinPump is required to limit the selection of speed options)

- Properties;

  Industrial; motors compatible with EC Regulation 640/2009, i.e. efficiency class IE3 @ 50 Hz for power equal/higher than 7,5 kW. For cases requiring less power, motors of efficiency class IE2 can be selected.

  Marine; not regulated by IE class and can be efficiency class up to IE3

  EEx and 2-speed motor options are currently not in use.

Mains frequency is tied to the voltage and will change according to generally available voltage/frequency combinations

6 Fluids

WinPump has a wide range of pre-specified fluids, listed with typical viscosity and density characteristics. The required fluid can be selected from the drop-down menu on the Fluids box. A known fluid can also be selected by directly entering its designation string into the Fluids box.

If selected, the specific fluid characteristics will govern a relationship between temperature and viscosity. If a temperature change is entered, the viscosity will change accordingly and vice versa.

There are two options on "Fluids" without a temperature-viscosity relationship

- Duty specific (LO) indicating lube oil properties

- Duty specific (FO) indicating fuel oil properties

With these two "Fluids" temperature and viscosity can be entered separately without any interrelation.

In the Oil Specification dialogue box, liquids can be specified to be contaminated by air (entrained gas) or water. These contaminants will change the suction capability of the pump. By default, all fuels are specified with water as contamination. If this is not the case, the contamination flag can be cleared by unchecking the box in the 'Contamination' dialogue. WinPump will then prompt you to give this fluid a unique name, e.g. by adding "w/o water" to the original name.

Customized oils can be specified by entering appropriate data into the Oil Specification dialogue box. Checking the box "Lock visc. index" will make the customized liquid have the same slope visc/temp as the selected base oil and you will only be required to enter one visc – temp point. With the "Lock visc. index" unchecked, you will need to enter two sets of visc/temp data to define the visc.-temp relationship. Customized oils can be saved and deleted.

7 Preferences

In the dialogue Preferences, selected from the File menu, you can pre-select a set of units and value entries. These units and values are inserted when WinPump is started and when 'Clear all' is selected.

Standard signatures, which appear on WinPump reports, default fluid and Company address can also be selected/edited from the Preference dialogue.

8 Reports

In order to create proper reports, you can within certain limits edit the designation on selected pumps. This is true for generic pumps, with an 'x' in the designation shown by WinPump, where the 'x' can be substituted by a proper designation letter. You may also add trailing info, e.g. A-numbers, to the designation

9 Save/open

WinPump selections/calculations can be saved to file for later use. WinPump will then save pump and motor designations, fluid designation, entered data with units as used incl all document specification data (=comments). When the file is reopened these data are used for recalculation of pump performance together with actual constants in the data file.

WinPump ver. 3.1 can read files created by previous WinPump versions, but due to limited amount of data in those files, the selection may deviate from that at the time of storage.

10 Search status indicators

Pump selection and search status indicators:

Empty pump designation field (no pump selected)

Lack of sufficient input data for pump selection

Pumps available in drop down list

not used

No pump found to meet required performance

Selected pump shown in pump designation field:

A suitable pump is selected

Selected pump not available from standard range

Selected pump not compatible with all duty cases

Driver selection and search status indicators:

Empty driver designation field:

Lack of sufficient input data for motor selection

Motors available in drop down list

Not used

No motor found to meet required performance

Selected driver shown in Driver box

A suitable driver from the Preferred motor range is selected

Selected driver is not from the Preferred motor range

Selected driver power capability not compatible with all Duty cases

11 Keyboard shortcuts

Ctrl-Enter	Select the first pump in the Pump drop-down list and enter it into the Pump box
Ctrl-Space	Select the first driver in the Driver drop-down list and enter it into the Driver box
F4	Drop down the Motor/Driver/Liquid list as indicated by cursor position
Down arrow	Select next item on drop down list as indicated by cursor position
Ctrl-1 to 4	Show details for duty case 1 to 4
Ctrl-W	Clear current duty
Ctrl-E	Clear all (reset)
Ctrl-I	Show pump details ("Show pump info")
Ctrl-D	Show driver details ("Show driver info")
Ctrl-P	Print
Ctrl-O	Open file
Ctrl-S	Save
Ctrl-Shift-s	Save as
F1	Help
Ctrl-Shift-Space	Driver filter settings
Ctrl-Up-/Down-arrow	Change unit of measurement