KERNEL Sistemi s.r.l.   www.kernelgroup.it   info@kernelgroup.it

SEM KERNEL
Software Energy Manager

software of supervision and energy consumption management

SEM

Software Energy Manager

USER MANUAL

Internal version
rev. 1.3

12 January 2017

Index

Index

₁ Introduction

1.1 Introduction

The SEM program (Software Energy Manager), processes and manages consumption data, credit and purchasing that come, through the field, from each user. This program, in addition to process data, it's also a management program that can manage the accounts of each user : consumption, prices, discounts, credits, debts ...

The SEM also manages the global data of the cabin and the global data of the entire plant :

- **Statistics Supplying** : For "supply statistics" we intend the use of energy performance through the time (for each user, divided into the various time bands).

- **Statistics Consumption** : The global consumption statistics, provide graphs and statistics on the global consumption of the plant during the day.

- **Accounting** : Accounting means that for each user you can provide the electricity bill (annual, monthly or weekly) hardcopy, by email or via web. The bills have a history of 5 years!

- **Planned Maintenance** : A series of operations to be performed at predetermined frequency that maintain the plant efficiency. The SEM indicates the maintenance to be executed through a permanent reporting on the screen (message that can be removed once completed the reported operation).

1.2 Login

After you start the program, you must immediately enter user id and password to gain access to the main screen :

If you enter administrator credentials, you will have access to all the features of the program and to all users of the system.

Instead, if you enter the credentials of a user you will have access only to the of the corresponding user!

1.3 Main Page Administrator

After you start the program, the main window will appear as follows :
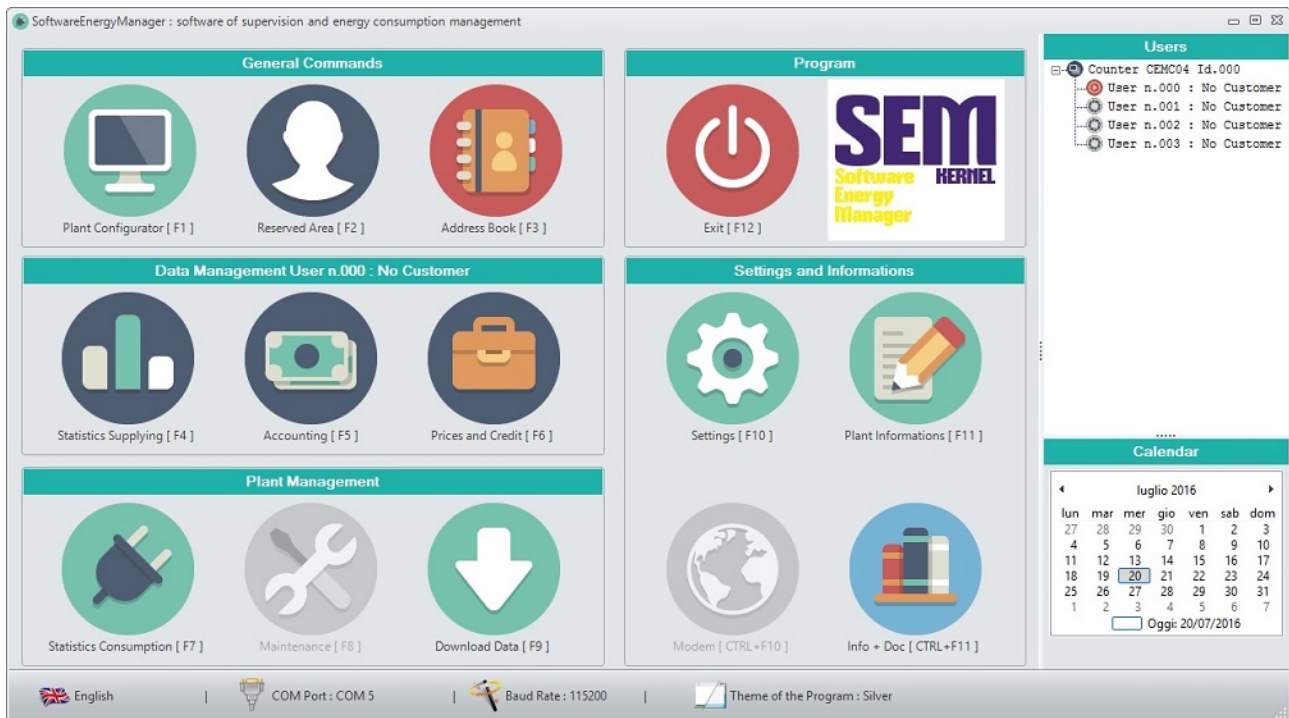
This screen is divided into the following areas (indicated by a brief description) :

- **General Commands** :
  1. Plant Configurator [F1] = Define characteristics of the plant.
  2. Reserved Area [F2] = Reserved Area for the plant manager.
  3. Address Book [F3] = Heading Customers.

- **Data Management** :
  1. Statistics Supplying [F4] = Screen with energy usage of each user for each time band.
  2. Accounting [F5] = Bills management of individual power consumers.
  3. Prices and Credit [F6] = Operating costs of the time slots + Credit management of individual user of the plant.

- **Plant Management** :
  1. Statistics Consumption [F7] = Summary plant total consumption.
  2. Maintenance [F8] = Management scheduled Maintenance.
  3. Download Data [F9] = Download all the data from PLC.

- **Settings and Informations** :
  1. Settings [F10] = General settings of the SEM program.
  2. Plant Informations [F11] = General project information and plant manager information.
  3. Modem [CTRL+F10] = Modem configuration (ONLY IF IT'S ACTIVE)
  4. Info + Doc [CTRL+F11] = SEM program information and documentation

- **Program** :
  1. Exit [F12] = Close the program.
  2. Logo = Logo of the program.

- **Users** : List of all users, followed by the respective customer name associated with it.

- **Calendar**

1.4 Main Page Administrator

If you enter the credentials of a user you will have access only to the of the corresponding user and you will be presented with the following main screen

Now we will analyse the individual items in more detail.

₂ General Commands

2.1 Plant Configurator

In this screen you set the characteristics of the plant. More specifically you have to select :
- The name / description of the plant

- The **MASTER** PLC between TP_320 and DP_120

- The users in the plant :
  1. Number of **CEMC02** = 2 cabin users Counter
  2. Number of **CEMC04** = 4 cabin users Counter
  3. Number of **CEMU01** = A single user Counter - REMOTE

- Presence of the **Modem** (YES / NO) :
  Putting "YES" you enable the button "Modem [Ctrl + F10]" in the main screen.

OK [ENTER] : confirm and save the plant configuration.
DISCARD [ESC] : exit without save the plant configuration.

2.2 Reserved Area

This "*Reserved Area*" allows the manager to evaluate what is making the entire plant :
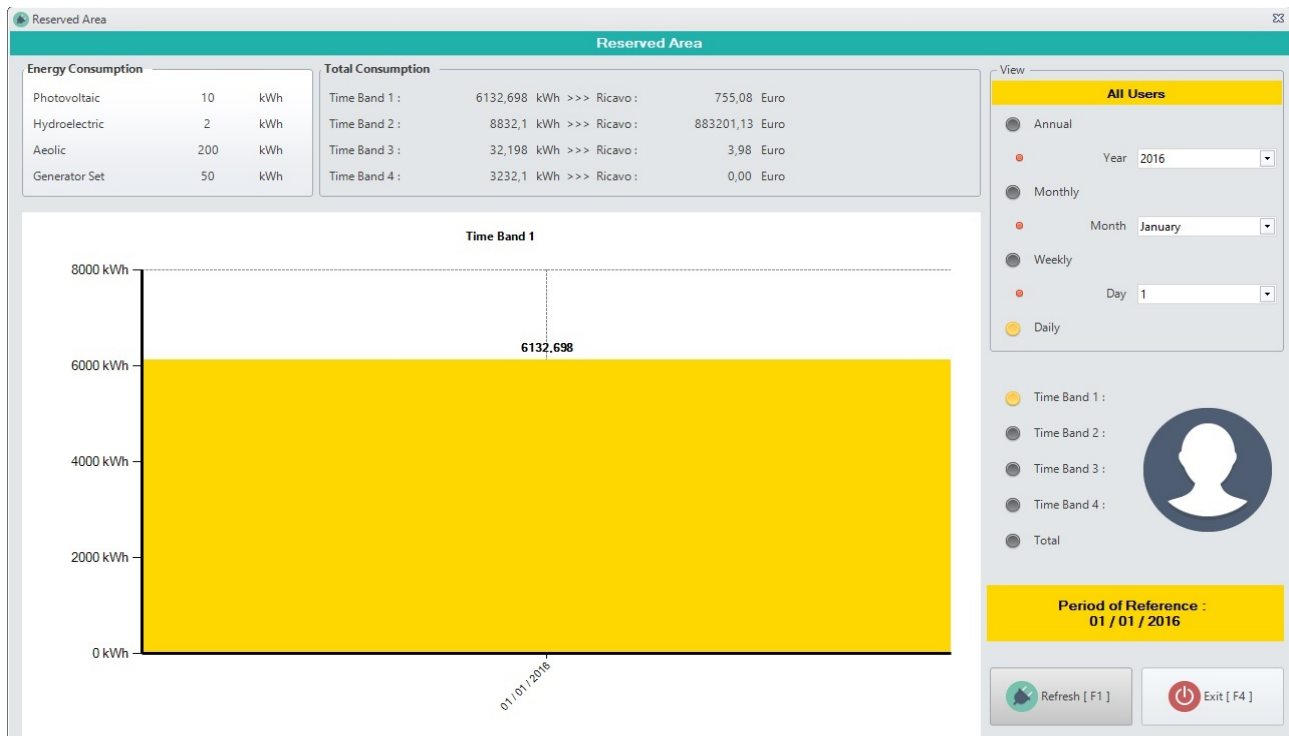
It includes a simple income statement with consumption and revenues.

In this window is displayed :
- The total consumption of energy, divided into the different energy sources available.
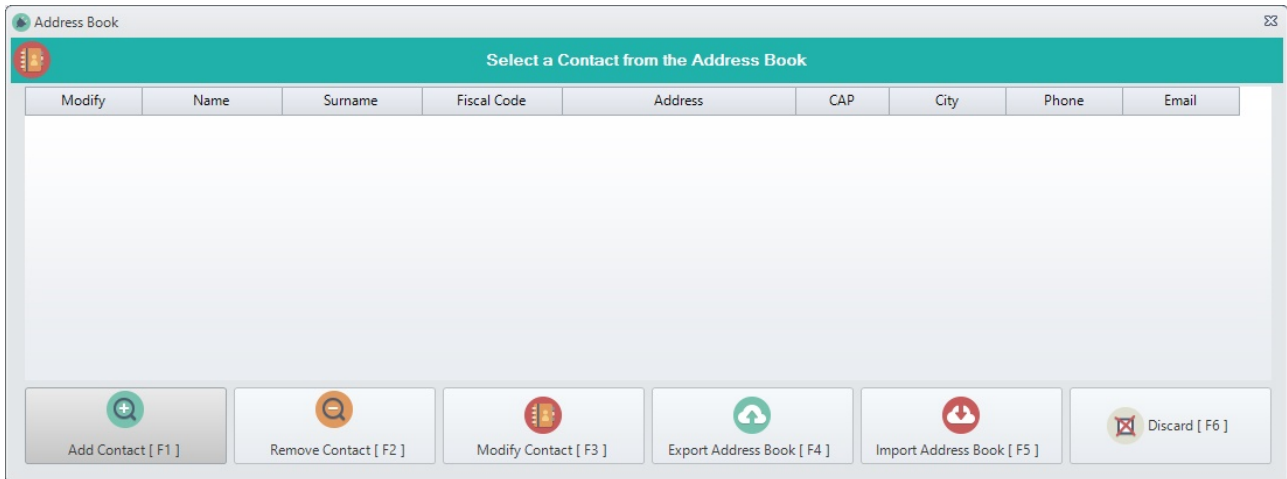
- The total consumption in each time slot

- Revenues of each time slot

You can select the time interval to consider and the time slot (or the total) to display in the graphs.

REFRESH [F1] : Updates the display of the Charts
EXIT [F4] : Exits the screen

2.3 Address Book
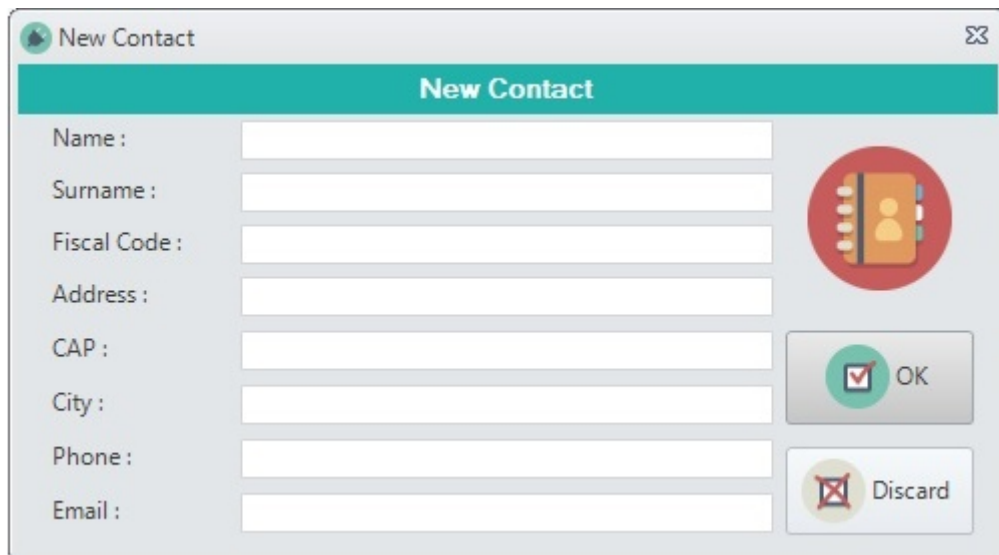
It manages the database of all plant customers. The following buttons are present :

- *Add Contact [F1]* = Add a new contact in the address book

- *Remove Contact [F2]* = Remove the selected contact from the address book (before requests confirmation)

- *Modify Contact [F3]* = Modify the selected contact

- *Export Address Book [F4]* = Export all the contacts in the address book on a .csv file

- *Import Address Book [F5]* = Import a new address book from a .csv file

- *Discard [F6]* = Leaves the customer address book

For each contact in the address book you need to set (through the following window) :
- *Name, Surname, Fiscal Code, Address, CAP, City, Phone and Email*
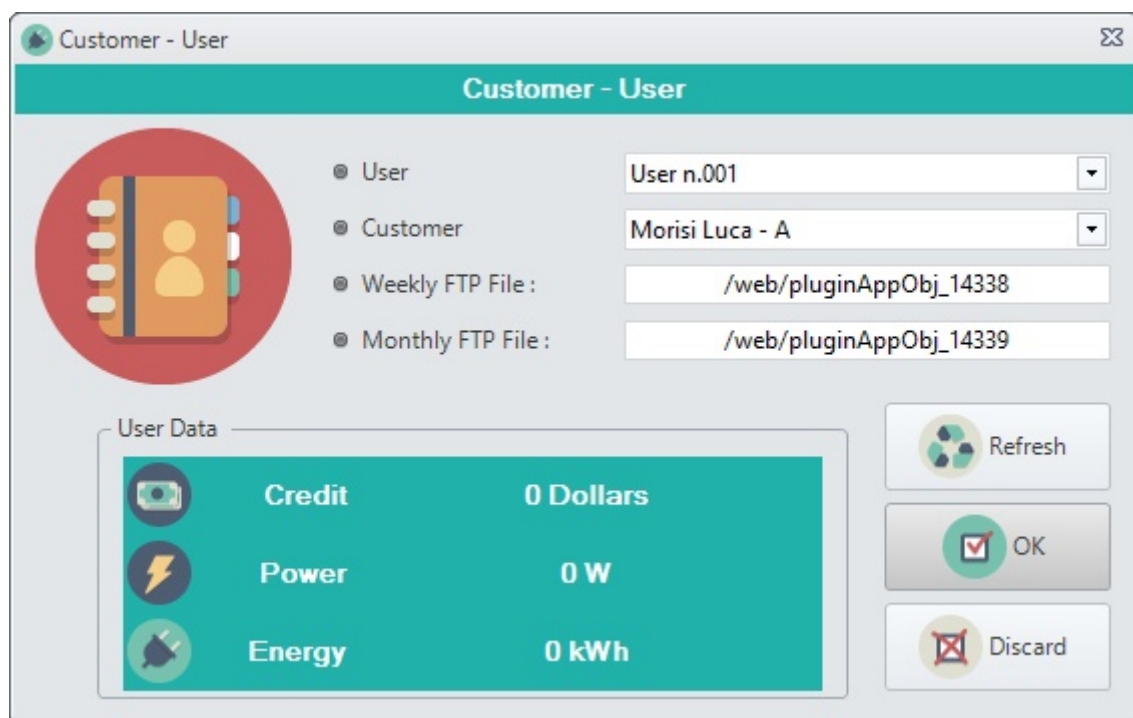
When you finish entering all the customers in the Address Book, if you return to the home page and you double click on a user (in the list of users placed in the right side of the screen), will open the following window! Here you can combine a **CUSTOMER** to selected **USER** :

2.4 Customer – User

In this screen you set the characteristics of the plant. More specifically you have to select :
- The User of the plant

- The **COSTUMER** of the selected user [You can also select "No costumer"]

- Weekly FTP File : The path on the FTP server where will be saved the data relative to the last week.

- Monthly FTP File : The path on the FTP server where will be saved the data relative to the last month.

Finally, in the lower part of the screen, you can read the current values of :
- Credit

- Power

- Energy

REFRESH [F1] : refresh the values of Credit, Power and Energy.
OK [ENTER] : confirm and save the configuration.
DISCARD [ESC] : exit without save the configuration.

₃Settings and Informations

3.1 Settings

In this window you select the general settings of the SEM program. The settings are as follows :
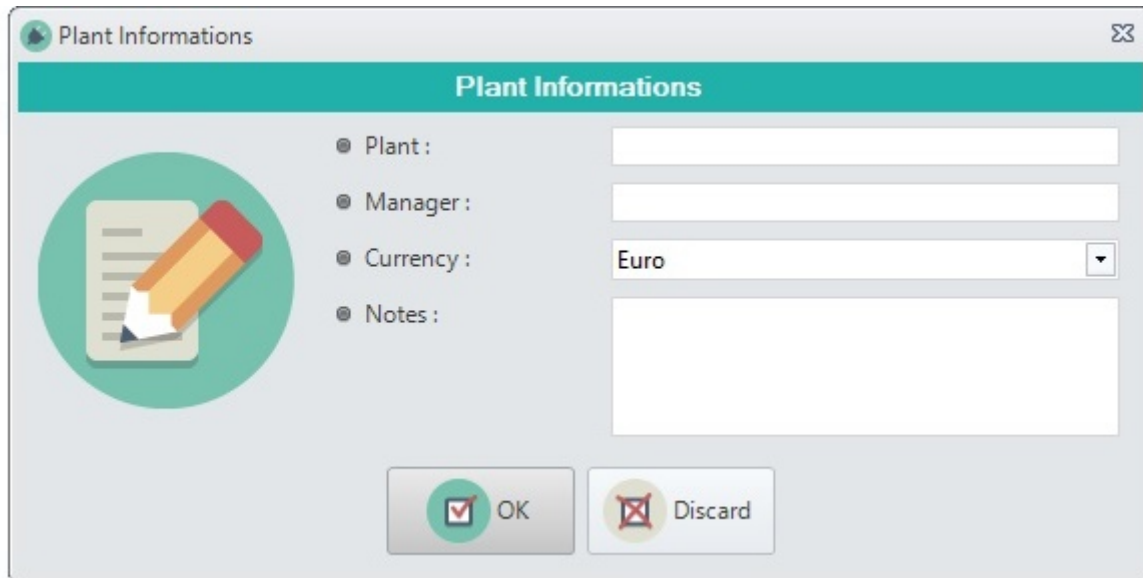
- **Select the type of communication between** :
  1. *Serial : PC COM Port and Baud Rate [default : 115200]*
  2. *Remote : IP Address and Port*

- **FTP Configuration :**
  1. *FTP : Authentication Required*
  2. *FTP Server*
  3. *FTP Username*
  4. *FTP Password*
  5. *Copy data on the FTP server : with this button you can send data (last week + last month + credit, power and energy... for each user) at the FTP server indicated. You can set paths in "Customer-User" windows [See paragraph "2.4 Costumer – User"]!*

- **Email Configuration :**
  1. *SMTP Port [default : 25]*
  2. *SMTP : Authentication Required*
  3. *SMTP Server*
  4. *SMTP Username*
  5. *SMTP Password*
  6. *Email [FROM]*
  7. *Subject*

- **Program Settings :**
  1. *Theme of the Program* (Blue, Silver, Black, Dark with effects Orange ...)
  2. *PC Language* (English, Italian, Polish or German)

- **Logo**

Select an image that will be the logo that appears on the bill in the Accounting window.
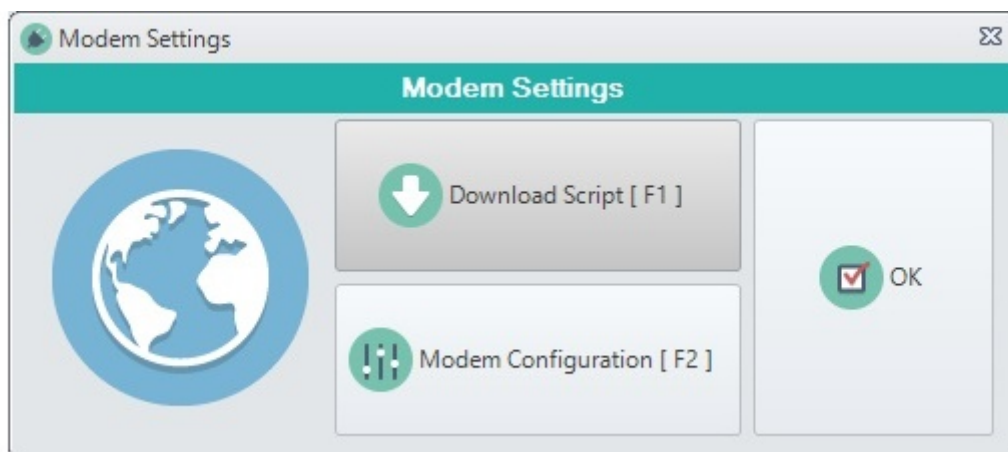
3.2 Plant Informations

In this screen you can set the following fields related to the plant :

Currency: Currency utilized. You need to select the currency from the list by choosing a present

- Plant : plant name
- Manager : Manager of the Plant
- Currency : Currency used. You need to select the currency by choosing one from the list
- Notes : General notes

3.3 Modem Settings

In this screen is managed the Modem (optional)! You can access this window only if you select " *MODEM = YES* " in the plant configuration!

You can perform the following operations :

1. Download the script inside the Modem.
2. Set the Configuration of the Modem and download it in the modem too.

3.4 Modem Configuration

The Modem Configuration includes the following items :

- **GPRS Access Point Name :**
  1. *GPRS APN (Tim, Vodafone or WIND)*
  2. *APN : Authentication Required*
  3. *GPRS Username*
  4. *GPRS Password*

- **FTP Configuration :**
  1. *FTP Server*
  2. *FTP : Authentication Required*
  3. *FTP Username*
  4. *FTP Password*
  5. *File Path*
  6. *File Name*

- **Email Configuration :**
  1. *SMTP Server*
  2. *SMTP : Authentication Required*
  3. *SMTP Username*
  4. *SMTP Password*
  5. *Email [FROM]*
  6. *Email [TO]*
  7. *Subject*

With the "**Configuration Download**" button starts the download of the configuration inside the modem.

3.5 Informations + Documentation
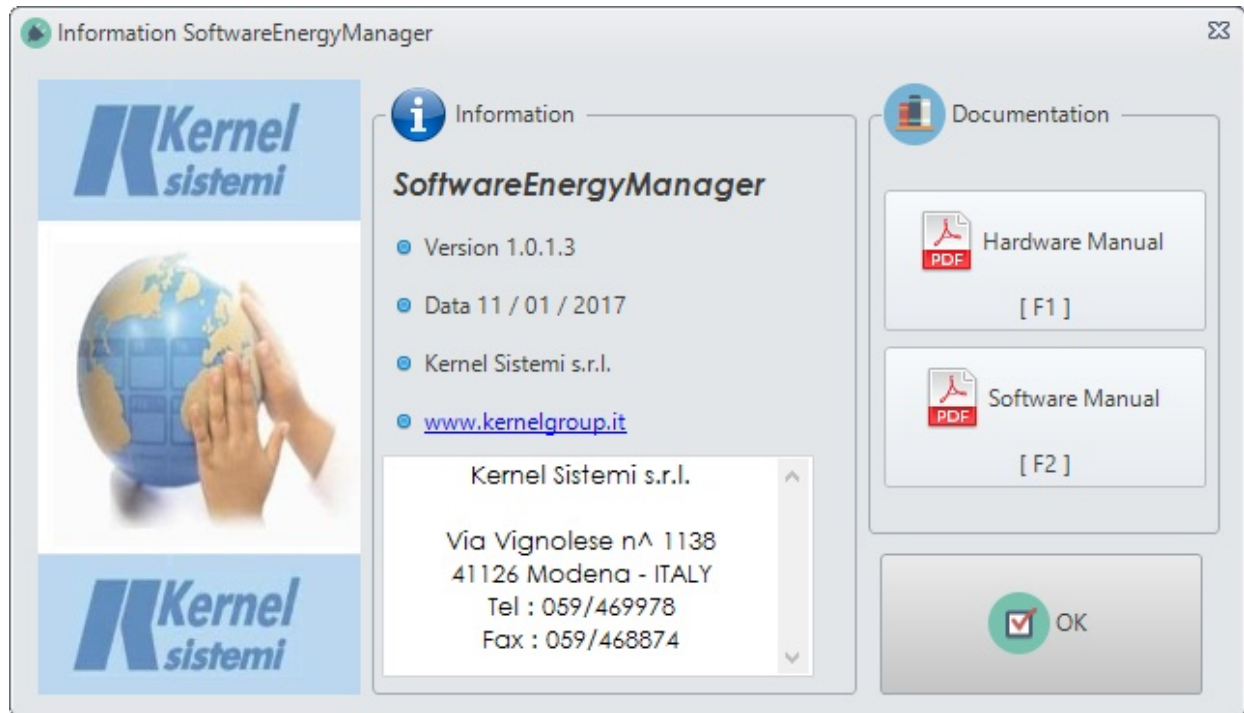
SEM program information :

- *Version : 1.0.1.3*
- *Data : 11 / 01 / 2017*
- *Producer : KERNEL Sistemi s.r.l.*
- *Site : www.kernelgroup.it*
- *Info :*

Kernel Sistemi s.r.l.
Via Vignolese n. 1138
41126 Modena – ITALY
Tel : 059 / 46 99 78
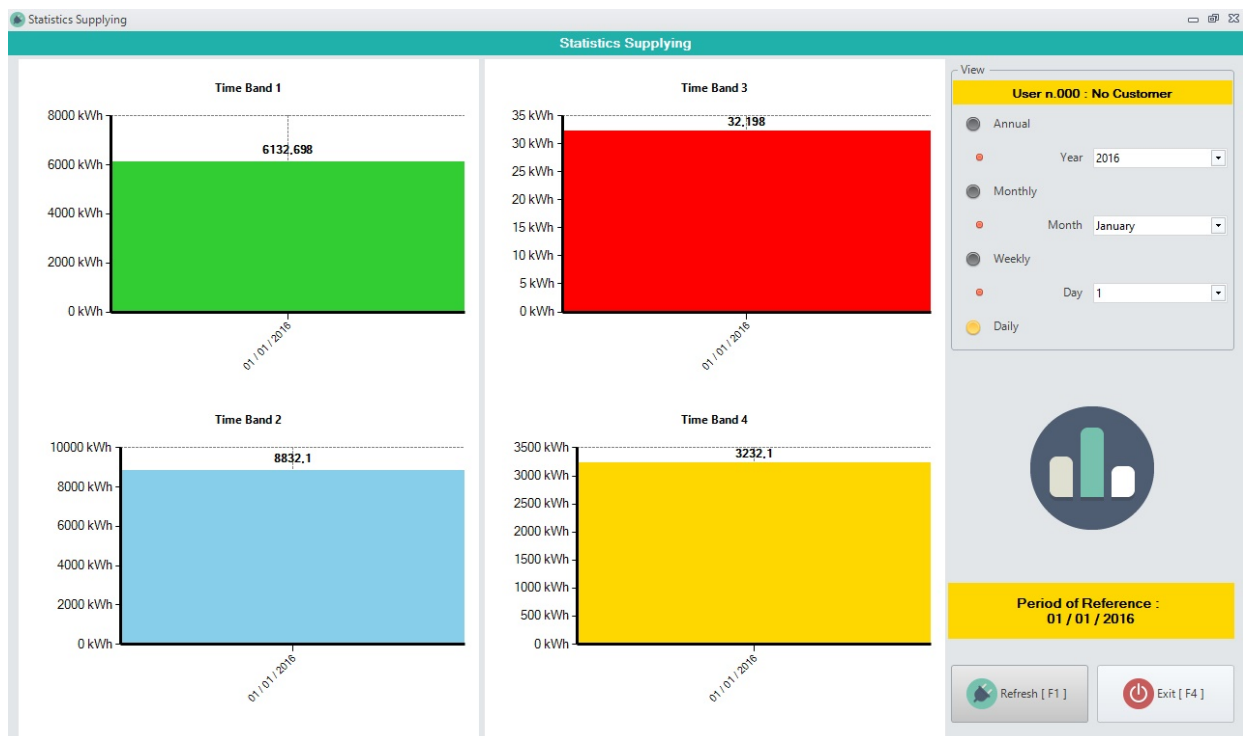**Fax : 059 / 46 88 74**

Available documentation :
Hardware Manual [F1] : Opens the hardware manual of the CEMxx
Software Manual [F2] : Opens the software manual (this document)

OK [Enter] : Exits the screen

4 Data Management

4.1 Statistics Supplying

This window displays the selected user consumption statistics, over a period of time set.
It displays a graph for each time band :
- *Band 1*
- *Band 2*
- *Band 3*
- *Band 4*

The periods of time that can be selected are the following :
- *Annual*
- *Monthly*
- *Weekly : You select the starting day*
- *Daily*

REFRESH [F1] : Updates the display of graphs
EXIT [F4] : Exits the screen

4.2 Accounting

In this window you see the bill (with consumption and related costs) of the selected user, within set time.
The total calculation is divided into various time slots (always with the display of consumption and costs) :
- *Band 1*
- *Band 2*
- *Band 3*
- *Band 4*

The periods of time that can be selected are the following :
- *Annual*
- *Monthly*
- *Weekly : You select the starting day*
- *Daily*

This screen displays the logo inserted in the General settings.

The bill can be :
1. **Printed** :

- *Print Preview [F1] : View print preview*
- *Print [F2] : Print bill*
- *Page Settings [F3] : Page settings*
- *Exit [F4] : Exits the screen*

2. **Sent by Email** : you can insert up to three destination email addresses

SEND EMAIL [ENTER] : Send an email with the selected bill
DISCARD [ESC] : Exits the screen

4.3 Prices and Credit

In this window are managed costs and Credits of the users.
- First of all you can set and send the individual prices of the various price ranges :
- *Band 1*
- *Band 2*
- *Band 3*
- *Band 4*
** N.B. : COSTS ARE THE SAME FOR ALL USERS OF THE PLANT **

SEND PRICES [F1] : Send the costs set to all users of the plant.

- Finally, you can set a new credit in the selected user using the appropriate button :
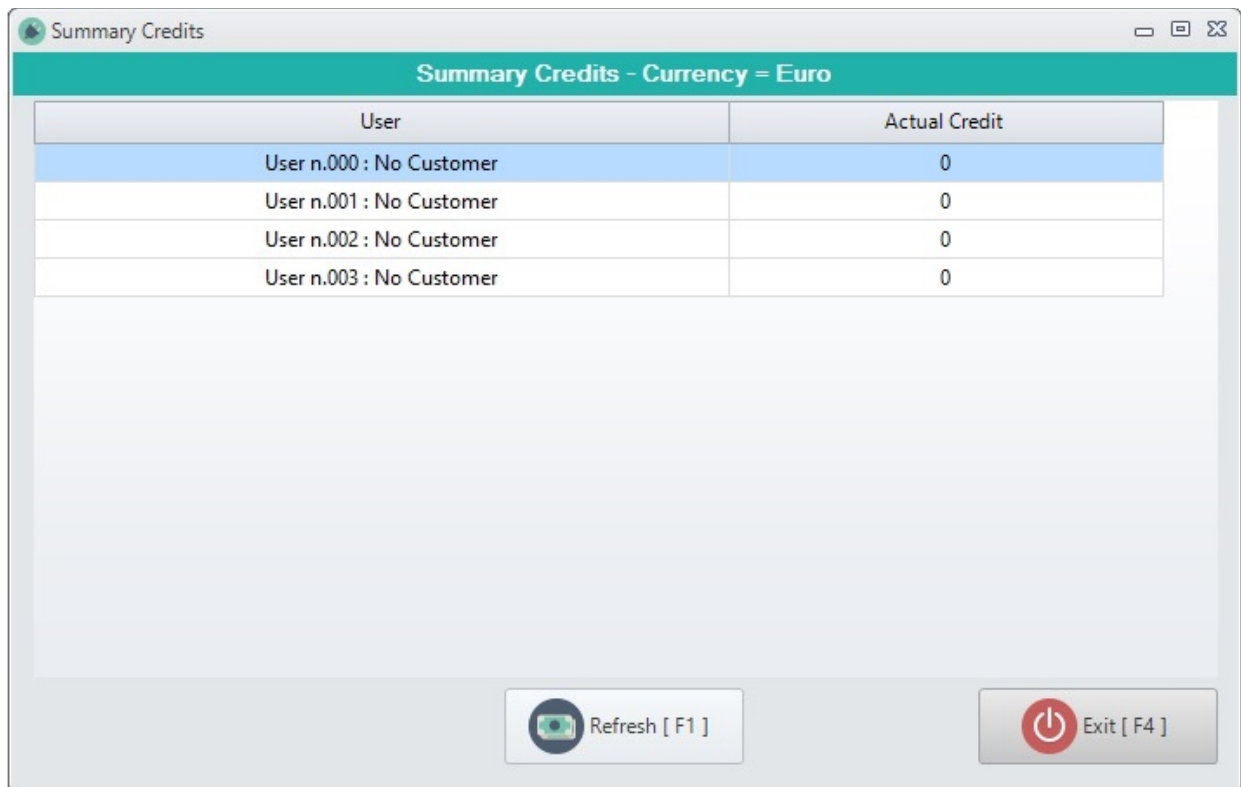**SEND CREDIT [F2]** : Send the Credit set to the selected user.

- General Buttons :
OK [Enter] : Save the costs set and leaves the screen
Discard [ESC] : Exit the screen without saving the costs

- Finally there is the key :
SUMMARY CREDITS [F3] : This button is used to view the summary of all credits of individual user of the plant. When you click on the button you open the following screen ...
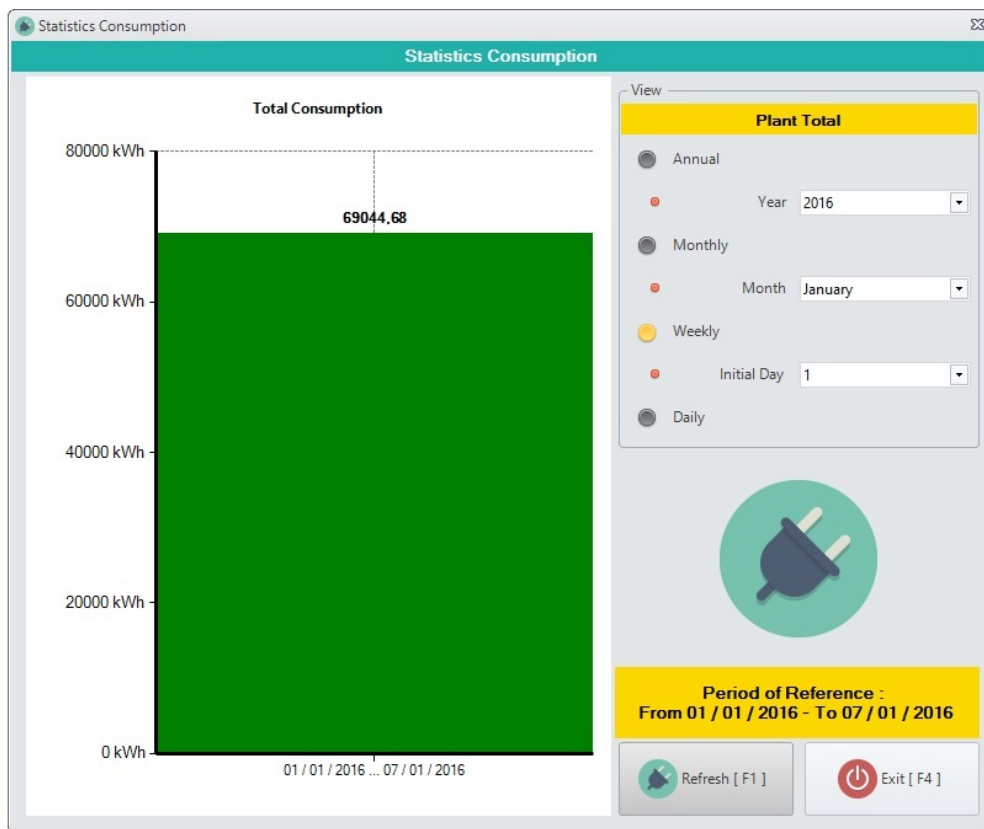

REFRESH [F1] : Updates the display of the Credits
EXIT [F4] : Exits the screen

5 Plant Management

5.1 Statistics Consumption

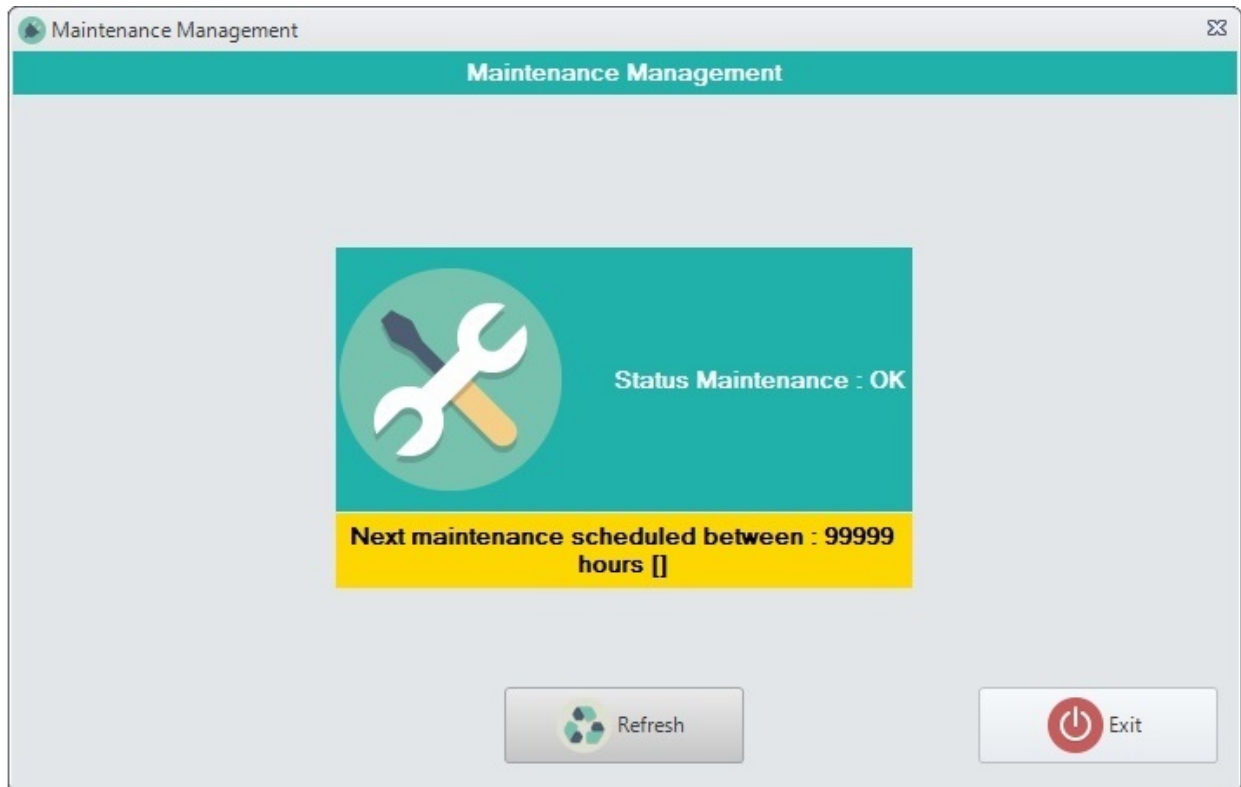This window shows the statistics on TOTAL PLANT consumption, within set time.

The periods of time that can be selected are the following :
- *Annual*
- *Monthly*
- *Weekly : You select the starting day*
- *Daily*

REFRESH [F1] : Updates the display of the Graph
EXIT [F4] : Exits the screen
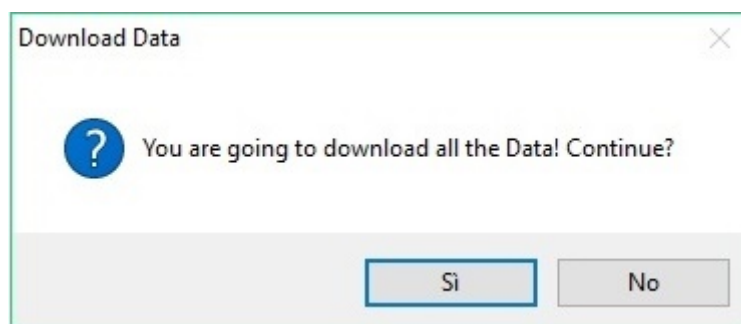
5.2 Maintenance

Maintenance management of the entire plant.

** CURRENTLY, THE MAINTENANCE IS NOT MANAGED **

5.3 Download Data

This button downloads the data from the PLC.