

# SKF Lubrication Planner



Instructions for use



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## 1. Disclaimer

When installing the software, the user is accepting the conditions explained in the “Terms of use” displayed during the installation process. Read them carefully before accepting and proceed.

## 2 Installing the software

To install SKF Lubrication Planner onto a PC

1. Insert a CD into the PC or download the file from our webpage
2. Use windows explorer to view the file
3. Open and run the file “SKF LubPlan setup.exe”
4. This will start the installation of the software on the PC.

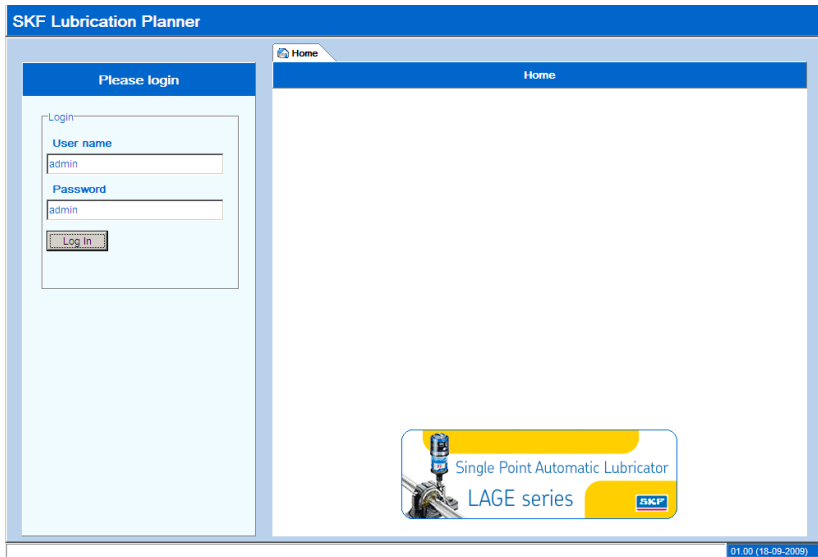
Once the software has successfully been loaded an icon appears on the desktop:



## 3 Starting the software



To start the software double click on the icon  
The following screen will appear:



Log in by typing in the user name and Password.

The default User name is: admin

The default Password is: admin

User name and password can be adjusted in the program see chapter 4.5.

## 4 Task bar and features

### 4.1 Edit mode/Read only mode



Ready only mode



Edit mode

The first icon on the tool bar represents the mode status of the program. The option to shift between “edit mode” and “read only” mode is available only for users with access level “Editor” or “Administrator”. For users with “user” access level, the program is always in “read-only” mode. See chapter 4.5 for the different user access levels.

No changes to the database can be made in the read only mode except for the completion of tasks. See chapter 4.2 Task lists. The password is needed again to change from “read only” mode to “edit mode”.

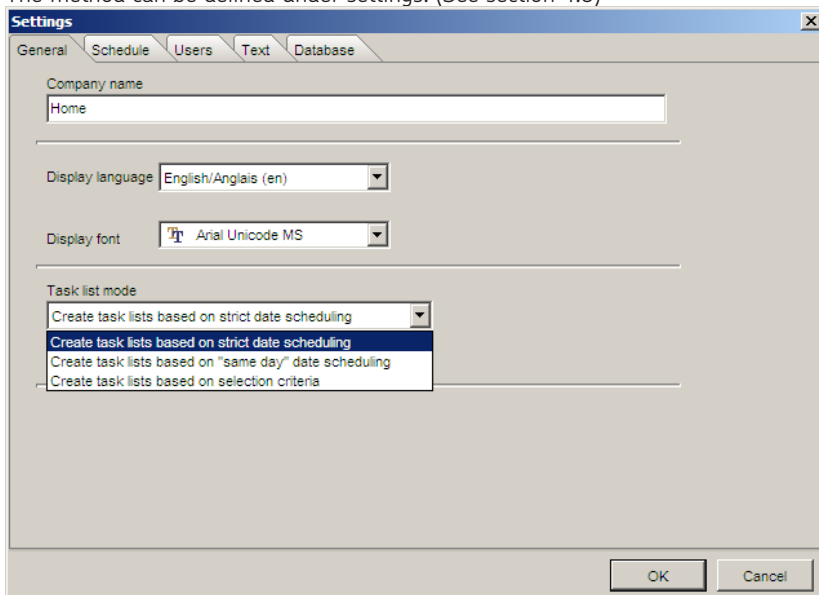
### 4.2 Task lists



This icon is for printing task list and marking tasks as completed. There are three different methods to generate task lists:

- Create task lists based on strict date scheduling
- Create task lists on “same day” strict date scheduling
- Create task lists based on selection criteria

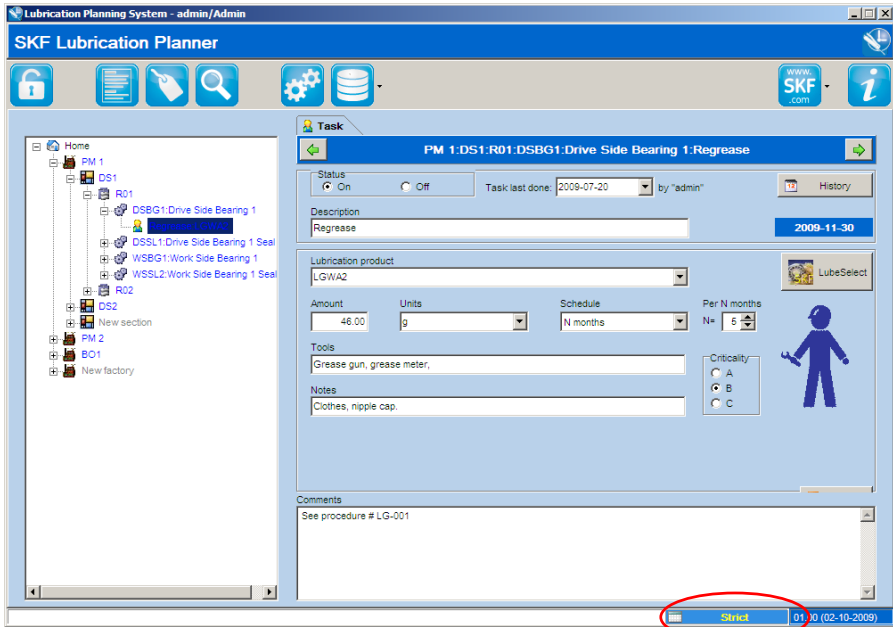
The method can be defined under settings. (See section 4.5)



## 4.2.1 Create task lists based on strict date scheduling

Tasks are planned on the selected day of the week or month according with the preferences specified at “schedule tab” under “settings”. This means that e.g. all weekly tasks will be performed on i.e. every Wednesday.

When this mode is selected the indicating box at the task bar will show “Strict”:



In that case the following window will appear clicking on the task lists icon:

**Date scheduled task list**

## Task List

Factory:

Section:

☒ Daily: 2  
☒ Twice weekly: 5  
☒ Weekly: 2  
☐ Monthly: 0  
☐ N months: 0  
☐ N years: 0

October 2009

	M	Tu	W	Th	Fr	Sa	Su
40					1	2	3
41	5	6	7	8	9	10	11
42	12	13	14	15	16	17	18
43	19	20	21	22	23	24	25
44	26	27	28	29	30	31	
45							

Today

Selected cut-off date: 2009-10-30

Employee:

The task list can be previewed and printed with the preview button. The created task list shows all tasks that need to be done before the selected date on the calendar. All days with tasks before the selected date have a colored background, which is red before the current date and blue after the current date. The tick boxes on the left side of the screen could be used to check which kinds of tasks are scheduled on which date. Task list can be targeted to include only specific factories and sections.

The name of the employee who will perform the tasks selected should be written in the field employee.

The tasks can be completed clicking "completed" button. This button gives first an overview of the selected tasks. These can be individually marked as completed by ticking the box. (All boxes are ticked by default) It is also possible to adjust the quantity that was applied without affecting the quantity by default. This is only used for storing the correct data in the history of a point.

Completed Tasks

Clear all tasks (if any) that haven't been completed yet.

Click OK to update task status in the database or Cancel to abort this.

2009-10-06

BR:LPS Section:N9100:1:Dieselmotor:change (Amount: 0.00 Liter)

BR:LPS Section:N9100:2:Koeling:change (Amount: 0.00 Liter)

2009-10-07

BR:LPS Section:N9100:1:Dieselmotor:change (Amount: 0.00 Liter)

BR:LPS Section:N9100:2:Koeling:change (Amount: 0.00 Liter)

2009-10-08

BR:LPS Section:N9100:1:Dieselmotor:change (Amount: 0.00 Liter)

BR:LPS Section:N9100:2:Koeling:change (Amount: 0.00 Liter)

BR:LPS Section:N9100:3:Vetgesmeerde punten:service (Amount: 0.00 gram)

A:7.0:P6400:1:Lagerhuis pomp:check (Amount: 1.00 Liter)

2009-10-09

BR:LPS Section:N9100:1:Dieselmotor:change (Amount: 0.00 Liter)

BR:LPS Section:N9100:2:Koeling:change (Amount: 0.00 Liter)

2009-10-10

BR:LPS Section:N9100:1:Dieselmotor:change (Amount: 0.00 Liter)

BR:LPS Section:N9100:2:Koeling:change (Amount: 0.00 Liter)

2009-10-11

BR:LPS Section:N9100:1:Dieselmotor:change (Amount: 0.00 Liter)

BR:LPS Section:N9100:2:Koeling:change (Amount: 0.00 Liter)

2009-10-12

BR:LPS Section:N9100:1:Dieselmotor:change (Amount: 0.00 Liter)

BR:LPS Section:N9100:2:Koeling:change (Amount: 0.00 Liter)

BR:LPS Section:N9100:3:Vetgesmeerde punten:service (Amount: 0.00 gram)

A:7.0:P6400:1:Lagerhuis pomp:check (Amount: 1.00 Liter)

A:7.0:P6400:1:Lagerhuis pomp:service (Amount: 1.00 Liter)

A:7.0:RW6420:1:Tandwielkast aandrijving:change (Amount: 1.00 Liter)

2009-10-13

BR:LPS Section:N9100:1:Dieselmotor:change (Amount: 0.00 Liter)

BR:LPS Section:N9100:2:Koeling:change (Amount: 0.00 Liter)

2009-10-08

Amount

0.00

(Liter)

Apply

Tasks: 43

OK

Cancel

SKF Lubrication Planner

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## 4.2.2 Create task lists based on “same day” date scheduling

Under this setting, all tasks will be planned by adding the interval to the date indicated on the “Task last done” field. For instance, if a monthly task was last done on 5th of October, it will be scheduled the 5th of every month. Weekly tasks will be scheduled 7 days after the previous ones and twice weekly will follow the days indicated in settings. This implies that not all monthly tasks are necessary scheduled on the same day. The “task last done” date is the last date when the task was scheduled as it's expected that the user mark it as completed the same day it was performed.

Previewing and completing task lists functioning in the same way as in strict date scheduling.

When this mode is selected the indicating box at the task bar will show “Repeat”:

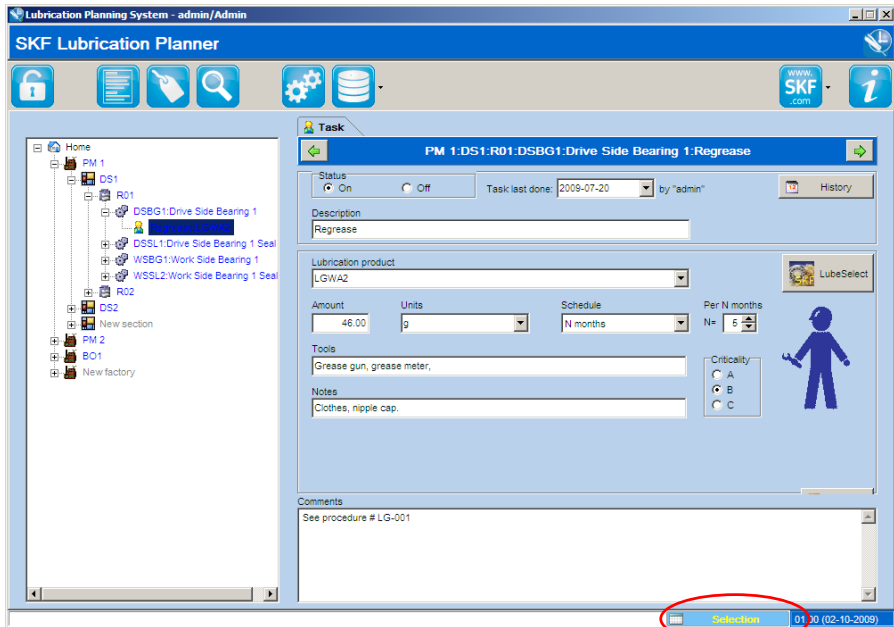
The screenshot displays the SKF Lubrication Planner software interface. The title bar reads "Lubrication Planning System - admin/Admin". The main window has a blue header with "SKF Lubrication Planner" and a toolbar with icons for lock, list, edit, search, settings, and database. A sidebar on the left shows a tree view of equipment: Home > PM 1 > DS1 > R01 > DSBG1-Drive Side Bearing 1. The main task configuration area is titled "PM 1-DS1-R01-DSBG1-Drive Side Bearing 1-Regrease". It includes a "Status" section with "On" selected, a "Task last done" field with "2009-07-20" and "by 'admin'", and a "History" button. The "Description" field contains "Regrease". Below this is a "Lubrication product" dropdown set to "LGWA2". The "Amount" field is "46.00", "Units" is "g", "Schedule" is "N months", and "Per N months" is "5". The "Tools" field contains "Grease gun, grease meter," and the "Notes" field contains "Clothes, nipple cap." There is a "Criticality" section with radio buttons for A, B, and C. A "Comments" section at the bottom contains "See procedure # LG-001". A red circle highlights the "Repeat" button in the bottom status bar, which also shows "01:00 (02-10-2009)".

### 4.2.3 Create task lists based on selection criteria

Task list in this method can be printed based on three criteria:

- Lubricant: A list will be made including only the lubrication points where the selected lubricant is used.
- Criticality: A list will be made including only the lubrication points having the selected criticality level.
- Schedule: A list will be made including only the lubrication points having the selected frequency.

When this mode is selected the indicating box at the task bar will show "Selection":



**Free task lists**

## Task List

Factory: All

Section:

**Selection criteria**

☒ **Select on Lubricant**

☒ Shell Rimula X 15W-4  
☒ Glycoshell Coolant  
☒ Shell Alvania RL2  
☒ Shell Tellus T 46  
☒ Shell Omala 220

All

None

☐ **Select on Criticality**

☒ B

All

None

☐ **Select on Schedule**

☒ Daily  
☒ Twice weekly  
☒ Weekly

All

None

Preview

Close

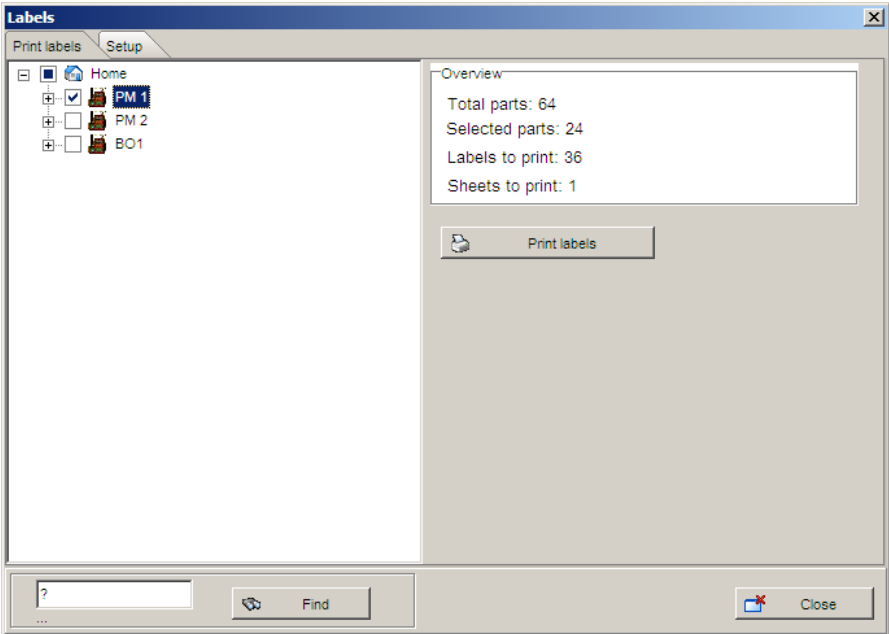
By using this method it is not possible to mark tasks as completed, as this mode is intended to be used specially when an additional ERP is installed in place and users do not want to have two parallel schedules.

### 4.3 Labels

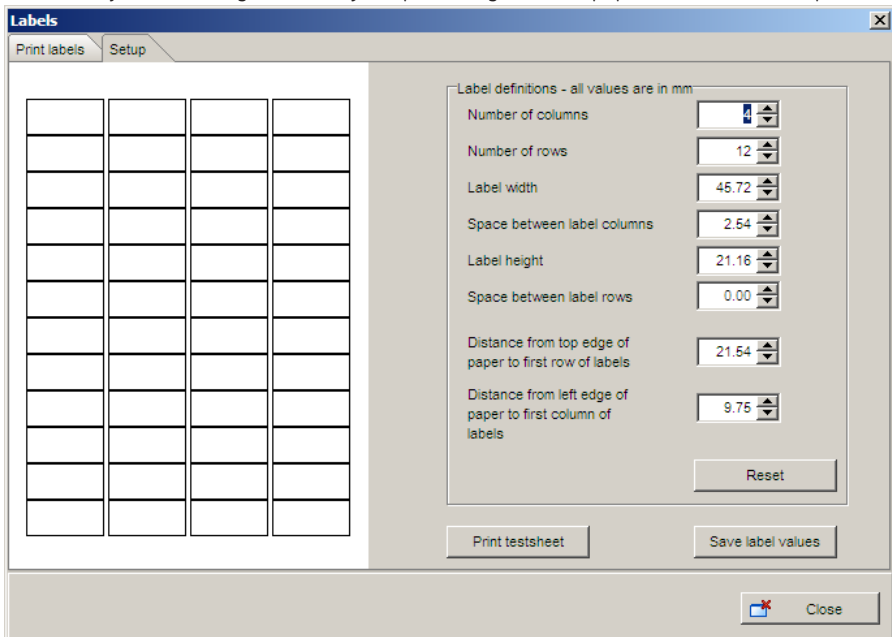


This feature allows printing labels for identification of lubrication points. They can be stuck on the “SKF grease fitting cap and tags TLAC 50” that were specially designed by SKF for that purpose. Read the instructions for use of these sheets and grease fitting caps carefully and note that a sheet should only be passed by a printer one time.

The points whose labels are desired to be printed can be individually selected. In the “overview” section of the “labels” window under the “Print labels” tab, a summary is made about the selected parts and needed sheets to print them.



You can adjust the configuration of your printer against the paper size in the “Setup” tab.



The top line of the labels is the code of a point (Combination of Factory code + section code + machine code + part number). The length of this code is limited on the length of the label. We therefore recommend using only short codes. Some part of the code will be removed if the total code is longer than the label.

The second line is showing the lubrication product used.

The last line is a combination of lubrication quantity, relubrication frequency and criticality.

**PM 1:DS1:R02:DSSL1:Drive Si/1**  
**SKF LGMT2**  
**2.00 g/Weekly/C**

## 4.4 Search



## 4.5 Settings



The icon “settings” gives access to all the different possible configuration options of the program. Under the tab “General”, the display language can be changed as well as the display font.

The task list mode can be used to select the method of generating tasks lists as described in chapter 4.2.

The “schedule” tab gives the opportunity to set the day when the tasks should be scheduled under the “strict date scheduling” mode.

The “Users” tab (only visual and accessible for users with access level of administrators) gives the possibility to add, update and delete users. Users with “user” access level can only print and complete tasks. A user with editor access level has access to all the functions of the software except to change access levels and passwords of users. That can only be done by users with administration rights

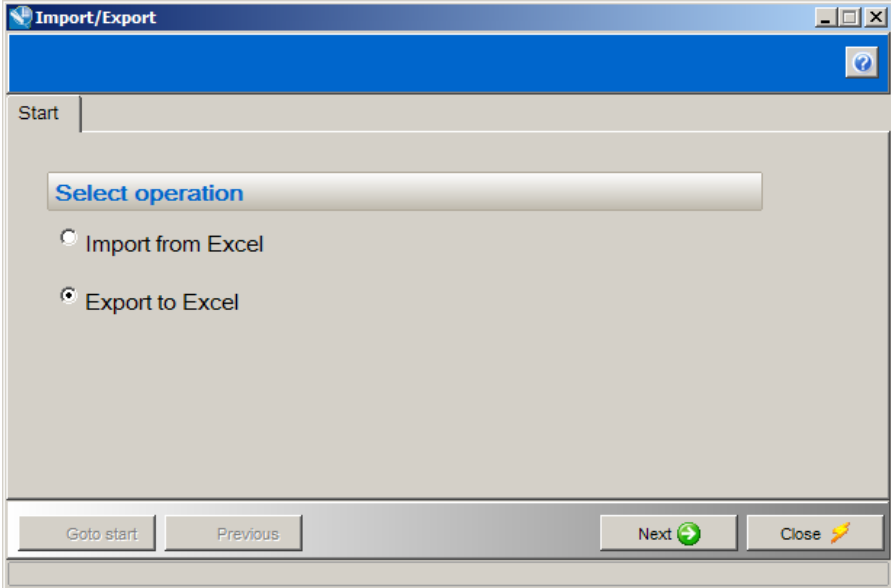
The “text” tab (only visual and accessible for users with access level of administrators and editor) give the opportunity to textual adjust and delete lubrication products and lubrication units used. This won't change any data in the database. SKF lubricants are loaded by default.

The “database” tab can be used to select another path for the database.

## 4.6 Database tools

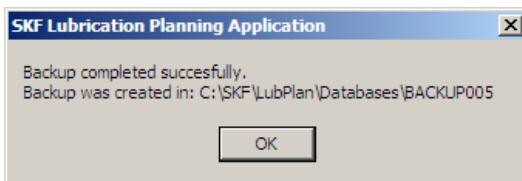


The first option under the database tools is the exporting and importing the database. This is helpful when the structure of the lubrication points is already or intended to be created in any digital way that allows exportation to a spreadsheet. This is done to and from an .XLS file. See the Help file under the question mark at the top-right corner for instructions on this function. Keep in mind that this function manages just the structure and not the whole database which includes e.g. history.



In order to save a copy of the full database you should use the second function “Backup Database”.

We recommend saving a copy of the database on a regular basis using this function. Such file could be stored on a different location to limit the chance of losing important data. The restore function can be used to load a backed up database to the program. By default, the backup file is saved in C:\SKF\LubPlan\Databases using consecutive numbers.



The “upload database” function will sent the database to an SKF server. The data provided could be processed for marketing, sales and product development purposes.

The “email database” function can be used to send an email including the database.

## 4.7 Useful links



Useful webpages are located under this icon as:

- SKF Maintenance Products
- SKF Lubrication homepage
- SKF Aptitude Exchange
- SKF Interactive Catalogue
- SKF Best Procedures for lubrication

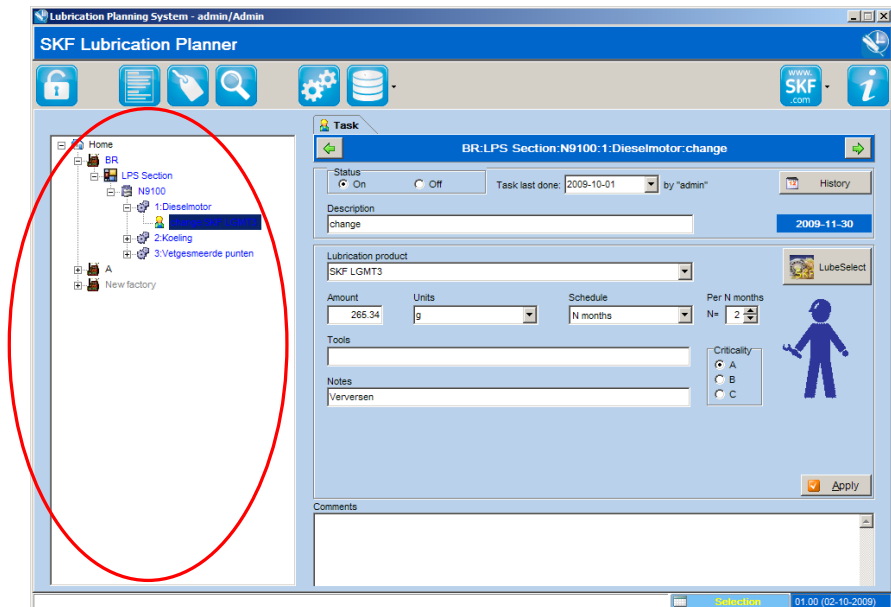
## 4.8 What's new



The information regarding the latest updates performed on the software will be displayed under this icon.

## 5. Data tree

The left side of the screen is filled with the data tree.



Basically, the tree represents the structure of a facility. It uses 5 levels over the tasks:

## **Company Name>Factories>Sections>Machines>Parts>Tasks**

New data can be created through importing data as explained in chapter 4.6, or directly on this tree by adding new parts, or copying them.

The order in the data tree determines the sequence of tasks when printing a list. The structure can be modified by “dragging and dropping”.

When a node is selected, the information regarding that node is displayed in the right part of the window.

The color of a node in the tree is representing the status of the node. Nodes that are “on” are blue. All tasks under this node will be scheduled in the task lists. Nodes that are “off” are represented in grey. These aren’t scheduled in the task lists and are useful when a part of the plant is temporarily shut down. Nodes that have mixed “on” and “off” tasks underneath them are represented as black.

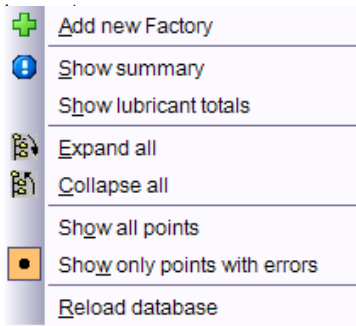
### **5.1 Home – Company Name**



Home is the highest level of the data tree, containing all factories underneath. The name home can be personalized under settings – Company Name.

This is the screen where a pictogram and text will show if there is a new version available to update the SKF Lubrication Planner software. Just click on it to start the updating.

By right clicking on home, extra functions are displayed. The option “Show only points with errors” is a good way to check the data on errors, such as unknown schedule



“Show lubricants totals”, allows having an overview of all the types of lubricants used and the amounts required within a year.



## 5.2 Factory



Factories have a code, description, status and comments. The code should be short and representing the factory. As the sum of all codes forms the final code that will be printed in the identification tag, they should be conceived as short as possible in order to make them easily printable. General advice is to keep the full codes smaller than 25 characters. Additional tips to save space are to use small fonts and avoid capitals.

## 5.3 Section



Sections have a code, description, status and comments. The code should be short and representing the section.

## 5.4 Machine



Machines have a code, description, status and comments. The code should be short and representing the machine.

## 5.5 Part



Parts have a code, description, status, nr of parts and comments. The code should be a short and representing the Part.

The “number of parts” field can be used when there are several parts next to each other with exactly the same conditions. They will therefore have exactly the same tasks to be performed on it.

## 6. Tasks



Every part can have as many tasks as needed. The date of “task last done” represents the last time it was scheduled and afterwards marked as completed. This date determines as well the next time it will be scheduled in the task list, depending on the mode of scheduling selected at “Settings”. The next scheduled date can be seen at the blue field below “History”. Administrators have the possibility to adjust the date when the task is last done. This date will automatically be updated when the task is marked as completed. For more information, see chapter 4.2.

Every time a task is preformed a line will be created in the history file. The history file is then showing the dates when the task was scheduled and completed, the employee who performed the task, the lubricant used and the amount applied. The history file can have a maximum of 500 lines, after which the oldest lines are removed. A back up of the database could be used to go further back in time. The history can be anytime exported to an Excel file, printed or erased.

The “description” should represent what the task is. It is advisable to create official procedures with best practices for every task. These could be mentioned in the “comments” field. Documents with basic best procedures for most common lubrication tasks can be found under the “Useful Links” icon. Refer to chapter 4.7 for additional information.

Lubrication product, amount, unit and schedule should be filled in at every task.

“Tools” and “Notes” can be filled in as extra info that is printed on the task list. This is good to make sure that the lubrication technician is carrying with him all required things to properly perform the task, as grease guns, cleaners, automatic lubricators, fittings, filters, etc.

Criticality can be specified here to address the importance of the task. This is also printed on the task list. Besides, if you don't want to use a “date scheduling” this is another parameter to generate task lists. For additional information see chapter 4.2.

LubeSelect button can be used to get advice on the proper lubrication product, amount and schedule for bearings or for a proper automatic lubricator. An internet connection is necessary for this feature as well as the log in name and password for SKF @ptitude exchange used to download the software. The registration and use of this service is for free. The lubrication recommendation is easily imported in the program.

In order to save time for the future, the password can be saved in the fields at the top of the first interface page.

SKF LubeSelect

LubeSelect login

Login name  Login password

**SKF**

You need to login to view this page.

Email address:

Password:

[Register here >](#)  
[Forgot password >](#)

Attention: LubeSelect for SKF greases gives lubricant selection suggestions, based on generalised selection rules. It cannot take into account every application detail of the application, and the selection is made from a limited set of greases. You will remain responsible for the lubricant selection that you will make, or the lubricant that you advise to your customer.

<http://webtools.skf.com/lubeselectskf/index.jsp?ServletWinExist=N&designation=22222E&action=s/>

Once in the interface, data from the application must be filled in, and at this point it's possible to save the data to the database. This is useful for future reference.

**SKF LubeSelect**

LubeSelect input    LubeSelect advice

Fields marked with (\*) are mandatory for grease type selection

**Bearing I**

☒ Bearing designation  
22222E

☐ Bearing type  
Spherical roller bearings

Inner diameter d 110 mm (\*)

Outer diameter D 200 mm (\*)

Bearing width/height 53 mm

**Bearing II**

☐ Spherical roller bearings only

Bearing serie 222

Load ratio Fa/Fr/Pe  
☒ No ☐ Yes

☐ Cylindrical roller bearings only

Bearing arrangement

**Load C/P (\*)**

☒ Low (>15)  
☐ Medium (8-15)  
☐ High (4-8)  
☐ Very high (<4)

**Ambient temperature (\*)**

☐ Less than -10°C  
☒ Between -10 and 40°C  
☐ More than 40°C

**Outer ring - temperature and speed**

Typical temperature 70 °C (\*)

Minimum temperature (start-up) 25 °C

Maximum temperature (peak) 90 °C

Rotational speed 800 RPM (\*)

**Optional conditions I**

Vertical shaft  
☐ No ☒ Yes

Shock load (\*)  
☐ No ☒ Yes

Oscillating movements  
☐ No ☒ Yes

Outer ring rotation  
☒ No ☐ Yes

Lubrication  
☒ From the side  
☐ W33 groove

**Optional conditions II**

	Not relevant	Relevant	Important	Very important
Central lubrication system	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
High rust protection	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Water resistance	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Low noise	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Frequent startup/shutdown (+)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Heavily vibrating installation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Very low friction	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Very long grease life	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Food compatibility	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Biodegradability	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Radiation resistance	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(+)=used for grease/oil advice, others for grease only

Get advice    Save data    Close

<http://webtools.skf.com/lubeselectskf/index.jsp?ServletWinExist=N&designation=22222E&action=si>

Once entered the right info and after clicking “Get advice”, the software will show all the options that LubeSelect consider suitable. Choose the preferred grease and lubrication method.

**SKF LubeSelect**

LubeSelect input    LubeSelect advice

Rating	Grease	Relub interval	Corrected interval	Relub amount (g)	Poor performance on
*****	SKF LGMT3	5200	2600 (0,3,17)	53	-
*****	SKF LGHP2	9400	4700 (0,6,13)	53	-
*****	SKF LGWA2	7800	3900 (0,6,10)	53	-
*****	SKF LGLT2	5200	2600 (0,3,17)	53	-
*****	SKF LGHB2	8900	4450 (0,6,2)	53	-
*****	SKF LGMT2	5200	2600 (0,3,17)	53	-
*****	SKF LGEP2	5200	2600 (0,3,17)	53	-
*****	SKF LGFP2	3600	1800 (0,2,14)	53	-
*****	SKF LGGB2	3600	1800 (0,2,14)	53	-

**Op hours**  
24

**Op days**  
7

**Contamination**  
☐ Low  
☒ Moderate  
☐ High

**Lubrication method**  
☒ Manual  
☐ LAGD 60  
☐ LAGD 125  
☐ LAGE 125  
☐ LAGE 250  
☐ LAGD 400  
☐ LAGD 1000

**Manual lubrication**

**44.7 g - 3 months**

Qt=0.49 g/day

Rating report    Compatibility

Apply selected    Close

<http://webtools.skf.com/lubeselectskf/index.jsp?ServletWinExist=N&designation=22222E&action=si>

Once selected the most suitable grease and lubrication method click on “Apply selected” and accept to store this in the database.

For additional information regarding LubeSelect refer to [www.apititudeexchange.com](http://www.apititudeexchange.com) and click on “LubeSelect for SKF Greases”.

## 6.1 LubeSelect input parameters

### 1. Bearing designation

It refers the unique SKF identification code of the bearing (see the Interactive Engineering Catalogue). If the designation is unknown, or in case of a non-SKF bearing, fill in the bearing type and associated parameters instead.

### 2. Bearing type

DGBB	Deep groove ball bearings
SABB	Self-aligning ball bearings
Y-Bearing	Y-bearings
ACBB	Angular contact ball bearings
ACBB - High-precision	High precision angular contact ball bearings
CRB	Cylindrical roller bearings
CRB - High-precision	High precision cylindrical roller bearings
CRB - Full complement	Full complement cylindrical roller bearings
TRB	Taper roller bearings
SRB	Spherical roller bearings
CARB	CARB bearings
CARB - Full complement	Full complement CARB bearings
NRB	Needle roller bearings
TBB	Thrust ball bearings
ACTBB	Angular contact thrust ball bearings
CRTB	Cylindrical roller thrust bearings
NRTB	Needle roller thrust bearings
SRTB	Spherical roller thrust bearings
Plain bearing	Plain bearings

### 3. Inner diameter (d)

Bore diameter of the bearing in mm. (1 inch = 25.4 mm).

### 4. Outer diameter (D)

Outside diameter of the bearing in mm. (1 inch = 25.4 mm).

### 5. Bearing width/height (B,H)

Height is used for radial bearings, Width for thrust bearings. This value is displayed on the results screen.

## 6. Filling type

LubeSelect for SKF greases concerns SKF greases only.

## 7. Load (C/P)

Ratio of the basic dynamic load rating (C) divided by the equivalent dynamic bearing load (P). This parameter is used to assess lubricants load capacity (antiwear properties EP, etc.) (See the General Catalog or IEC for calculation of the load).

## 8. Typical temperature (outer ring)

Temperature in degrees Celsius of the bearing measured on the outer ring during normal operation in the application.

Conversion: temperature in degrees Celsius=  $(5/9) \times (\text{temperature in degrees Fahrenheit} - 32)$ .

## 9. Minimum temperature (start-up)

It stands for the minimum temperature of the bearing at start-up in the application.

Conversion: temperature in degrees Celsius=  $(5/9) \times (\text{temperature in degrees Fahrenheit} - 32)$ .

## 10. Maximum temperature (peak)

This is the peak temperature of the bearing in the application.

Meaning the maximum temperature which can occur during operation or standing still.

Conversion: temperature in degrees Celsius=  $(5/9) \times (\text{temperature in degrees Fahrenheit} - 32)$ .

## 11. Rotational speed

Bearing speed, in number of revolutions per minute (RPM).

## 12. Shock load

Bearings subjected to short, impulse-like loads, like railway boogie bearings or wind peaks acting on wind turbines and its gearbox bearings.

## 13. Ambient temperature

Refers to the Air temperature in the direct surroundings of the bearing (e.g. oven temperature). This parameter is used to prefer lower/higher grease consistency.

## 14. Bearing Arrangement

The arrangement the bearing is applied in. Used for calculating speed limits for CRB bearing.

## 15. SRB Series

First three digits of SRB bearing designation, indicating which series the SRB belongs. Used for calculating speed limit for SRB bearing.

## 16. Large axial load

This corresponds to the ratio of axial force and radial force larger than calculation factor e in the SKF General Catalogue 6000. Used for calculating speed limit for SRB bearing.

### **17. Vertical shaft**

Select it where the application considers shaft in vertical position. This parameter is used to prefer leakage resistance properties.

### **18. Oscillating movements**

Bearing which does not revolve but swings back and forth. This parameter is used to prefer good anti-brinelling performance, or greases which easily provide lubricant into the contact.

### **19. Outer ring rotation**

Applicable when the outer ring is rotating instead of the inner ring. This parameter is used to prefer greases which are mechanically stable and can withstand high G-forces. (GAST test).

### **20. High rust protection required**

This is important in case of aggressive water contamination (with possible additives). Typical examples: pulp & paper application, metal working, and many others.

### **21. Water resistance required**

This is important in case of a highly humid environment or water spraying onto the bearing. Typical examples: water cooled bearings (as in the steel industry), bearings on the bottom of a car (because of the pools on the roads).

### **22. Low noise required**

'Low noise' is interpreted as a noise level of QE4 or QE5 for bearings with an outer diameter smaller than 47 mm, and a noise level of QE5 or QE6 for bearings with an outer diameter larger than 47 mm.

### **23. Frequent start-up/shutdown**

Frequent means more than once per day in this context. With this parameter, lubricants are preferred with good antiwear properties and high viscosity. Typical example: a car, stopping and accelerating frequently in city traffic.

### **24. Heavily vibrating installation**

When high G-forces ( $G > 1$ ) are present. Typical examples: railway axle boxes, vibrating screens. With this parameter, greases are preferred with good mechanical stability, tested in V2F test.

### **25. Very low friction required**

Relevant in applications where a low start-up or running torque is required, or if a low running temperature is wanted. This parameter is used to prefer low base-oil viscosity. Typical example: textile industry, spindles, robots.

### **26. Very long grease life required**

It's Relevant in certain sealed/shielded bearing applications, especially when they are running at high temperatures. Typical example: car alternators, high speed electrical motors (in this case bearing life depends upon grease life).

**27. Food compatibility required**

Important if there is any chance at all that the grease will come into contact with food or food wrappings.

**28. Biodegradability required**

This is very important in case of significant total-loss of lubricant, or when legal requirements are in place. Typical examples: farming and forestry.

**29. Radiation present**

It refers to the presence of radiation. Grease must not degrade as a result of radiation. Preference is given to radiation resistant greases. Typical example: nuclear radiation.

**30. Central lubrication system**

When this parameter is selected, greases with good pumpability are preferred.

**31. W33 Groove**

It must be selected when the replenishment is made through the bearing outer or inner ring, instead of from the side. This parameter is used to calculate the required relubrication quantity.

**32. Contamination**

This parameter is used to adjust the relubrication interval.





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