FineLIFT

Quick Start Guide

Preface

This Quick Start Guide provides a fast and friendly introduction on FineLIFT main features and functionalities. All the features and functions of the program are presented and explained in detail within the complete User's Guide, along with informative examples.

FineLIFT, the **F**ully **IN**tegrated **E**nvironment for Elevator Design, combines both designing and calculations in a uniform, integrated environment, consisting of two main Components, the Calculations Component and CAD Component:

- Concerning the **Calculations component**, FineLIFT Calculation Environment performs all the necessary calculations and provides the CAD Environment with all the necessary data needed to create the final drawings of the project with all the construction details. FineLIFT Calculation Environment can also be used independently, providing only the calculations issue of the case study.
- Concerning the **CAD component**, which is based on IntelliCAD engine, thus guaranteeing full independency to its user from expensive CAD platforms, provides the user with a friendly CAD environment not only to design the drawings through its rich libraries, but even more to generate completely automatically the drawings of the project, through an expert drawing generator.

Despite its numerous capabilities, FineLIFT has been designed in order to be easy to learn. The simplicity in the operation philosophy is realised very soon and all that the user has to do is to familiarise with the package.

This Guide is divided into 3 short parts:

- Part 1 describes the installation procedure and the main menu structure.
- Part 2 describes the calculation environment, as far as the main data input is concerned.
- Part 3 deals with the CAD component of FineLIFT, showing its philosophy and main features.

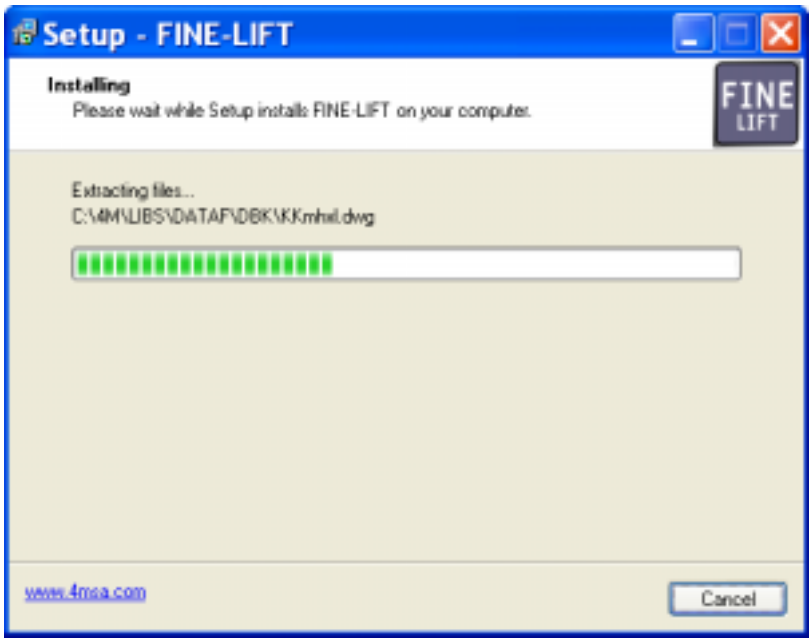
1. Installation - Launching

1.1 Installing FineLIFT

For installing FINE LIFT, just follow the instructions given below:

Insert the CD of FINE LIFT into the CD-ROM drive *(e.g. D:, E:),* then the setup window appears on screen.

Then, by pressing the key “Next” and following the instructions, the installation procedure is getting started. After accepting the license agreement and giving user name and organization details, the progress bar is displayed, as shown below:



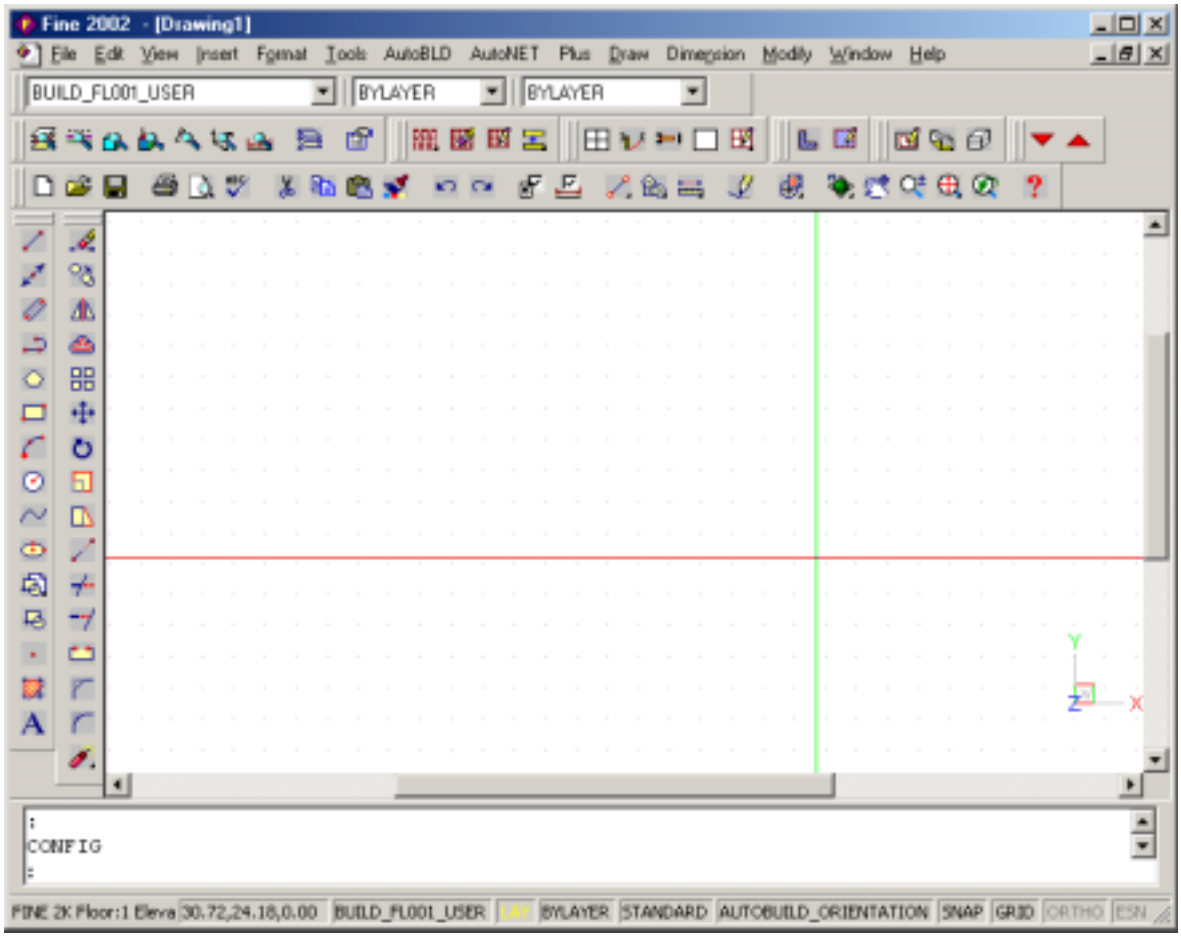
Installation procedure is finally completed with the following window:

Given that the box “Run FINE” is checked, by pressing the “Finish” button, the program runs. Or alternatively it can be run through the “Programs” list.

Caution! *Make sure that the key dongle is plugged into the port of your PC anytime you run the program. To make sure that the program can actually “see” the hasp, run the hdd32.exe program from the 4M folder. When the key driver is loaded a relevant message appears. Right after, Windows should be restarted.*

1.2 Start Working with FineLIFT

As soon as the program is loaded, the main menu screen appears for the first time:

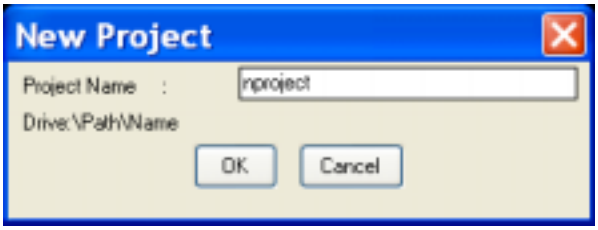


Among the commands of the designing environment, we notice the following main options of the package:

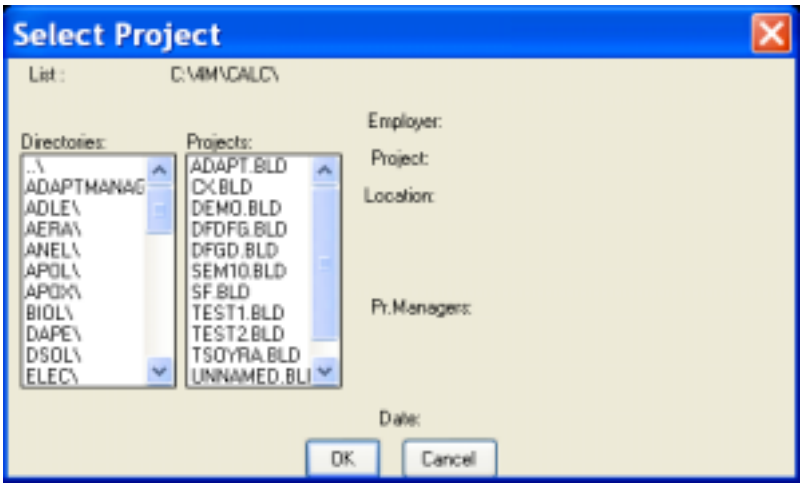
1. Project files management options (New Project, Open Project and Project Information) which are located into the options group FILE.
2. Option Group with the name **AutoBLD**, which includes all the commands required for the Architectural designing
3. Option group with the name **AutoNET**, which includes all the commands required for the designing and calculation of the elevators.
4. Auxiliary option group with the name **PLUS**, which contains a series of designing facilities for the user.

1.3 Project Definition

To start creating a new project with FINE HVAC, a new project should be defined by utilising the corresponding option in the project FILE management menu mentioned above. In case that "NEW PROJECT" is selected, a window appears on the screen where the name of the Project should be typed.



In order to open an existing project, created by the program, you should select "Select Project". Then a list showing the existing projects in your disk will appear on screen.

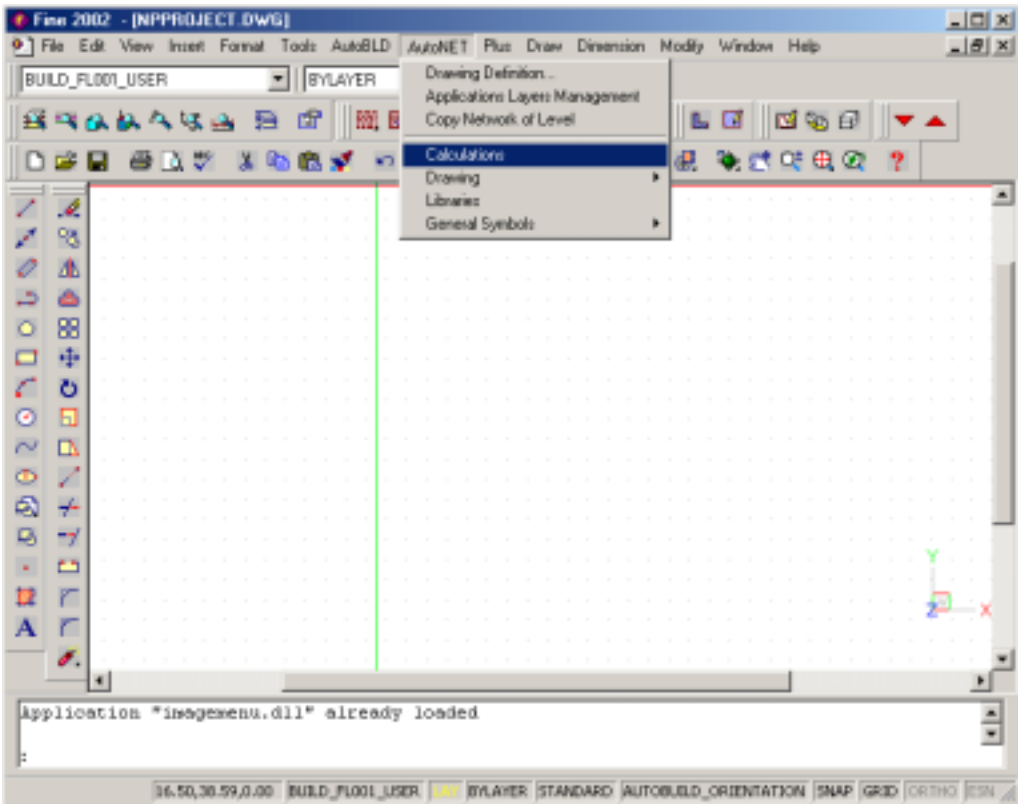


At first, the list displays all the projects that exist in the FINE directory, but with the use of the mouse or the keyboard and acting correspondingly, you can transfer to any other directory, viewing at the same time the existing projects. It is noted that the projects are included into directories with the extension BLD. If an existing project is selected, it is loaded and displayed on the screen.

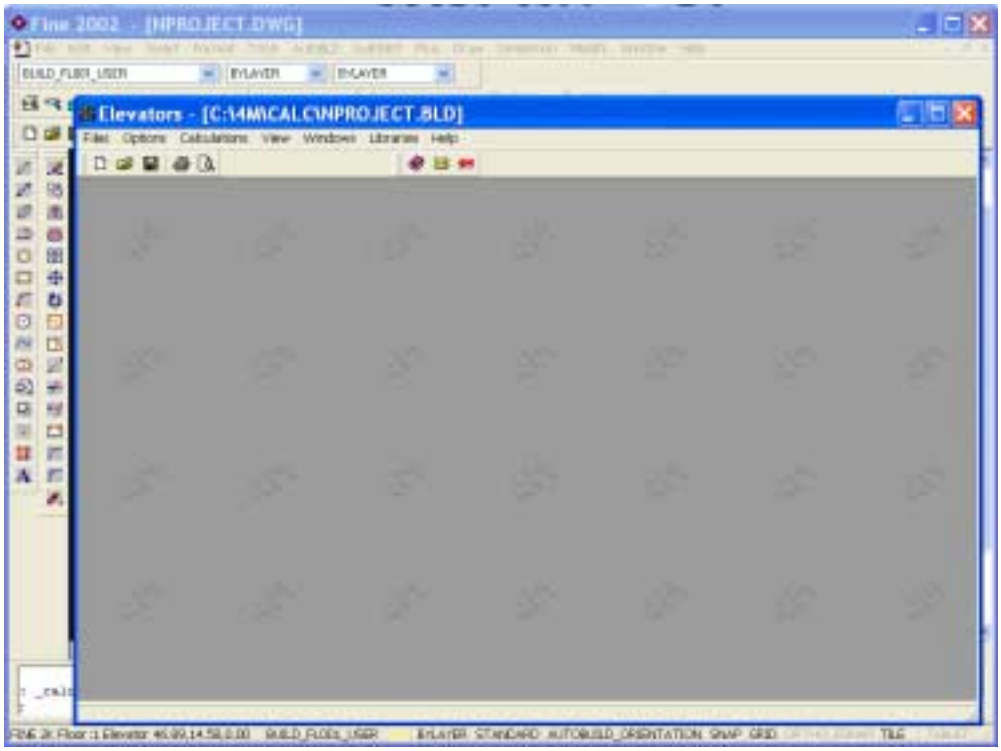
No matter if a new project is created or a saved one loaded, you can now begin working with the use of the subsystem commands described above.

Note: *Project is the directory where the project drawings and the calculation files are saved (e.g. heat-insulation etc). The program performs an automatic management of the drawing files (based on the main DWG file that has the same name with the project directory) as well as the calculation files. If the user wishes, he may decline from the standard used above and use his own names for each project drawing (e.g. water supply). This can be accomplished with the "Save As" command and the file will be saved in the project directory (there is no restriction about the number or the type of the characters used for the names of the files). Of course the files defined by the user may be loaded and edited by using the "Open" command. Let us remind you that the "Select Project" command brings up the primary project file which, as mentioned above, has the same name with the project directory.*

Most important among the group of commands is the AutoNET group and especially the "Calculations" and "Drawing" commands.



By selecting “Calculations”, the calculation component is being loaded and the following window appears on screen:



Operation instructions of FineLIFT Calculation Environment are given in the next chapter 2.

2. Calculation Environment

This chapter provides a full description of the Calculation Component of FINE LIFT. Within the basic menu options, we can see the groups **"Files"**, **"Options"**, **"View"**, **“Windows”**, **"Libraries"** and **"Help"**, which are described below along with their secondary options.

2.1 Files

The option "Files" includes all the secondary options needed to manage the project files, to print the output, to communicate with other programs (such as MS-word) etc. In particular, a short description of those options is given below:

New project: Type a name in order to save the new project in a file.

Project Selection: A window appears where you can select the desired (existing) project file and load it.

Caution! *If neither a new nor an existing Project is selected, the program automatically considers that the UNNAMED project is active. If you add new data to the UNNAMED project and you want to save it with a different name, select “Save as” and type the new project name.*

Save: The project you are currently working on is saved on the hard disc (with the previously given name).

Save as...: The project you are currently working on is saved in a different file with a new name.

Restore Prototype: The saved prototype appears on the screen.

Save as Prototype: The form, which has been created by the user and is displayed on the screen when this option is selected, is saved as a Prototype.

Printing Prototypes: The printing prototype management window is activated.

Printing: The project issue is printed according to the previously selected options in "Printing Contents" and "Printing Parameters", following the print preview output.

Printing Contents: You can select the project items you want to print, as shown in the respective window:

Printing Parameters: The desired printing parameters can be selected in this window according to the procedure already mentioned in Chapter 1.

Print Preview: The complete project issue appears on the screen, exactly as it will be printed, page to page.

Export to RTF: A RTF file containing the project items is created (within the project directory, with the name ANEL.RTF). Furthermore, the user can select this command if a direct link to MS-Word is desired.

Link to MS-Word: A RTF file containing the project items is created (within the project directory, with the name ANEL.RTF). In parallel, the MS-Word program is being activated, given that it is already installed.

Link to 4M Editor: A RTF file containing the project items is created (within the project directory, with the name ANEL.RTF). In parallel, the MS-Word program is being activated, given that it is already installed.

Exit: With this command, the application stops running.

2.2 Options

There are 2 basic data categories of the project: Project options and Specific data.

2.2.1 Project Options

The "Project Options" include the project headings, where you can type the data concerning the Employer, the Project, the Location, the Date and the Project Manager, as shown in the respective form.

2.2.2 Specific Data

The specific data that must be entered according to a specific project, are divided into three categories: “General”, “Technical” and “Electric” or “Hydraulic” (according to the choice of the lift type).

2.2.2.1 General

Lift type: Choose whether the lift is a Classic (Electric) or a Hydraulic one.

Lift kind: Choose the lift kind: Persons, Hospitals, Vehicles or Loads.

Number of Passengers: The number of passengers is completed only when a Passengers lift is selected. For new buildings the minimum number is 8.

Desirable car surface area (F):

The user fills up the desired area of the car surface in m².

If a passengers lift is selected, the user must complete this field only if he desires a different car surface area from the calculated one (Table 1.2 EN 81-1). This area should be smaller than the maximum car surface area given in Table 1.1 EN 81-1. If any of the other lift kinds is selected, the desirable car surface area should definitely be filled up, because it is being used for the calculation of the working load of the lift and the car weight.

Car surface area (F): The area of the car surface that will be used in calculations is shown in m². For Passengers lift it is calculated according to Table 1.2 EN 81-1, if the user has not entered a value for the desirable car surface area. In the other kinds it is the same with the desirable car surface area.

Desirable car weight (P): The user fills up this field when he desires a different car weight from the one calculated.

Car weight: If the desirable car weight is not completed, it is being calculated as follows:

a) Persons lifts: P = 100 + (50 x Passengers Number) (Kp)

b) Other lift kinds:

i) $Q \leq 500$ Kp: P = 100 x (3 + Car surface area) (Kp)

Q > 500 Kp: P = 100 x (3 + (1.5 x Car surface area)) (Kp)

Car weight is analyzed in the following four fields. Particularly, car weight is equal to the sum of the frame weight, the door weight T1, the door weight T2 and the cabin weight.

Frame weight (kg): The weight of the frame is indicated.

Door weight T1 (kg): The weight of the T1 door is indicated.

Door weight T2 (kg): The weight of the T2 door is indicated.

Cabin weight (kg): The weight of the cabin is indicated. As mentioned above, the sum of these four fields produces the car weight, which is calculated by the program.

Desirable lift nominal weight (Q): The user fills up this field if he desires a different lift nominal weight from the calculated one.

Lift nominal weight (Q): Depending on the lift kind it is calculated as follows:

a) Passengers lifts:

i) Number of passengers < 20: Q = (75 x Number of passengers) (Kp)

ii) Number of passengers ≥ 20: Q = (500 x Car Surface Area) (Kp)

b) Hospitals lifts: Q = (200 x Car Surface Area) (Kp)

c) Vehicles lifts: Q = (200 x Car Surface Area) (Kp)

d) Loads lifts: Q = (300 x Car Surface Area) (Kp)

Speed (m/s): The user enters the velocity of the car. By pressing F11 or the button inside this field, a helpful table appears showing the suggested lift velocities for different lift kinds and number of stops.

2.2.2.2 Technical

Number of safety gears: This field is filled up only when there are more than one safety gears.

Desirable safety gear kind: By pressing the button inside the field, the user chooses a different kind of the safety gear from the selected one, which is according to the limitations of the law.

Safety gear chosen: If the desirable safety gear kind field is blank, the safety gear is automatically calculated by the program (according to section 9.8.2 EN 81-1) as follows:

a) $V_c \leq 0.63$ (m/sec):	Instantaneous safety gear
b) $0.63 < V_c \leq 1.00$ (m/sec):	Instantaneous safety gear with buffered effect
c) $1.00 < V_c$:	Progressive safety gear

In case we have more than one safety gears, the chosen kind is the progressive safety gear (Section 9.8.2.2 EN 81-1).

Machine room location: Choose whether the machine room is on the up side or the down side of the well.

Car drive length (m): Enter the respective length.

Suspension Ratio: Choose “Direct” if the suspension is 1:1 or “Indirect” if the suspension is 2:1 (see following drawings).

Number of Stops: Enter the number of stops of the lift.

Two speed lift: The field is checked if we have a two speed lift or left blank if it has only one speed.

Motor Origin: Choose whether the winch motor of the lift has an internal origination or an external one.

Number of guide rails: Choose the number of guide rails that will be used for the car guidance. Valid values are 2 or 4 guide rails.

Forklift vehicle loading: Choose whether the lift will be loaded with a forklift vehicle. This applies only to the "ELOT 1988" method and affects the calculation of the F_s force which consequently affects the calculation of the bending stress.

User definition of load position in the car: Check the box if you wish to enter the position x_p and y_p of the load in the calculation of the guide rails or leave it blank and the position of the load will be calculated according to EN 81-1. There are two cases: 1/8 load transportation on x axis and 1/8 load transportation on y axis.

Note: While the car is loaded and unloaded, it must be assumed that a force - F_s - is acting on the center of the threshold of the car door. The force acting on the threshold must be:

$F_s = 0,4 * g_n * Q$	for lifts with rated load less than 2500 Kg in houses, office buildings, hotels, hospitals, etc,
$F_s = 0,6 * g_n * Q$	for lifts with rated load equal or more than 2500 Kg,
$F_s = 0,85 * g_n * Q$	for lifts with rated load equal or more than 2500 Kg in the case of forklift vehicle loading

When the force acts on the threshold, we must assume that the car is empty. The force must only act on the most malign door in cars which have more than one door.

2.2.2.3a Hydraulic

Number of pistons: Choose the number of pistons

Side Suspension: Check the box if the suspension is on a side of the lift or leave it blank if there is no side suspension.

Print calculation of the wire ropes: The user checks this box if he wishes to incorporate the calculations of the wire ropes into the project issue.

Print calculation of the piston-cylinder-supply duct: The user checks this box if he wishes to incorporate the calculations of the piston, the cylinder and the supply duct into the project issue.

Print calculation of the power unit: The user checks this box if he wishes to incorporate the calculations of the power unit into the project issue.

Print calculation of the guide rails: The user checks this box if he wishes to incorporate the calculations of the guide rails into the project issue.

Print calculation of the buffer: The user checks this box if he wishes to incorporate the calculations of the buffer into the project issue.

Print calculation of the wire ropes safety coefficient limit: The user checks this box if he wishes to incorporate the calculations of the wire ropes safety coefficient limit into the project issue.

2.2.2.3b Electric

Print calculation of the guide rails: The user checks this box if he wishes to incorporate the calculations of the guide rails into the project issue.

Print calculation of the wire ropes: The user checks this box if he wishes to incorporate the calculations of the wire ropes into the project issue.

Print calculation of the wire ropes safety coefficient limit: The user checks this box if he wishes to incorporate the calculations of the wire ropes safety coefficient limit into the project issue.

Print calculation of the friction pulley: The user checks this box if he wishes to incorporate the calculations of the friction pulley into the project issue.

Print calculation of the motor: The user checks this box if he wishes to incorporate the calculations of the motor into the project issue.

Print calculation of the speed limiter: The user checks this box if he wishes to incorporate the calculations of the speed limiter into the project issue.

Print calculation of the buffer: The user checks this box if he wishes to incorporate the calculations of the buffer into the project issue.

Print calculation of the counterweight guide rails: The user checks this box if he wishes to incorporate the calculations of the counterweight guide rails into the project issue.

Existence of divergence pulley: The user checks this box if there is a divergence pulley.

2.3 Calculations

The option “Window” contains the data and results of the Lift project with the logical order of the calculations, although there is no restriction for the user who can access any parameter at any time. Furthermore, there are 2 different groups of windows depending on the choice of the lift type (Electric or Hydraulic). Therefore, in section 2.3.1 the window’s data and results of the electric lift are described, whereas in section 2.3.2 the window’s data and results of the hydraulic lift are described.

2.3.1 Electric Lifts EN 81-1

In the following pages the electric lifts EN 81-1 calculation sheets are described along with their corresponding calculations. The data we must fill are presented on the screen with black color and the calculated data with red color.

2.3.1.1 Guide rails calculation

In the dialog screen shown below, we must fill the following data for the calculation of the guide rails:

Auxiliary equipment force M (N): Enter the force that acts on the guide rails due to the auxiliary equipment, in Newton.

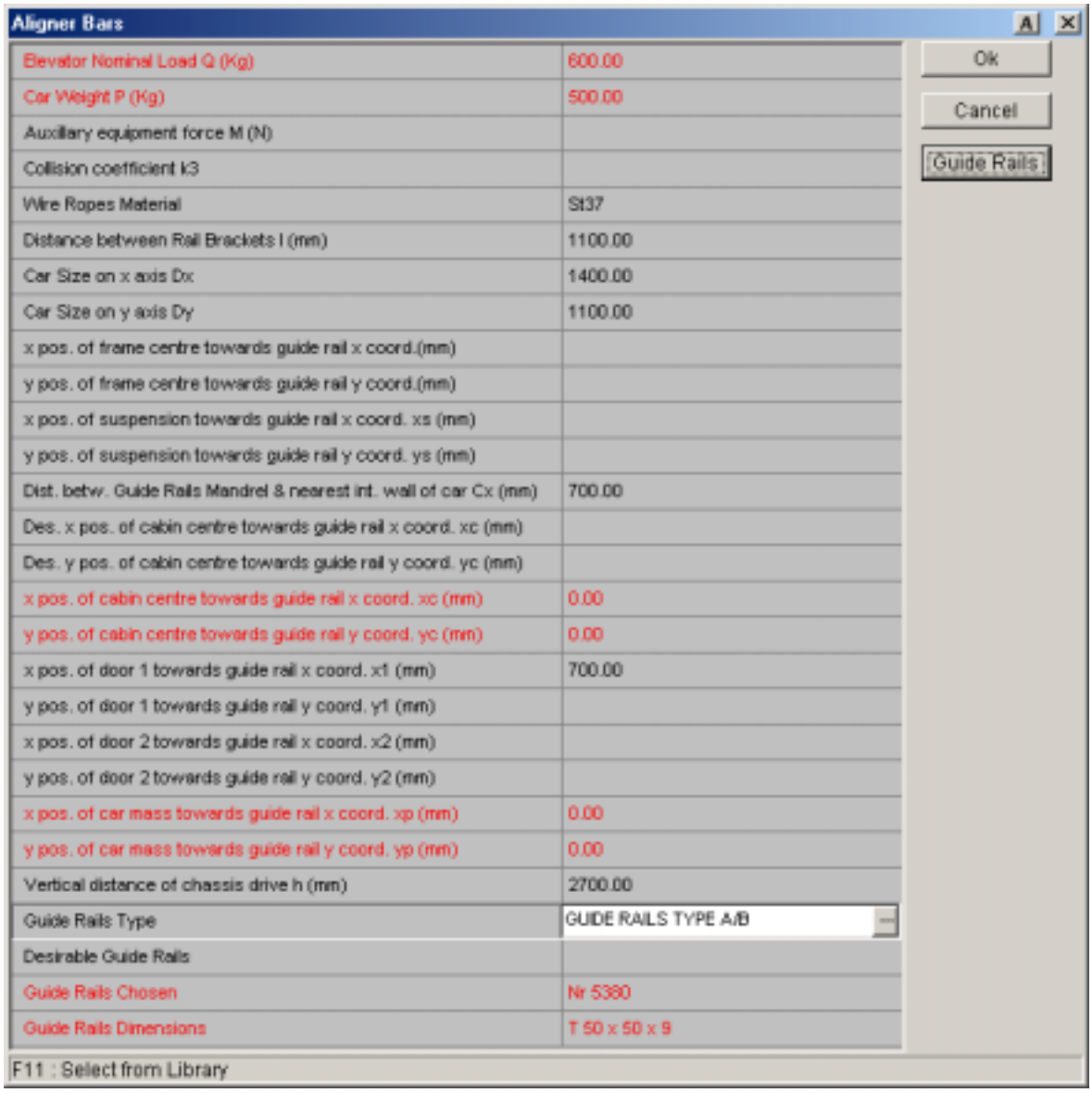
Collision coefficient k_3: Enter the value from the Table Z.2 that follows.

Guide Rails Material: Enter the material of the guide rails: St37, St44 or St52.

Distance between Rail Brackets l (mm): Enter the distance between rail brackets.

Car Size on x axis D_x: Enter the size of the car on the x axis.

Car Size on y axis D_y: Enter the size of the car on the y axis.



X position of the frame centre towards guide rail x coordinate (mm): Enter the position of the center mass of the frame towards coordinate x of the guide rail cross-section.

Y position of the frame centre towards guide rail y coordinate (mm): Enter the position of the center mass of the frame towards coordinate y of the guide rail cross-section.

X position of suspension towards guide rail x coordinate x_s (mm): Enter the position of the suspension (S) towards coordinate x of the guide rail cross-section

Y position of suspension towards guide rail y coordinate y_s (mm): Enter the position of the suspension (S) towards coordinate y of the guide rail cross-section

Distance between guide rails mandrel & nearest internal wall of car C_x (mm): Enter the distance between the guide rails mandrel and the nearest internal wall of the car.

Desirable x position of cabin center towards guide rail x coordinate x_c (mm): Enter (if you wish) the distance towards the x axis between the position of the cabin center and the guide rail x coordinate.

Desirable y position of cabin center towards guide rail y coordinate y_c (mm): Enter (if you wish) the distance towards the y axis between the position of the cabin center and the guide rail y coordinate.

X position of cabin center towards guide rail x coordinate x_c (mm): The distance towards the x axis between the position of the cabin center and the guide rail x coordinate is calculated (if the user hasn't set a desirable one).

Y position of cabin center towards guide rail y coordinate y_c (mm): The distance towards the y axis between the position of the cabin center and the guide rail y coordinate is calculated (if the user hasn't set a desirable one).

X position of door 1 towards guide rail x coordinate x_1 (mm): Enter (if you wish) the distance towards the x axis between door 1 (opposite to the guide rails) and guide rail x coordinate.

Y position of door 1 towards guide rail y coordinate y_1 (mm): Enter (if you wish) the distance towards the y axis between door 1 (opposite to the guide rails) and guide rail y coordinate.

X position of door 2 towards guide rail x coordinate x_2 (mm): Enter (if you wish) the distance towards the x axis between door 2 (next to the guide rails) and guide rail x coordinate.

Y position of door 2 towards guide rail y coordinate y_2 (mm): Enter (if you wish) the distance towards the y axis between door 2 (next to the guide rails) and guide rail y coordinate.

X position of car mass towards guide rail x coordinate x_p (mm): The position of the car mass (P) towards the coordinate x of the cross section of the guide rail is calculated.

Y position of car mass towards guide rail y coordinate y_p (mm): The position of the car mass (P) towards the coordinate y of the cross section of the guide rail is calculated.

Vertical distance of chassis drive h (mm): Enter the distance between the guide rails blocks for the chassis drive.

Guide rails type: Choose the desirable guide rails type from the guide rails library, by pressing F11 or the button inside the field.

Desirable guide rails: By pressing F11 or the button inside the field, it is possible to choose a different size of the selected guide rail type from the one that had been calculated by the program.

By pressing the button "Guide Rails" the following screen appears, which shows the calculated values and the maximum acceptable ones.

2.3.1.2 Suspension Wire Ropes – Friction Pulley Calculation

The following fields must be completed for the calculation of the wire ropes and the friction pulley:

Desirable counterweight weight (Kp): Enter (if you wish) the weight of the counterweight. The calculated value is shown in the next field.

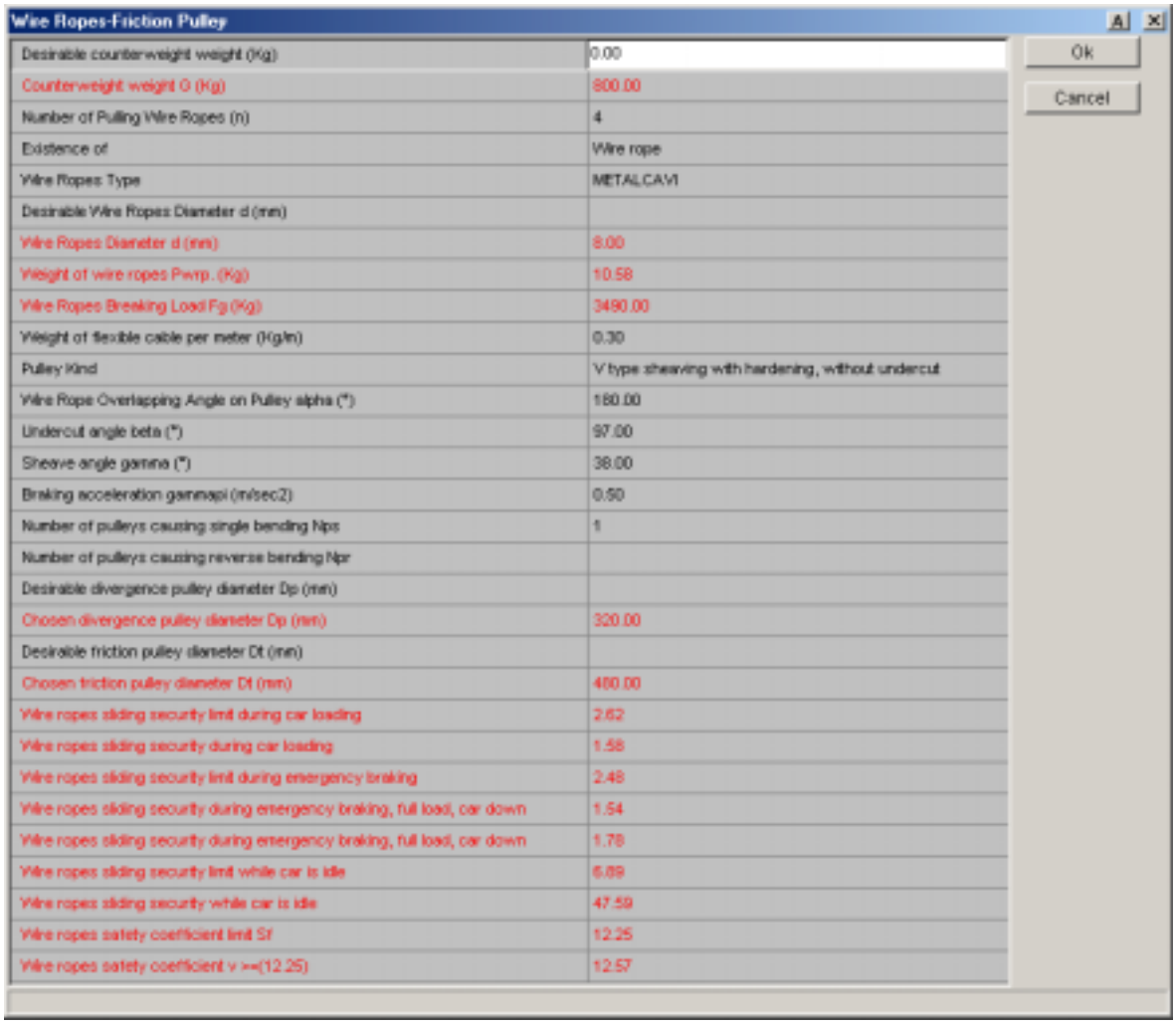
Number of pulling wire ropes: Enter the number of wire ropes used for the pulling of the lift's cabin. It should always be more than two.

Existence of: Choose the existence of «Wire Rope», «Rundle» or «Suspension Chain».

Wire Ropes type: By pressing F11 or the button inside the field, choose the desirable wire ropes type from the wire ropes library.

Desirable wire ropes diameter: By pressing F11 or the button inside the field, you can choose from the wire ropes library (if you wish) a different wire ropes diameter from the one selected by the program.

Weight of flexible cable per meter: This is the command's cable of the lift.



Friction Pulley kind: Choose whether the friction pulley is semicircular sheaving with undercut or semicircular sheaving or V type sheaving or V type sheaving with hardening.

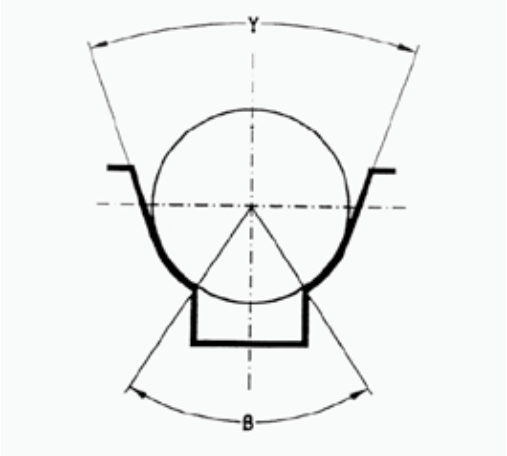


Figure IB.1: semicircular sheaving with

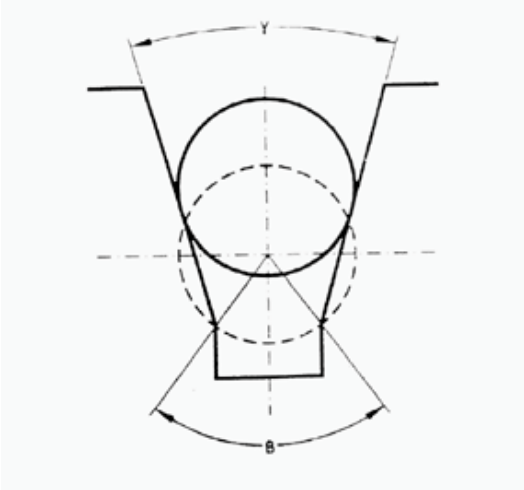


Figure IB.2: V type sheaving

undercut	

Wire rope overlapping angle on pulley α (°): If you wish you can change the default value. Allowable values are between 150^o and 220^o.

Undercut angle β (°): The undercut angle value is indicated. The angle must be smaller than 106^o.

Sheave angle γ (°): The sheave angle value is indicated. The minimum value of the angle is 25^o.

Braking acceleration γ_π (m/sec²): Under no circumstances should the acceleration be smaller than:

- 0,5 m/s^2 in normal cases
- 0,8 m/s^2 when buffers with reduced drive length are used

Number of pulleys causing single bending: Enter the appropriate number of pulleys.

Number of pulleys causing reverse bending: Enter the appropriate number of pulleys.

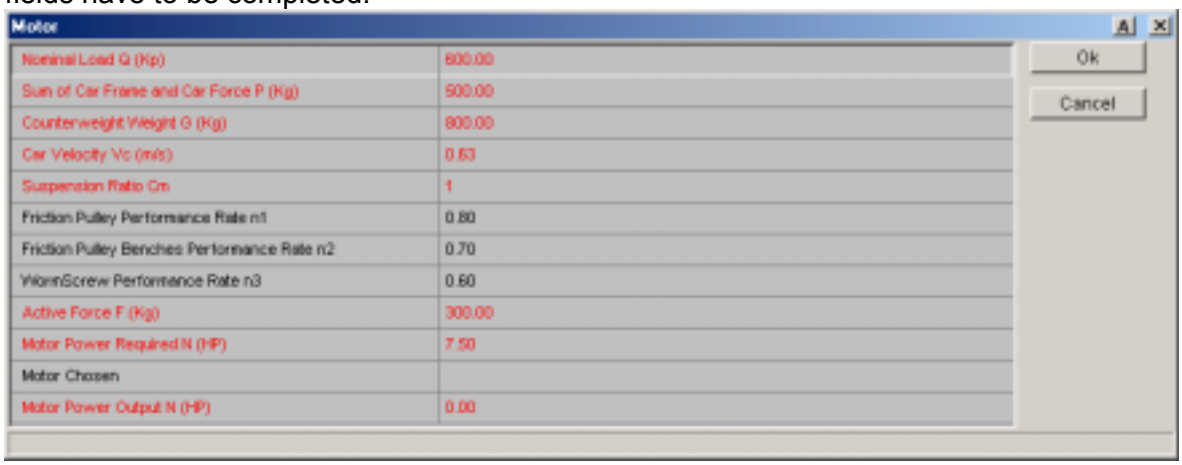
Desirable divergence pulley diameter D_p: Enter the desirable diameter of the pulley.

Attention! This field will be shown only if the respective box is checked in the lift's specific data.

Desirable friction pulley diameter D_t: The user enters the desirable diameter of the friction pulley if he desires a different diameter from the one selected by the program, which is shown in the next field.

2.3.1.3 Motor Power Calculation

As shown in the following screen, for the calculation of the required motor power the next fields have to be completed:



Friction pulley performance rate n_1: Enter the performance rate of the friction pulley.

Friction pulley benches performance rate n_2: Enter the performance rate of the friction pulley benches.

Wormscrew performance rate n_3: Enter the performance rate of the wormscrew.

2.3.1.4 Gear regulator calculation

For the calculation of the gear regulator, the following fields have to be completed:

Resultant limiter stress force G': The user enters the resultant stress force. A typical value is 50 kg.

Limiter pulley kind: Choose whether the pulley is semicircular sheaving with undercut or V type sheaving without hardening or V type sheaving with hardening.

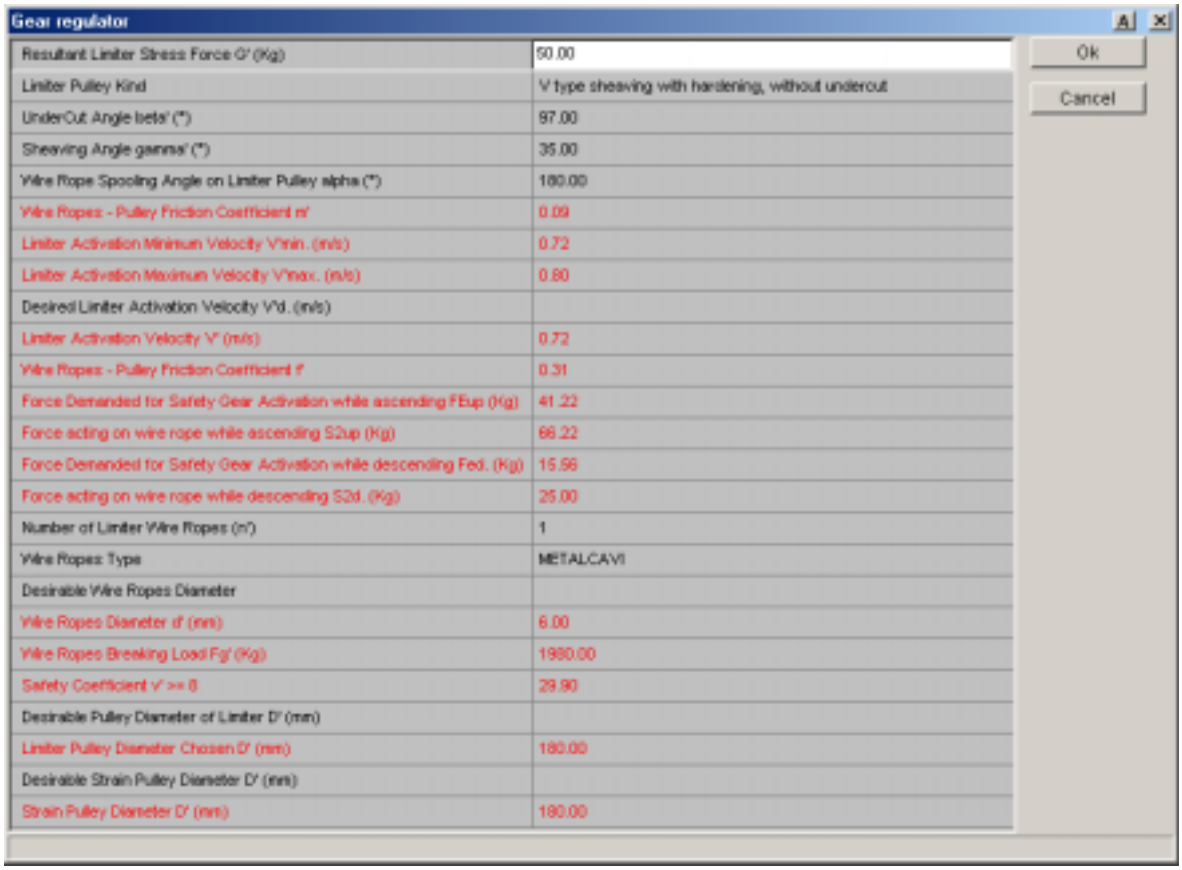
Undercut angle β (°): The undercut angle value is written. The angle must be smaller than 106°.

Sheave angle γ (°): The sheave angle value is written. The minimum value of the angle is 25°.

Wire rope spooling angle on limiter pulley α' (°): If you wish you can change the default value. Valid values are between 150° and 220°.

Desirable limiter activation velocity V'_{des} (m/s): If you wish choose the limiter activation velocity or else the program chooses the minimum activation velocity.

Number of limiter wire ropes v': Enter the number of the wire ropes of the velocity limiter.



Wire ropes type: By pressing F11 or the button inside the field, choose the desirable wire ropes type from the wire ropes library.

Desirable wire ropes diameter d' (mm): By pressing F11 or the button inside the field, choose (if you wish) from the selected wire ropes type library, a different diameter from the one calculated by the program.

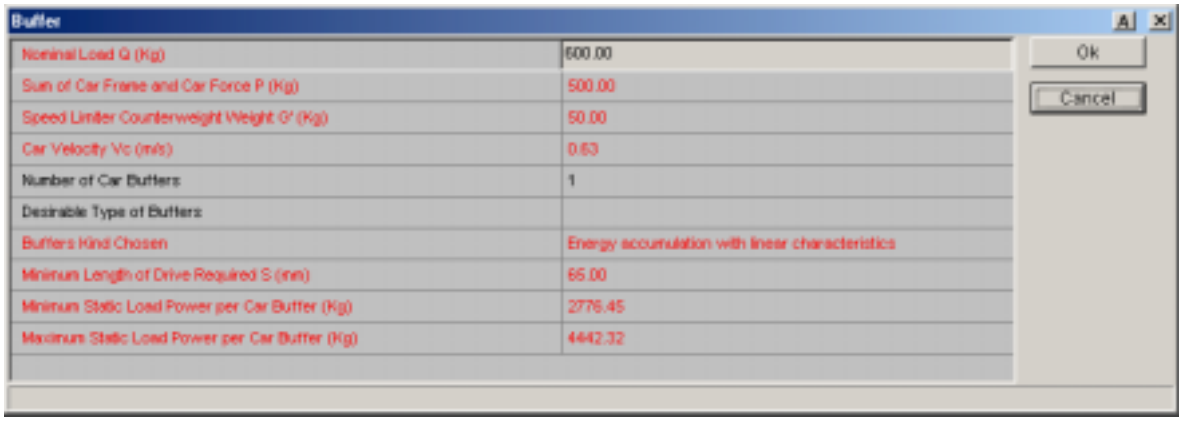
Desirable limiter pulley diameter D' (mm): By pressing F11 or the button inside the field, choose (if you wish) from the pulleys library, a different diameter from the one calculated by the program.

Desirable strain pulley diameter D_p' (mm): By pressing F11 or the button inside the field, choose (if you wish) from the pulleys library, a different diameter from the one calculated by the program.

2.3.1.5 Buffers calculation

For the calculation of the buffers, the following data must be entered:

Desirable buffers type: By pressing F11 or the button inside the field, you can choose (if you wish) from a number of buffer types, a different type from the one selected by the program.



The choices appearing in the “Desirable buffers type” are the following:

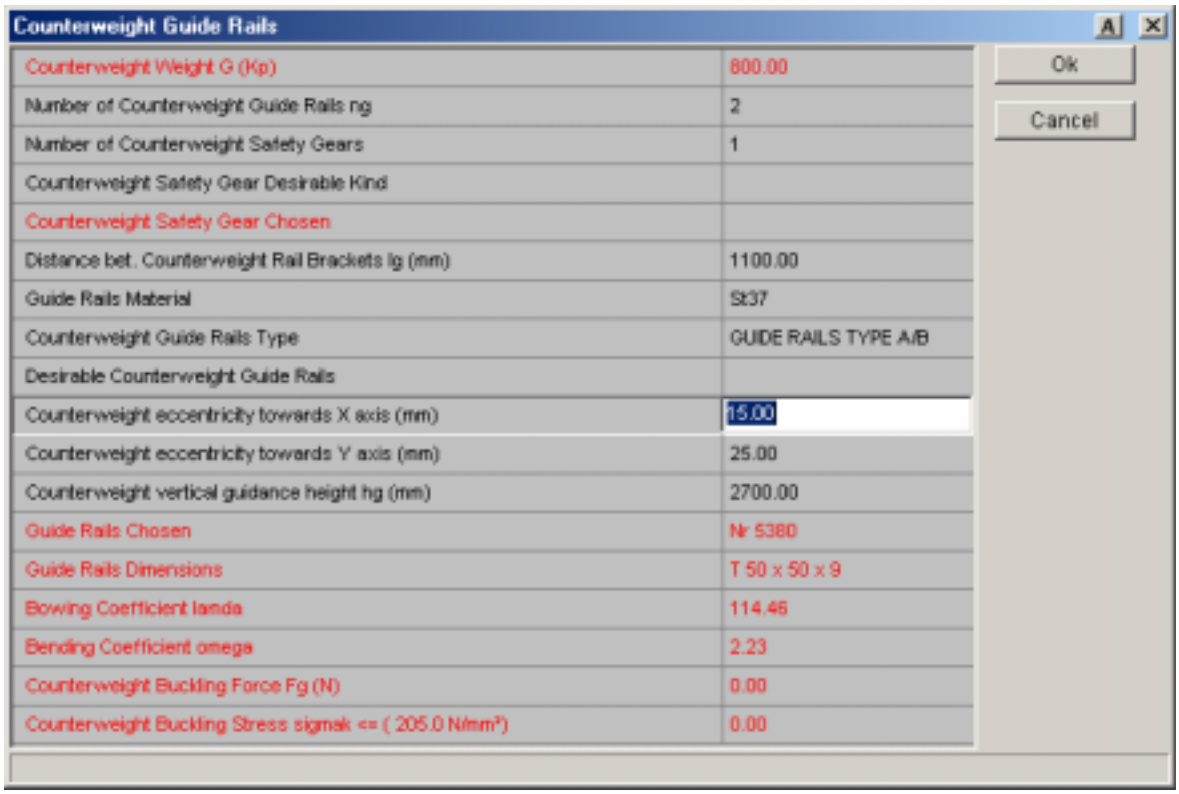
- Energy accumulator with linear characteristics
- Energy accumulator with non linear characteristics
- Energy accumulator with decelerating restoration
- Energy scattering

2.3.1.6 Counterweight guide rails

The following data must be completed for the calculation of the counterweight guide rails:

Number of counterweight guide rails n_g: Enter the counterweight’s guide rails number of the lift. A common value is 2.

Number of counterweight safety gears: Enter the counterweight’s safety gears. A common value is 1.



Desirable counterweight safety gear type: By pressing F11 or the button inside the field, choose the desirable type for the counterweight safety gear.

If this field is left blank the double direction safety gear is chosen and is not subject to buckling check.

Distance between counterweight rail brackets: Enter the distance between rail brackets of the counterweight.

Guide rails material: Choose from the list shown the desirable material of the guide rails.

Counterweight guide rails type: The desirable type of the counterweight guide rails is chosen from the library.

Desirable counterweight guide rails: By pressing F11 or the button inside the field, the type of the counterweight guide rails of our choice is selected.

Counterweight eccentricity towards x axis, X_g (mm): Counterweight's mass position in relation to guide rail's x coordinate.

Counterweight eccentricity towards y axis, Y_g (mm): Counterweight's mass position in relation to guide rail's y coordinate.

Counterweight vertical guidance height h_g (mm): Enter the distance between the guide rails blocks.

2.3.2 Hydraulic Lifts EN 81-2 1999

Hydraulic lifts are divided into the following categories according to their suspension type:

1. **HAI**

One back or side piston, indirect drive through wire ropes

Application for loads from 150 to 1.800 kg

Application for drive lengths from 4.0 to 35.0 m

2. **HAS**
One back or side piston, direct drive

Application for loads from 150 to 1.800 kg

Application for drive lengths from 2.5 to 8.0 m

3. **HA**
One piston below, direct drive
Application for loads from 225 to 6.000 kg

Application for drive lengths from 2.5 to 15.0 m

4. **HAD**
Two side pistons, direct drive
Application for loads from 750 to 12.000 kg

Application for drive lengths from 2.5 to 8.0 m

5. **HADI**
Two side pistons, indirect drive through wire ropes
Application for loads from 750 to 6.000 kg

Application for drive lengths from 4.0 to 35.0 m

Suspension type defines the calculations and checks type that will be executed by the program.

Within the User's Guide, the relevant calculation sheets along with the calculations executed in the case of hydraulic lifts are described in detail. In particular, all the parameters involved in the calculations are numerated and the principles, on which the calculations are based, are analyzed. The logical order followed by the program is exactly the same with the one that follows.

2.4 View

This option includes the sub-option "Toolbars", according to the usual windows standards.

2.5 Windows

2.5.1 Print Project

This option opens a window with the Project text, which can be edited by the user according to what was mentioned in section 1.3.4. In particular, pressing the "Edit" icon replaces the main menu with the text editor menu giving you the capability to edit and change it until you close it (selecting "Exit"), so you see the text again in yellow background.

2.5.2 Material Bill of Quantities

This window shows a detailed list of the materials used in the project, the cost of each one and the total cost.

2.5.3 Drawing

This option opens the window "Drawing" in which the user can import one of the pre-drawn drawings included in the program. This can be done by choosing "Drawing

selection" which is in the group "Drawing" appearing right next to the "Windows" option, when you open the window "Drawings".

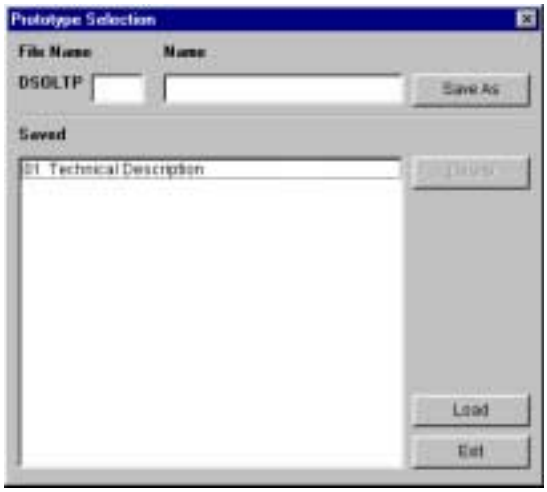
You can use the options of the group "View" to preview the drawings in your screen, as well as the option scale to set their printing scale.

The user can also use helpful drawing tools (real-time pan, real-time zoom, zoom window, zoom extents).

Furthermore, the user can export the drawing to dwg or dxf file and activate IntelliCAD or AutoCAD.

2.5.4 Technical Description

The **"Technical Description"** window supports composition of the project's technical description, allowing selection of different technical description prototypes with all word processing features available, as we will see below, and free configuration of new prototypes according to the user desire. By selecting **"Technical Description"** the corresponding window appears, updated with the project's results. When the Technical Description window is activated, an additional option in the main menu (just above the "Windows" option) is appeared with the name "Technical Description". Choosing "Prototype Selection" from this menu the prototype management window will appear on our screen together with the list of the available prototypes for the application we work with.



Selecting the corresponding prototype (with the help of the mouse and using the "Load" key), the corresponding text appears in the Technical description window (in yellow background and with updated results of the project). Any desired modification in the technical description of the project, either by changing the position of a word-parameter or processing the text the way we want to, can be done by pressing the "Edit Prototype" icon.

Caution: *Depending on the lift's type (hydraulic or electric) the user must choose the respective description from the technical description prototypes. Changing the lift's type in a project does not automatically change the technical description.*

Note*: It is reminded that technical description prototype files are located in the 4M\CALC\ANEL\ directory with names ANELTP01.RTF for the first prototype in the list, ANELTP02.RTF for the second, etc, and the descriptions of the prototypes can be found in the file ANELTP.LST which is located in the same directory.*

2.5.5 Assumptions

The general assumptions text of the project issue is shown (summary of the norm), which can be included in the project's printout provided that it has been chosen in the "Printing Contents". By choosing "Assumptions", the option "Assumptions" appears in the menu including the sub-option "Prototype Selection". By choosing a specific assumptions prototype, a window with the respective text appears.

Caution! *Depending on the lift's type (hydraulic or electric) the user must choose the respective assumptions from the assumptions prototypes. Changing the lift's type in a project does not automatically change the assumptions.*

Note: *It is reminded that assumptions prototype files are located in the 4M\CALC\ANEL\ directory with names ANELPR01.RTF, ANELPR02.RTF, etc, and the descriptions of the prototypes can be found in the file ANELPR.LST, which is located in the same directory.*

2.5.6 Cover Page (of the project issue)

The **"Cover Page"** window is the first page of the project that is printed and the program enables the user to select between different types of cover pages, or even to create his own cover page, as it is desired.

The function of the "Cover" is completely similar to this of the Technical Description. In this way, the option "Cover" appears in the menu with the sub-option "Prototype Selection" etc. By selecting a prototype (with the option "Load") the relevant Cover page appears in the window.

Note: *Cover page prototype files are located in the 4M\CALC\ANEL\ directory with names ANELCP01.RTF, ANELCP02.RTF, etc, and the descriptions of the prototypes can be found in the file ANELCP.LST, which is located in the same directory.*

2.6 Libraries

Application's libraries contain:

- **Wire ropes:** The user can define wire ropes types with their standardized nominal diameter order and their respective breaking loads.
- **Pulleys:** The standardized diameters with their weight and cost are shown.
- **Guide Rails:** Guide rails (aligner bars) categories are included and each category contains different types. Each type contains the material (e.g. St33), the size (e.g. T50x50x50), the cross section, the foot thickness, the moment of inertia, the strain torsion, its hinge cover width, its hinge cover foot thickness, its screw diameter, its cost and code.
- **Motors of electric lifts:** Motors library contains several types with their nominal power (HP) and their respective cost.
- **Pistons:** In the pistons library categories can be defined and for each category a number of different types. Each type contains the following data: Material, piston external diameter, piston internal diameter, wall thickness of piston, piston weight, cylinder external diameter, wall thickness of cylinder, maximum stress and cost.
- **Pumps:** The pumps of the library are defined by their type, flow rate, coefficient a and b, cost and code.
- **Supply Pipes:** Each supply pipes type contains its name and material as well as a number of external diameters and their respective thickness and static stress.
- **Motors of hydraulic lifts:** Motors library contains several types with their nominal power (HP) and their respective cost.
- **Pulley mandrels:** Each pulley mandrel type has its material, diameter, strain torsion, fastening distance and cost.

Libraries are open to any update from the user.

Notes: *Library files used by the Lifts program are located in the 4M\LIBS\DATAF\ directory with the following names:*

Guide rails	*DBK1.MDB*

Wire ropes	*DBK2.MDB*
Pulleys	*DBK3.MDB*
Motors of electric lifts	*DBK4.MDB*
Pistons	*DBK5.MDB*
Pumps	*DBK6.MDB*
Supply Pipes	*DBK7.MDB*
Motors of hydraulic lifts	*DBK8.MDB*
Pulley mandrels	*DBK9.MDB*

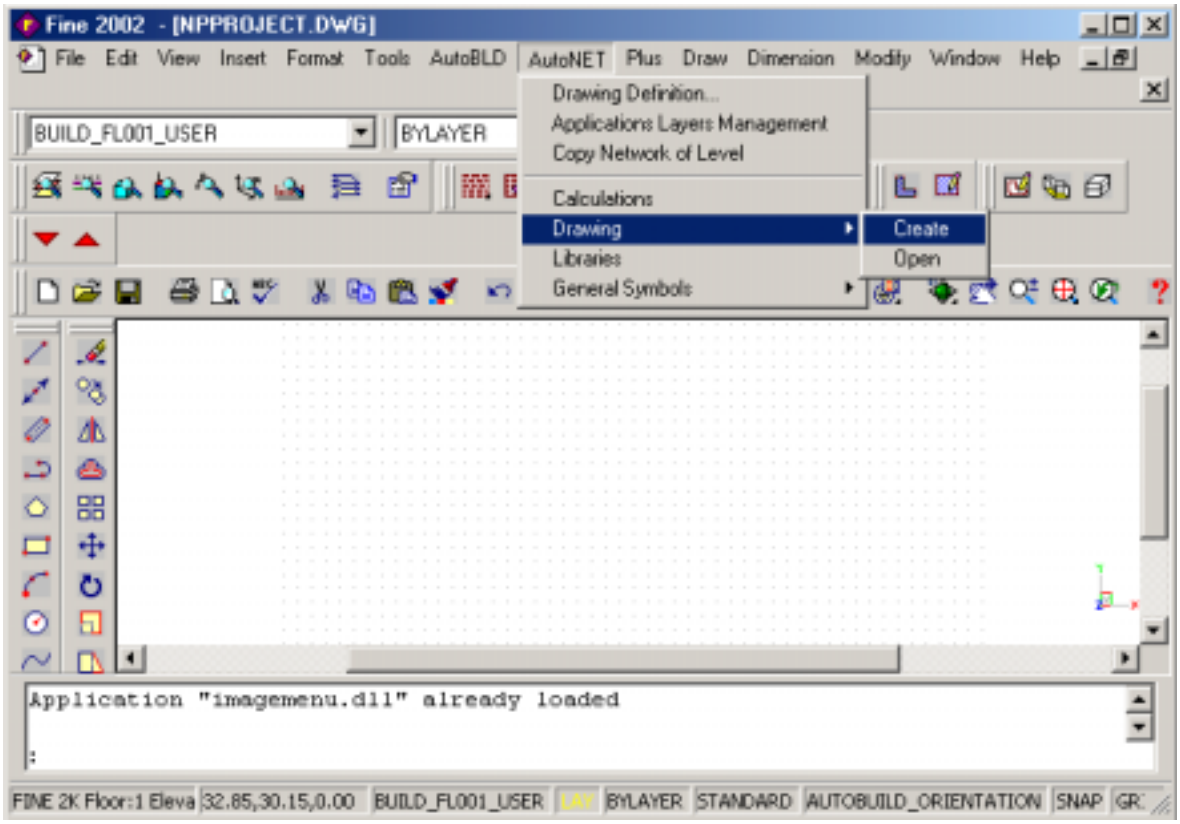
2.7 Help

This option includes a number of options that aim to support the user in learning each application-program following various ways. The most important of them is the "**Contents and Index"** option according to the common windows standards.

3. CAD Component

3.1 General Environment

As mentioned earlier, the general CAD Environment is characterized by an Autocad like user interface, as shown below:

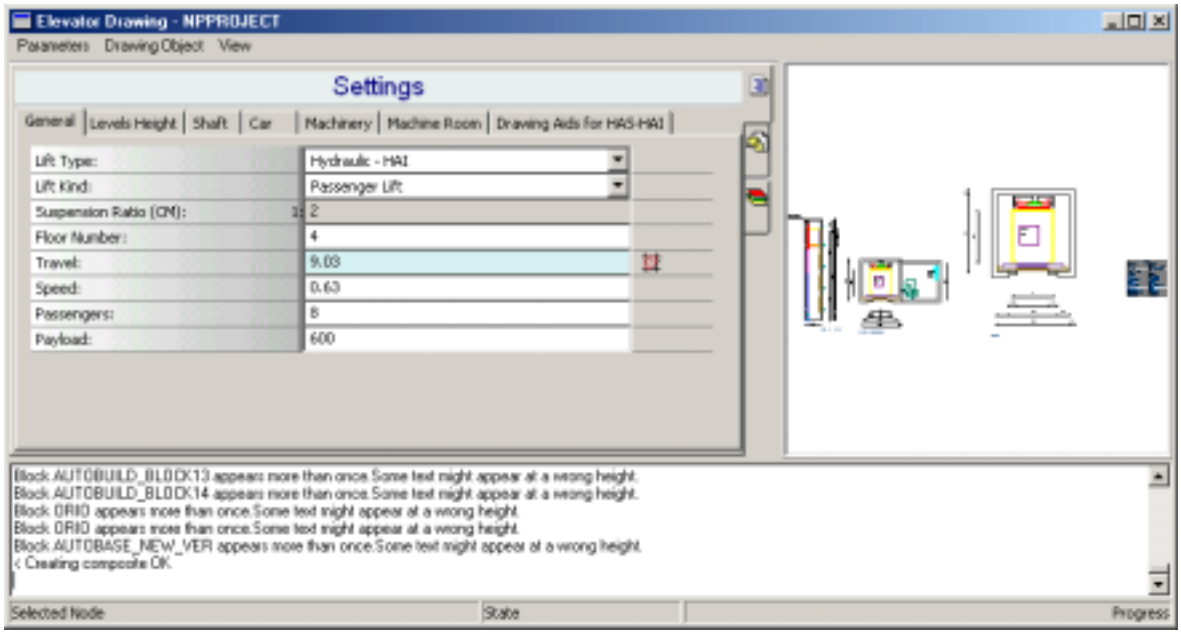


The “Drawing” command, next to the “Calculations” command, located within the AutoNET group of commands, takes care of the drawings that should be attached to the calculations output, shown in the previous chapter. In particular, drawings are being automatically generated through the component and the procedure described in the next paragraph 3.2.

3.2 Generator of Elevator Drawings

3.2.1 Introduction

After selecting the instruction “Elevator Drawing” -> “Creation”, the following window appears on screen. The drawing processor generates the drawings which are necessary for the completion of the study.



More specifically, this window is composed of five parts:

- The part including the calculation parameters
- The part including the drawing parameters
- The part including the layer parameters
- The part corresponding to the viewer of the drawings
- The part where messages plus information related to the creation of the drawings are shown.

Within the main menu, we can see the options “Parameters”, “Drawing” and “Preview”.

By using the “Parameters”, we can initialize anytime the values of the drawing, based either on the values that have been calculated through the case study, or on the values of the latest storage. The second case prerequisites the fact that the drawing has been already created once.

The changes made on the drawing, appear in a real time basis on the viewer, given that the “automatic review” has been selected from the “drawing” menu. Alternatively, the review can be also done by pressing “F5” key.

From “Preview” option we can change the appearance of the window (i.e. activation or inactivation of the message window).

3.2.2 Calculation Parameters

Most of the fields are filled through the results deriving from the calculations (ADAPT). However, the user can process the drawing according to his preferences. For this reason he can modify the values of the fields, either by inserting other values, or by getting values through the technical libraries of the program. In this case he has to use the icon  which is next to each value field (corresponding to library items).

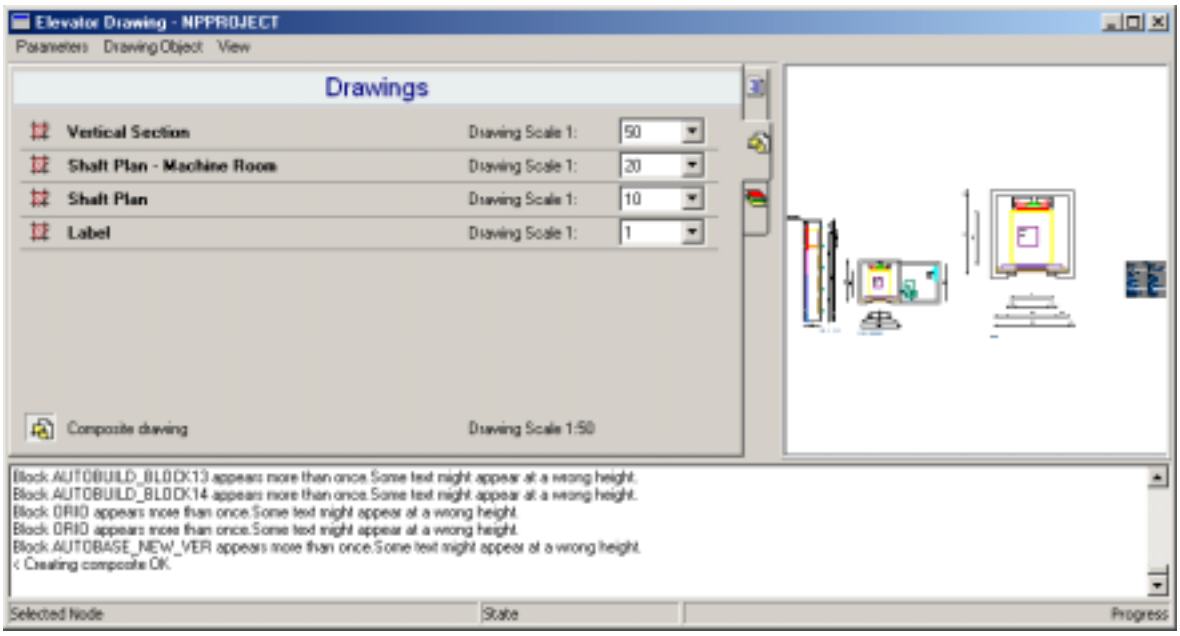
In addition, the user can use the icons  which refer to an auxiliary window, containing any alternative choice.

Value fields are colored with a color depending on their attributes. In particular:

Fields with a white background contain just simple values.

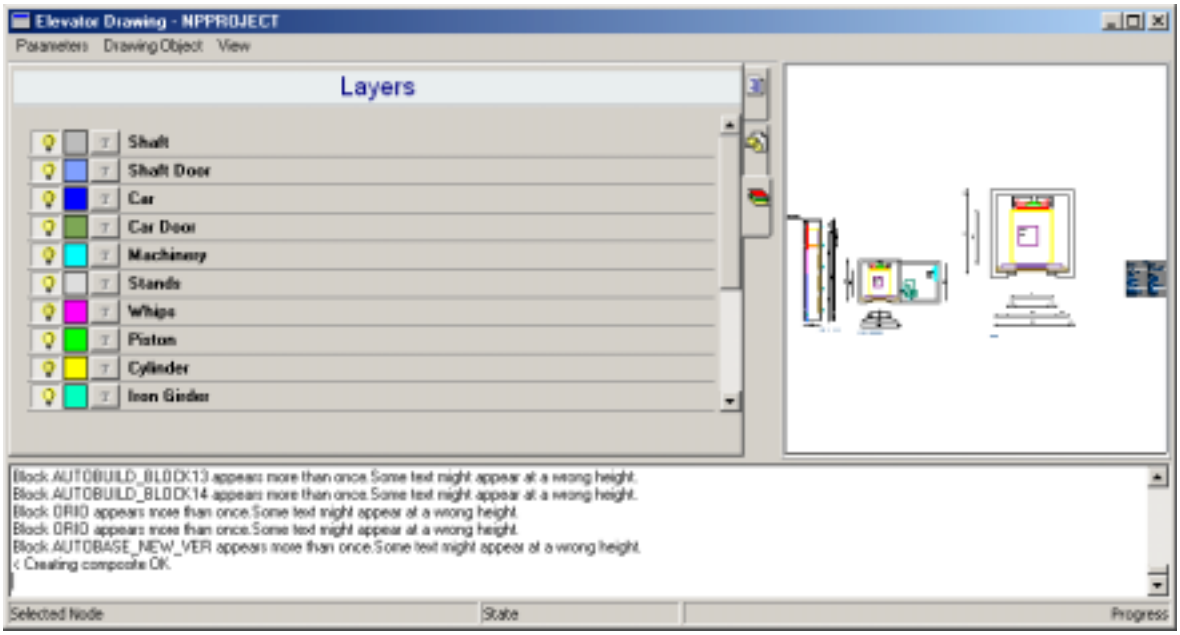
Fields with a cyan background contain values which are coming either through library tables, or depend on other values and are deriving from calculations. In the specific case of the “suspension ratio (CM)”, which has a grey background, the value is occurring from the selection of the type of elevator and should not be changed by the user.

3.2.3 Drawing Parameters



In this section, we define the drawing scales for each partial drawing. Besides, by pressing the icon  we can see the related drawing (i.e. view plan of well). By pressing the icon of the composed drawing, we can see the whole drawing composed of the partial drawings, each one having been drawn with the appropriate drawing scale.

3.2.4 Layers Parameters



Here we define the colors for the different layers, as well as the heights of the texts (in drawing mm) which are inserted within the drawings.

In addition, we define the layers that will be visible or not.

3.2.5 Preview

This window permits the drawing preview through the following facilities:

- Real time pan
- Real time zoom
- Zoom window
- Zoom extends

The functionality of those commands, can be easily realized by the user.

3.2.6 Messages

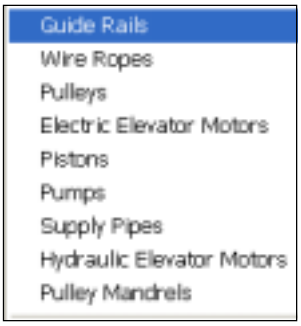
During the creation of the drawings, if they are mistakes then related messages appear in bold red characters. Additional information shows the progress of the drawing creation during the generation.

Finally, after closing the window “elevator design”, a file is created named as the project file with the suffix “HV” and the extension dwg (i.e. nprojectHV.dwg), where we can realize any modification we might need (i.e. correction of the location of the engine-room, addition of a door to this room and so on).

In case we want to use the ready to use drawings from FINE library elevator drawings, we should select the option “Elevators” from the “General Symbols” first. Then, we just need to select the drawings we need through the slides menu. In order to print the elevator drawings with the desired scale, we need to proceed to the following steps:

- Decide the plotting scale, i.e. 1:50 (in this case we will define 1000 mm = 50 d.u.)
- The parts of the drawing we want to be in a different scale, i.e. 1:20, we scale them with the ratio [general printing scale]/[printing scale of the drawing], i.e. 50/20=2.5, which means that we will scale the drawing 2.5 times to be in 1:20 scale.
- From AutoBLD» -> «General Symbols» we select a label at the appropriate scale.

3.3 Libraries



Libraries refer to the following equipment (as shown in the respective menu) and are the same with the ones included within the Calculation Environment, where they can be updated.

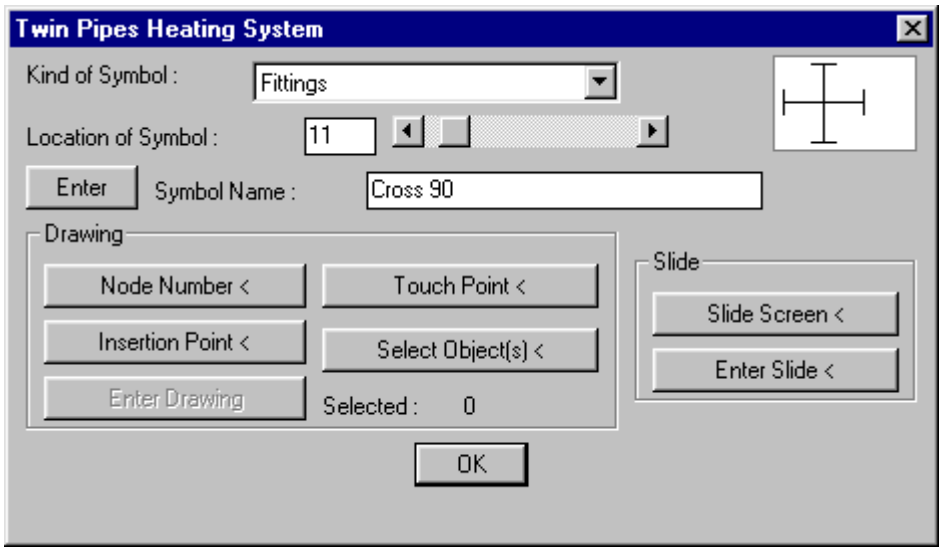
3.4 Symbols & Drawings

3.4.1 Contents

"Symbols" include various general symbols, configurations and other drawings that can be used in elevator case studies.

3.4.2 Library Management

The "Application Library Management" option leads to a submenu including the options "Numerical data" and "Drawing data". The first option leads to the libraries with all the numerical data of the materials and the organization of the FINE or ADAPT libraries (see the chapter concerning "Libraries" in the volume of the ADAPT-FCALC calculations). The "Drawings" option leads to a dialog box where the following data can be seen, regarding each application:



Kind of Symbol: This the category type where the symbol belongs to (e.g. accessory, receptors, high-pressure unit, configurations etc).

Location of Symbol: It refers to the position of the symbol, which you want to view or insert in the library, in the drawings as well as in the numerical data library.

Symbol name: This is registered in the "numerical data" libraries. There is a set of commands on the right side of the screen, which enable the insertion of a slide in a position within the library. More specifically:

Slide screen: The slide screen provides a dynamic zoom in the drawing. It initially carries out "zoom all" in the whole drawing. Afterwards it is possible to define the screen desired to be saved as a slide by using the zoom. This capability is particularly useful in case it is desired to insert a lot of symbols at the same time.

Enter Slide: This option enables saving the current screen as a slide. On the left side, a set of commands helps you to define a block and insert it in the library. It consists of the following commands which should be followed in the order given.

Node Number: Determine the position where the numbering of the receptor should be shown, as well as the font type and height (or simply press <Enter> twice after providing the receptor location).

Touch point: Insert and place the receptor touch points (connection points).

Caution! *If you do not want to have the touch points printed in the final drawings, the "touchpoints" layer should be de-activated (select "Freeze") in the AutoCAD "Layer Manager".*

Insertion point: Determine the point according to which the drawing will be inserted.

Select Object(s): Select which entities of your drawing will comprise the Block. It should be pointed out that, in case the symbol type stands for a receptor or an accessory, the receptor tpoints (touch points) as well as the receptor attributes should be also determined.

Enter drawing: Run this command to save the selected block in the respective library directory.

Note: *The drawing libraries of the X application are in the directory \AFINE14\LIBS\DWG\DBX. For example, in the Single-Pipe System application (as well as in the Twin-Pipe System application), where X=C, drawings are saved in the directory \AFINE14\LIBS\DWG\DBC and they have the following names:*

GC1_a??.DWG, for the drawings of accessories 1,2,3,..,?? etc.

GC3_a??.DWG, for the drawings of radiators 1,2,3,..,?? etc.

GC3_c??.DWG, for the connection points of the receptors 1,2,3,..,?? etc.

By the way, note that the numerical data libraries of the X application are in the directory \4M\LIBS\DATAF\DBX.*, e.g. the numerical data libraries of the Single-Pipe System application are in the directory \4M\LIBS\DATAF\DBC*.* and so on.*

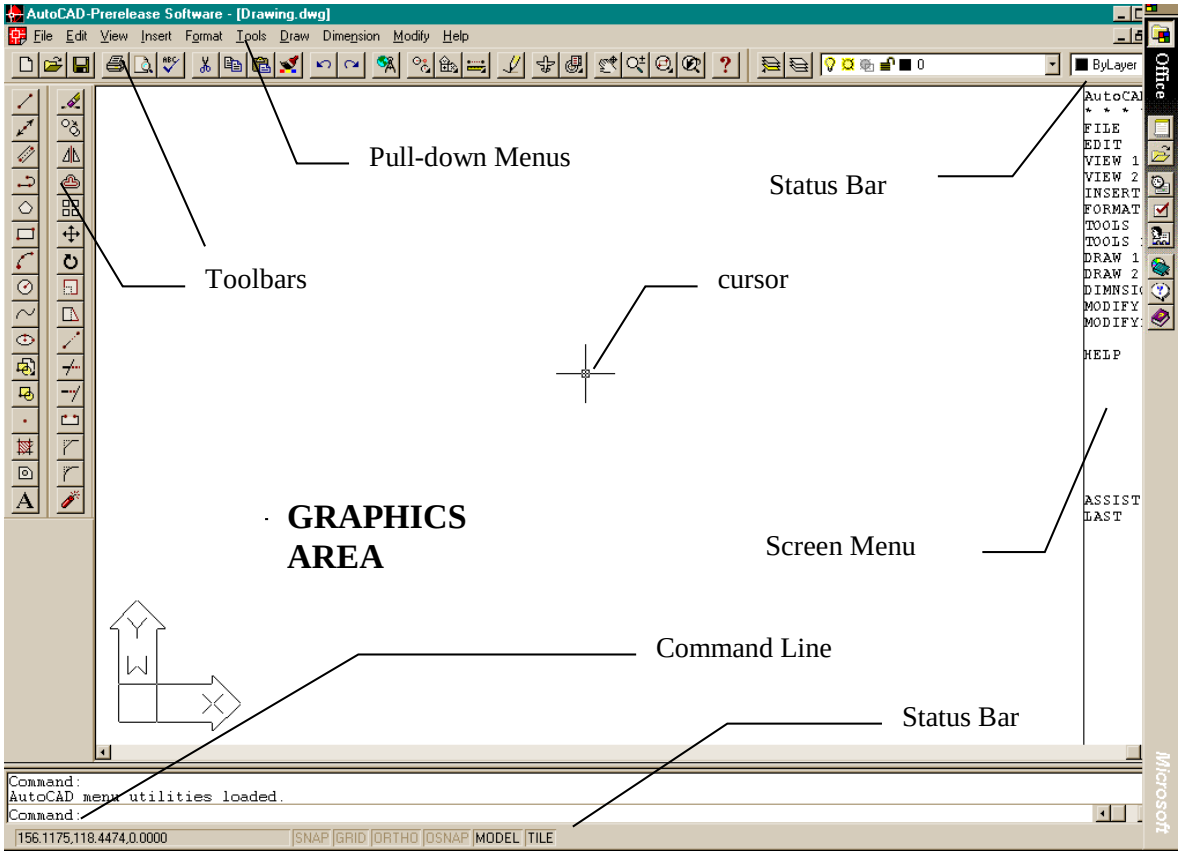
The option "General Symbols" leads to submenus with groups of existing drawings, where every management capability mentioned above is available, except for the touch point. Furthermore, the user can directly define the symbol name by entering the respective position in the menu (in contrast with the application libraries where the name is read in the numerical data sheet).

***Note:** Apart from the symbols for receptors and accessories, each application includes some details as well (see secondary option "Details"). However, if every available detail of FINE was loaded on the PC during the installation of the programme, the hard disc would be loaded with a huge number of files. To avoid that, only the more fundamental details are initially loaded. Therefore, the user of the package can look through all the details saved in the programme CD, select the ones needed for the applications he works on and incorporate them himself. In particular, in the directory "leptomer" there are more than 200 details, which correspond to an equal number of DWG files. The user can view them on the screen (by directly selecting "Open" while working on the CD) and follow the above described procedures in case he wants to save some of them in the program libraries on his PC*

Someone who is familiar with CAD, it is like he/she already know the CAD Environment of FINE LIFT. Just for the users who need more help, the following paragraph explains the basics about the structure and operation of FINE LIFT CAD Environment.

3.5 Drawing Principles & Basic Commands

A great advantage of the package is that the structure and the features of the drawing environment follow the standards of the CAD industry adopted by AutoCAD, IntelliCAD etc. In particular, the available working space is as follows:



As shown in the above figure, the screen is divided into the following "areas":

- ***Command line:*** The command line is the area where commands are entered and the command messages appear.
- ***Graphics area****:* The largest area of the screen, where drawings are created and edited.
- ***Graphics cursor***: The cursor is used for drawing, selecting objects and running commands from the menus or the dialog boxes. Depending on the current command or action, the cursor may appear as a graphics cursor (crosshairs), a selection box, a graphics cursor with a selection box etc.
- ***Pull-down menus***: These menus appear by placing the cursor on the Status line.
- ***Screen menu***: It concerns all the pull-down menus and submenus which are displayed on the right side of the screen (the screen menu can be activated and deactivated using the AutoCAD option "Preference").
- ***Status Line***: It is the line on the top of the screen where the current layer (slide), the drawing status and the current cursor coordinates are displayed.
- ***Cursor menu***: This menu appears when the cursor is in the graphics area and you press either the middle mouse button or <SHIFT> and the right mouse button simultaneously.

Please note that each mouse button performs a specific function. The functions of the mouse buttons are the following:

Left button: Selection of a command, point or object.

Right button: Enter

Middle button: "Osnap" command (see section 2.2).

Note: *In case your mouse has only two buttons (or it has three buttons, but the mouse driver has not been properly installed for the middle button to function), the first two functions are executed as described while the third one can be substituted by the combination of the "Shift" key and the right mouse button (right click while <Shift> is pressed down).*

3.5.1 Drawing aids

This section describes the basic drawing aids available to the user. These are the commands **Osnap** (object snap), **Ortho** (vertical/horizontal drawing), **Grid** and **Snap** (movement increment). More specifically:

OSNAP: The "Osnap" command forces the cursor to select a snap point of an object, which is within the Pick box outline. The snap points are certain characteristic geometric points of one or more objects, like the midpoint or one of the endpoints of a segment or arc, the center point of a circle or arc etc. If you have specified a snap point and move the cursor close to it, the program will identify it with a frame. The "Osnap" command can be activated either by holding down the "SHIFT" key and right clicking the mouse or by clicking the middle mouse button (if there is one available and active) or through the additional toolbar (version for Windows). For example, if we select “Endpoint” from the menu, then this action *Selects one of the two endpoints of an object (the one closer to the selection point).*

ORTHO: The "Ortho" feature restricts the cursor to horizontal or vertical movement. The status bar shows whether the "Ortho" command is activated by displaying "ORTHO" in black characters (in AutoCAD 12, the indication "**O**" also appears on the top left side of the screen).The command is activated or deactivated by clicking the corresponding button-icon or by pressing **F8**.

GRID: The screen grid is a pattern of vertical and horizontal dots, which are placed at the axes intersection points of an imaginary grid. The grid distance may be different on the **X** and on the **Y** axis. The grid can be activated or deactivated by clicking the corresponding button-icon or by pressing **F7** (If the grid is active, it appears on the Status Bar). Grid is a visual drawing aid that appears only on the screen and is not printed. If you want the grid to be printed, you should draw it yourself.

SNAP: The graphics cursor position coordinates appear in the middle of the upper part of the graphics area. If "Snap" is selected, the graphics cursor movement may not be continuous but follow a specific increment (minimum movement distance). When "Snap" is on, the cursor seems to adhere, or "snap", to an invisible grid. "Snap" can be turned on and off either by clicking the corresponding button/icon or by pressing **F9**. (If it is activated, it appears on the Status Bar). If the command is active, the "**S**" indication also appears in the top left corner of the screen. The default Snap setting is ***0.05 m*** for both axes (X and Y).

3.5.2 Drawing Coordinates

When you need to determine a point, you can either use the mouse (by seeing the coordinates in the status bar or using the snap utilities), or enter the coordinates directly in the command line. Moreover, you can use either Cartesian or polar coordinates, either absolute or relative values, in each method (relative coordinates are usually more convenient).

Relative coordinates: Enter the @ symbol (which indicates relative coordinates) and then the x,y,z coordinates (Cartesian system) or the r<θ<φ coordinates (polar system) in the command line. The system used (Cartesian or polar) is defined by the “,” or “<” symbol. If you do not insert a value for z or φ, it will be automatically taken as zero. For example, if you are prompted to locate the second (right) endpoint of a 2m horizontal line, you should enter:

@2,0 if you use the Cartesian coordinates (which means that the distance of the second point from the first is 2 m on the x axis and 0 m on the y axis), or

@2<0 if you use the polar coordinates [which means that the second point is at a distance of 2m (r=2) and an angle of 0 degrees (θ=0) from the first].

Absolute coordinates: These are specified like the relative coordinates, but without using the @ symbol. The absolute coordinates are specified in relation with the 0,0 point of the drawing.

The measurement system can be activated, deactivated or changed with the F6 key.

3.5.3 Drawing Basic Entities

Line: "Line" option is used for drawing segments. When you select "Line" from the menu or type "Line" in the command line, you will be prompted to specify a start point (by left clicking or by entering the point coordinates – relative or absolute – in the command line) and an endpoint (determined in the same way).

Arc: The "Arc" command is used for drawing arcs. An arc can be drawn in different ways: The default method is to specify three points of the arc ("3-Points"). Alternatively, you can specify the start point and endpoint of the arc as well as the center of the circle where it belongs (St, C, End). The user will not find it difficult to understand and become familiar with the various methods of drawing an arc.

Polyline: This command allows you to draw polylines, which are connected sequences of line or arc segments created as single objects. The command is executed by either using the menu or typing "pline" in the command line. You will be prompted to specify a start point and an endpoint (by right clicking the mouse or by entering the point coordinates – relative or absolute – in the command line). Then, the command options will appear (Arc, Close, Length etc). Select **A** to switch to Arc mode, **L** to return to Line mode and **C** to close the polyline.

3.5.4 Useful Commands

This section includes brief descriptions of the basic program commands, which will be very useful to the user. These are the commands "Zoom", "Pan", "Select", "Move", "Copy" and "Erase". In particular:

Zoom: "Zoom" increases or decreases the apparent size of the image displayed, allowing the user to have a "closer" or "further" view of the drawing. There are different zooming methods, the most functional of which is the real-time zooming ("lens / ±" button). You can use the mouse to zoom in real time – that is to zoom in and out by moving the cursor. Within the zoom command, click and hold down the left mouse button and move the cursor up and to the right to zoom in or down and to the left to zoom out. There are a number of helpful zoom options which become available by selecting "Zoom" in the "View" menu or by typing "Zoom" (or just "Z") in the command line. These options are:
All/Center/Dynamic/Extents/Left/Previous/Vmax/window/<Scale(X/XP)>
Each of these options zooms in a different way. The most common is the "Window" sub-option, which magnifies a part the drawing, included in a (user defined) imaginary rectangle.

Pan: "Pan" ("hand" icon) moves the position of the visible part of the drawing, so that you can view a new (previously not visible) part. The visible part of the screen moves towards the desired area and to the desired extent.

Select: This command selects one or more objects (or the whole drawing), in order to execute a specific task (erase, copy etc.). Select is also used by other CAD commands

(for example, if you use the "Erase" command, "Select" will be automatically activated in order to select the area that will be erased).

Move: This command allows moving of objects from one location to another. When the "Move" command is activated, the "Select" command is also activated so that the object(s) the user wants to move (in the way described in the previous paragraph) can be selected. After you have selected the desired object(s), you are prompted to specify the base point (using the snap options), which is a fixed point of the drawing. When you are prompted to specify the position where the base point will be moved, use either the mouse or the snap options. After you have completed this procedure, the selected object(s) will move to the new position. Please note that the base and the new location points can be also specified with the use of coordinates (absolute or relative, see related paragraph).

Copy: The "Copy" option allows the copying of objects from one location to another. The "Copy" procedure is similar to the "Move" procedure and the only difference is that the copied object remains at its original location in the drawing.

Erase: Choose this option to delete objects. The procedure is simple: Select the objects you wish to erase (as described above), type "E" in the command line and press <Enter>. Alternatively, you may first type "E" in the command line, then select the object(s) by left clicking and finally right click to erase the object(s).

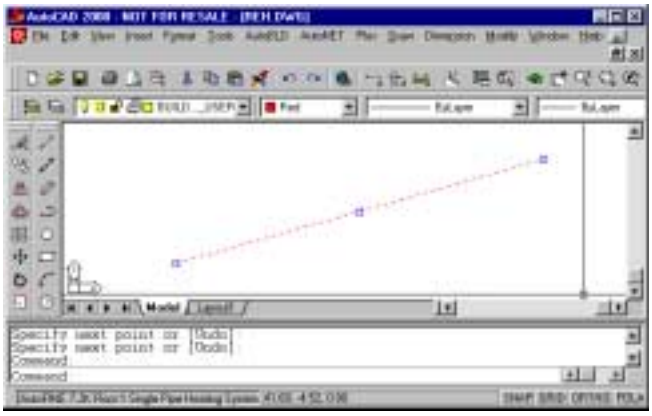
DDInsert (Insert Drawing): This command allows the user to insert another drawing (DWG file) or block in the drawing. When this command is selected, a window appears in which you should select block or file and then select the corresponding block or file from disk. Then you are prompted to specify the insertion point, the scale factor etc, so that the selected drawing is properly inserted.

Wblock: The "Wblock" command allows us to save part of a drawing or the entire drawing in a file, as a block. When this command is selected, you are prompted to enter the file name and then you should select the drawing or the part of the drawing you wish to save. The use of this command is similar to the "Screen Drawing" command, which will be described in a following section. In order to insert a block in a drawing, you should use the "ddinsert" command described above.

Explode: The "Explode" command converts a block in a number of lines so that you can edit it in that form. If it is selected, the program will prompt you to select the block ("Select object") you wish to explode.

3.5.5 Grips

Grips are some characteristic points of an object which appear after it is selected (by placing the graphics cursor with the selection box on the object and left clicking). Then object is displayed with grips (small blue squares), which mark control locations and are powerful editing tools. When you click a grip, it turns red and the following prompt appears in the command line: **STRETCH** <stretch to point> /Base point /copy/ undo/ exit. If you press <Enter> (or right click),



the first characters of the corresponding word are entered, e.g. “sc and enter” for the "Scale" command).

When a command is executed, grips disappear and the objects are deselected. If the command is an editing command (correction or copy), which can be preselected, the objects take part in the execution of the command automatically. In this case, the command overrides the "Select objects" prompt and proceeds. To deselect grips and objects you should press <Esc> twice. Once to deselect the objects and twice to deactivate the grips.

In each object the positions of the grips are different. Namely, for a point the grip is the point itself, for a segment the grips are the midpoint and the two endpoints, for an arc the midpoint and the two endpoints, for a circle the center and the quadrants, for a polyline the endpoints of the line and arc segments and the midpoints points of the arc segments, for a spline the spline points, for a block the insertion point, for text the insertion point etc.

3.5.6 Print

This section may be read after the user has created a drawing and wants to print it. Any drawing can be printed using a printer or plotter or to a file. Printing is performed using "PRINT" (or "PLOT") command, selected either from the "FILE" menu or typing it in the command line, provided there is a drawing already loaded.

3.5.6.1 Previewing a drawing before printing

Viewing a drawing before printing gives you a preview of what your drawing will look like when it is printed. This helps you see if there are any changes you want to make before actually printing the drawing.

If you are using print style tables, the preview shows how your drawing will print with the assigned print styles. For example, the preview may display different colors or lineweights than those used in the drawing because of assigned print styles.

To preview a drawing before printing

1. If necessary, click the desired Layout tab or the Model tab.

2. Do one of the following:

   - Choose File > Print Preview.
   - On the Standard toolbar, click the Print Preview tool ().
   - Type ppreview and then press Enter.

3. After checking the preview image, do one of the following:

   - To print the drawing, click Print to display the Print dialog box.
   - To return to the drawing, click Close.

3.5.6.1 Printing a drawing

The Print dialog box is organized by tabs into two functional areas: scaling and viewing, and advanced printing options. For help defining print settings before you print, see Customizing print options.

To print a drawing

1. If necessary, click the desired Layout tab or the Model tab.

2. Do one of the following:

   - Choose File > Print.

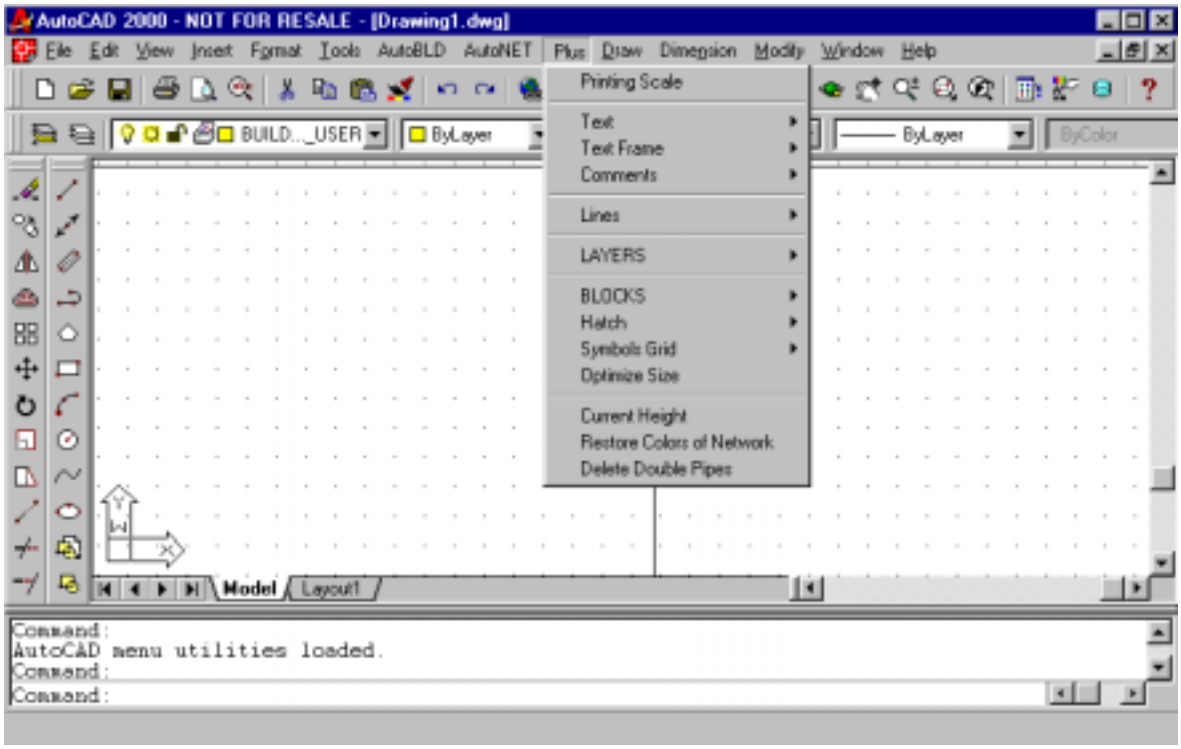
- On the Standard toolbar, click the Print tool (). If you click the Print tool, the Print dialog box does not display. Your drawing will be sent directly to the selected printer.
- Type print and then press Enter.

3. From the Print dialog box, make any adjustments to the settings.

4. Click Print.

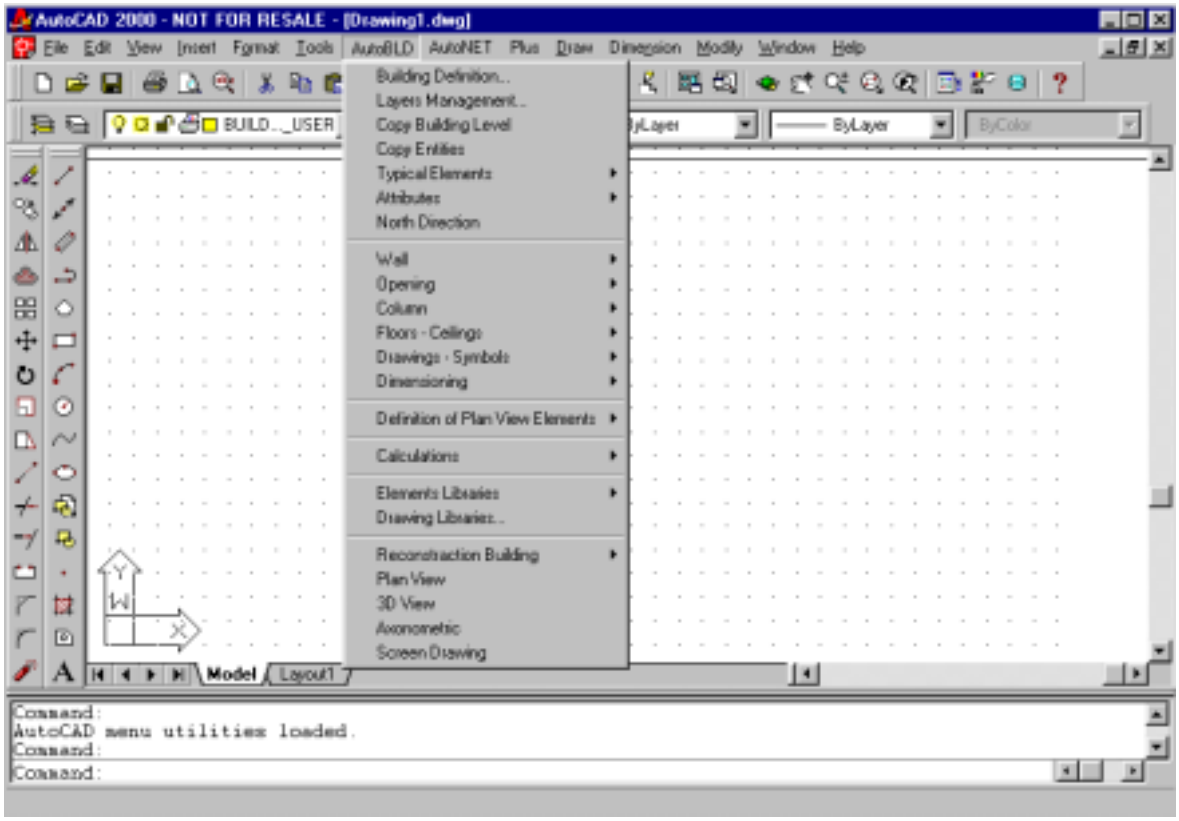
3.5.7 Plus Drawing Tools

Those tools belong to the large group of options under the general menu PLUS. These are a series of additional drawing tools, which have been embodied in the package in order to help the user during drawing, and are described within the Full User's Guide.



3.5.8 Architectural Drawing Tools

Those tools belong to the large group of options under the general menu AutoBLD. In fact, AutoBLD option group, serves only for designing the Architectural plan view, in case the user needs to present drawing of its elevator, within the Architectural drawings. In general this is not necessary, however FineLIFT include this option and the details are mentioned within the complete User's Guide.



In short, as we can see from the program menu, the AutoBLD commands and instructions deal with the facilities required to create an Architectural drawing, and are divided into sub-groups: The first sub-group includes commands for the definition of the project parameters, the second sub-group includes drawing functions, the next sub-group includes management options for the AutoBLD libraries (Architectural objects and symbols) and the last sub-group includes commands for the building viewing tools.