

### Routes:

After configuring a Plant, the user will have input into the DSP software all information needed to begin the predictive maintenance program: mechanical data on equipment; machine descriptions and related drawings; and the variables to be measured on each configured point.

Next, the user must organize and define measurement **routes**, which include the configured machinery, points, and the order in which measurement readings are to be taken and captured by the MX300 data collector. To build a new route, the user needs to login to the DSP software, then click on the ROUTES option:

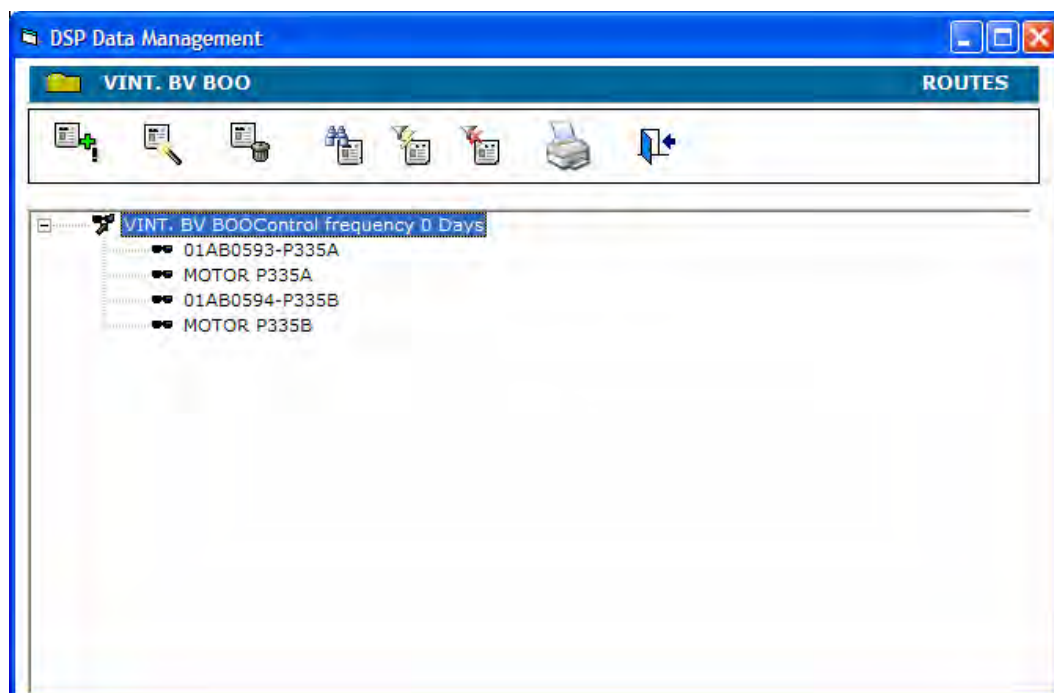
### ROUTES








#### Creating and Editing Routes:

To create a route, the first step is to think of an appropriate name.

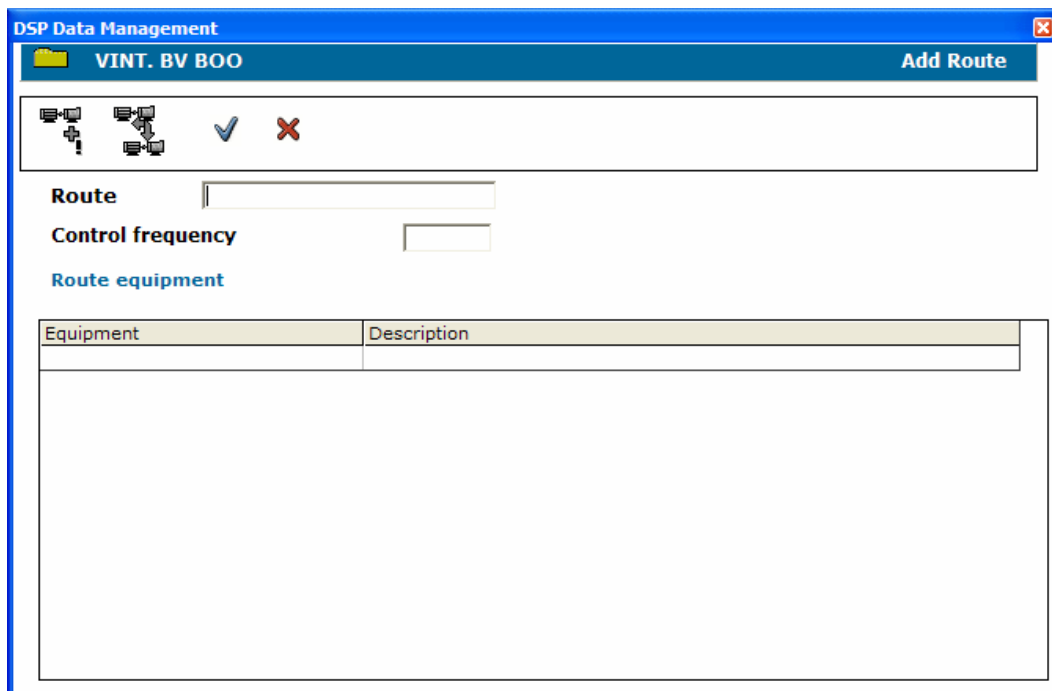
Next, to optimize the time spent on data collection, it is crucial to review the plant layout and decide the order in which measurements will be taken using the data collector on the route.

When the ROUTES window is open, an icon menu will be seen on the top of the window, like this:



	ICON to create/add a new route.
	ICON to edit an existing route.
	ICON to delete a route.
	ICON to perform a search.
	ICON to filter equipment.
	ICON to deactivate filter or to view all equipment.
	ICON to print equipment list.

To create/add a new route, click the NEW ROUTE icon. The Add Route window will then open.



**Route**

**Control frequency**

**Route equipment**

Equipment	Description

The first step is to input the name of the route. This name will identify the route in both the software and in the data collector.

The control frequency should be expressed in days. The control frequency value will determine if the route has “expired”, or in other words, if it has not been measured inside this given period.

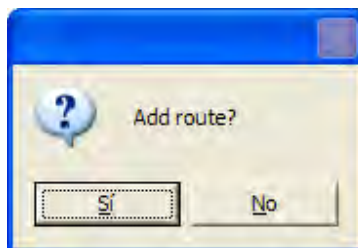
For each route created the ROUTES window will show the details of the equipment it contains, listed in the order in which the operator will take the measurements. This information will also be sent to the data collector.

Plants created in the software may contain any number of routes. The same equipment may be included in several different routes, depending on whether the monitoring schedules require it.

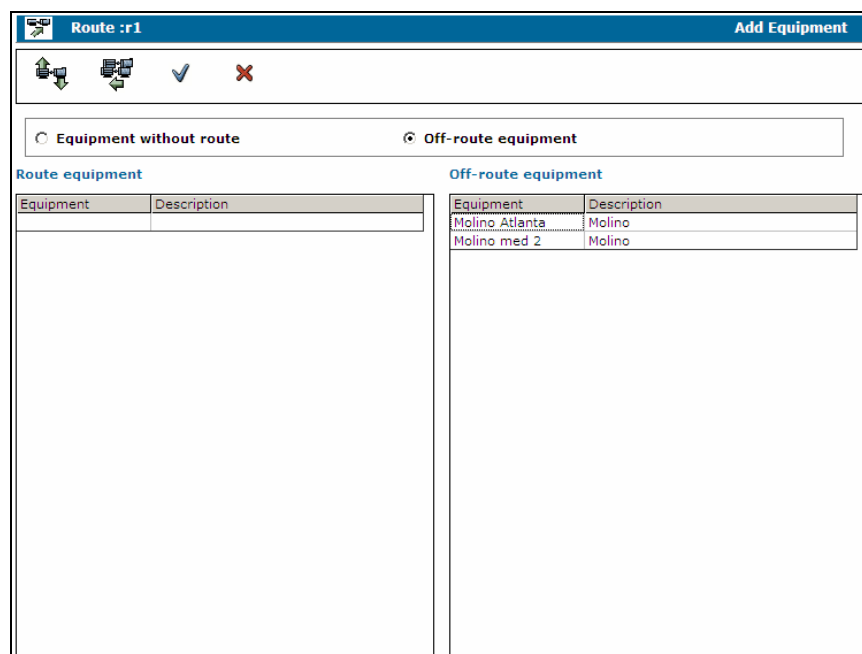
The second step is to add the equipment to be monitored. To proceed, click the "Add Equipment" icon, as shown here:



The program will then ask to confirm whether the route should be added. Click "yes".



Once the route is added, a window bearing the name of the new route will open. This window will show the equipment not in the route on the right-hand side, and the equipment included in the route on the left-hand side, as in this example:



All equipment can be selected and copied to the route by clicking the “Copy All Equipment” icon.

The order of the equipment can be modified by clicking the “Modify Order” icon.

To select and add specific equipment, make a double click on it, then right-click the mouse and select the “Copy” function. The equipment will then be added to the route.

### Non-route equip.

Equipment	Description
01AB0593-P335A	3K6X4X16/141RV
01AB0594-P	
MOTOR P335A	0164
MOTOR P335B	0165

For plants that have a large number of machines, the “Modify Order” icon may also be used in to view all equipment, listed in alphabetic order.

From the “Add Equipment” window, deletions can also be made, by selecting the equipment, right-clicking on the mouse, and selecting the DELETE function.

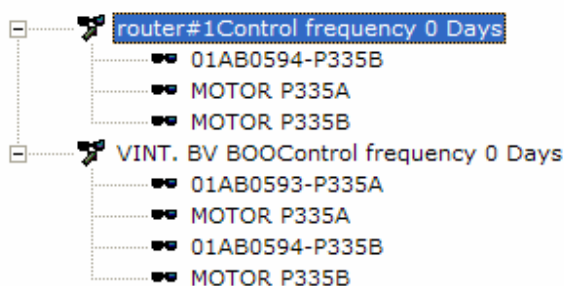
### Route equipment

Equipment	Description
01AB0594-P335B	3K6X4X16/141RV
MOTOR P335A	MOTOR WEG 75HP BA70164
MOTOR P335B	MOTOR WEG 75HP BA70165

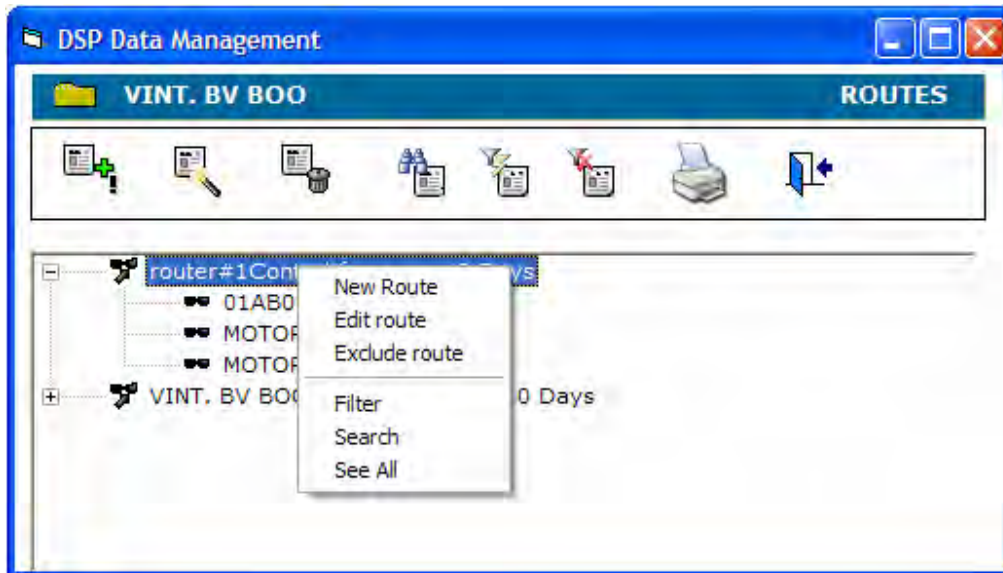
When the addition of equipment to a route is completed, the “Edit Route” screen will list all equipment included in the route, in order.

### Summary of Measurement Routes:

On the “Routes” window the software displays a list of all routes created in the plant, indicating the control frequency for each. By clicking a route, a tree diagram will show all equipment the route contains, as seen here:

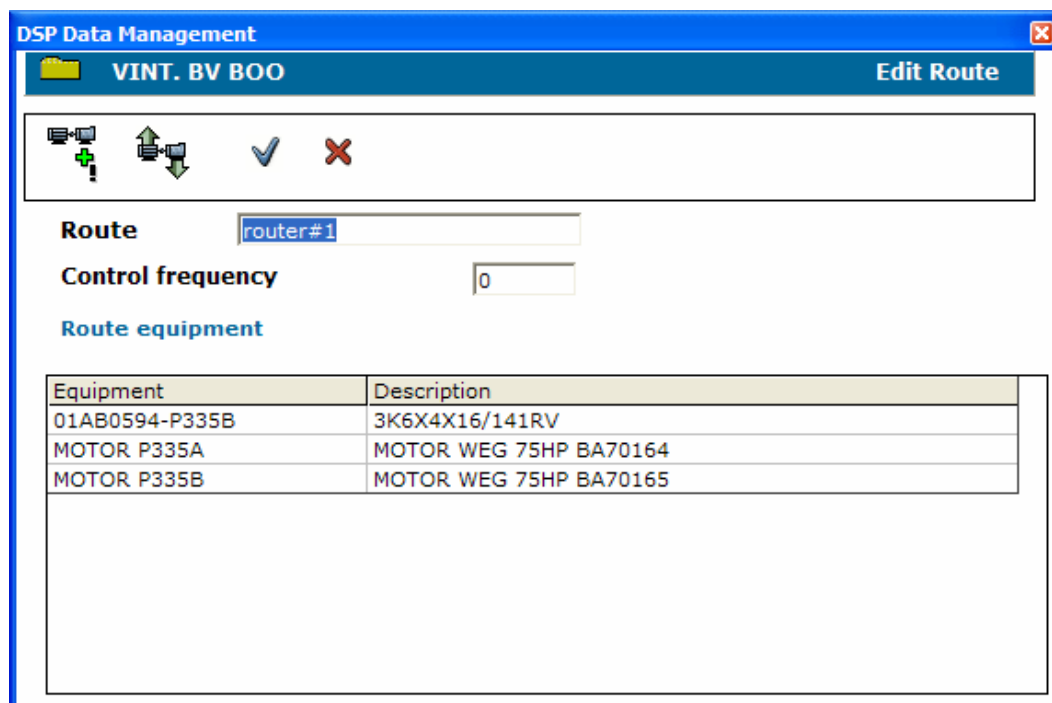


As in other windows of the software, functions for the items listed can be accessed by right-clicking the mouse.



From this window, it is possible to delete a complete route or to create a new one.

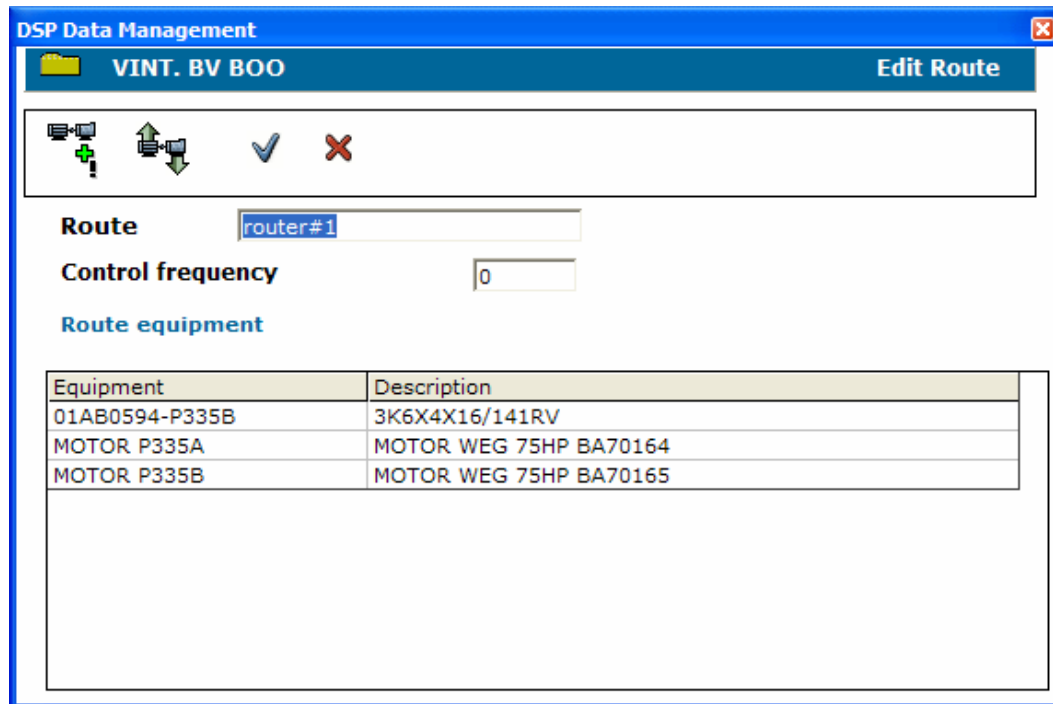
A change in the order of any equipment, or to delete equipment, may be performed by editing the route.



**The Equipment Order:**

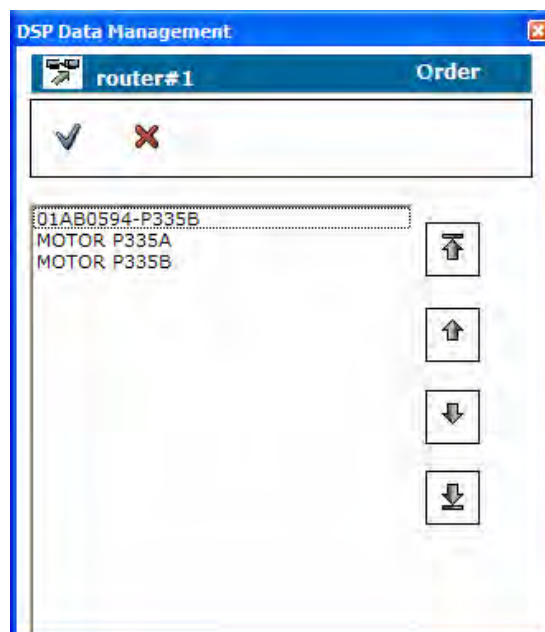
The order or sequence of equipment in a route may be changed at any time. The order may be changed each time a transfer is performed.

Selecting the “Edit” function, the window will show the two tools available: “Add Equipment” and “Modify Order”.



Equipment	Description
01AB0594-P335B	3K6X4X16/141RV
MOTOR P335A	MOTOR WEG 75HP BA70164
MOTOR P335B	MOTOR WEG 75HP BA70165

To change the order of the equipment, click the “Modify Order” ICON:

Route order can be modified with these functions:



Positions the selected equipment at the top of the list.



Moves the selected equipment up one position.



Moves the selected equipment down one position.

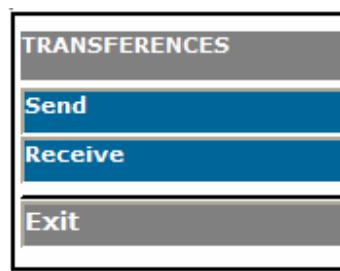


Positions the selected equipment at the bottom of the list.

### Transfers between DSP Software and MX300 Data Collector:

The TRANSFER application of the software manages sending routes to, and receiving data from, the data collector. To perform transfers, a special program is used to communicate between the MX300 and the computer. This program divides TRANSFERS into two functions: **send** and **receive**.

For managing transfers, select the TRANSFERS option from the initial window, and the TRANSFERS function window appears:



### TRANSFERS - Send:

From this application, data from routes is **sent to** the MX300 data collector. As the data collector can receive only one package per transfer (from all the routes from the plants), it is necessary to select which package is to be received.

The package may be created from the “TRANSFERS” box, by selecting the routes from the available plants.

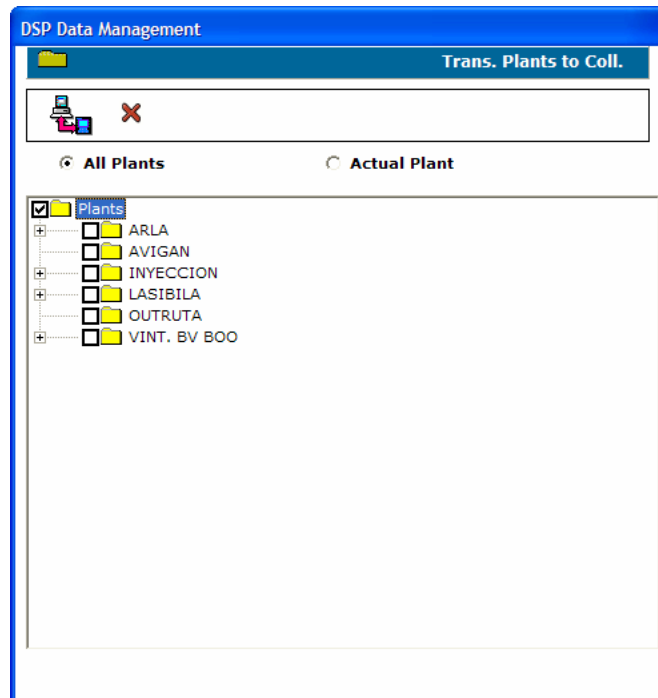
Select from these options:

☐ **All Plants**

☒ **Actual Plant**

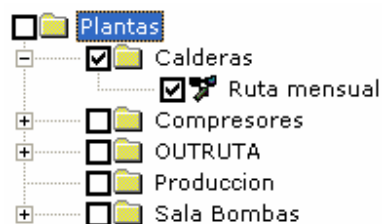
This option optimizes the selection time and updates required when a Transfer is performed. After a plant is selected from this initial screen, and TRANSFER function is activated, the system will show the selected plant and all its related sub-plants.

If it is desirable to transfer another route from other plant, the option **All Plants** must be chosen. In such case, access to all routes of all plants is obtained.



The list of routes for Plants and Sub-Plants is shown in a tree diagram, and on each tree branch there is a check-box to make one's selection.

Selecting a high-level box (for an entire route) will automatically select the low-level boxes underneath. Selection must thus be made with care..



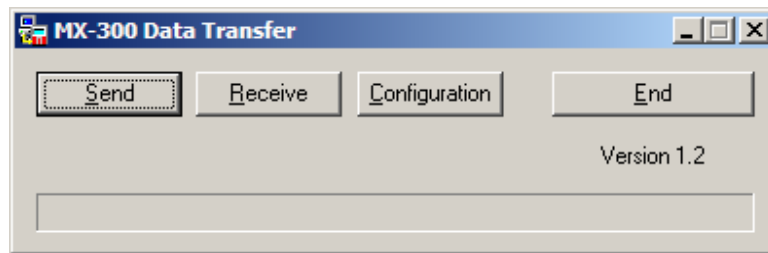
After the Routes are selected, the program will generate a file that it will transfer to the MX300, after the user clicks this ICON:



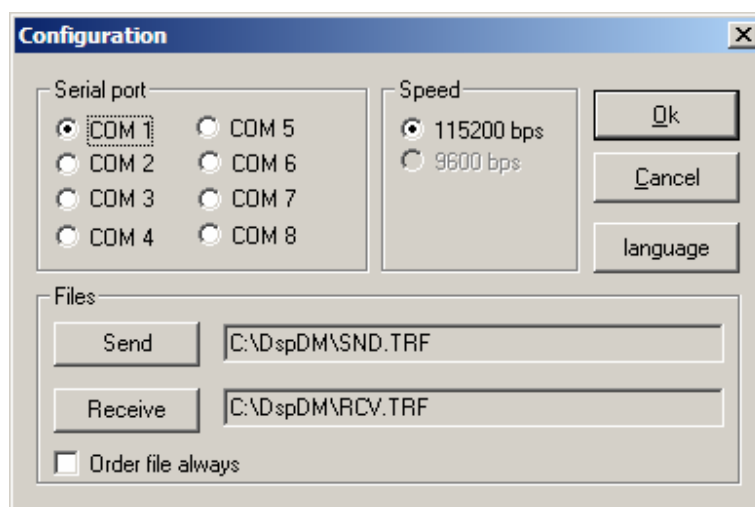
A bar will indicate the progress of this operation. After the file with information of each plant is completed, the software will open a DATA TRANSFER window.

Inside this window are available options, such as changing transmission speed, configuring the port, configuring the transfer file for the send/receive functions, etc.





The configuration of the transfer program is automatic and made in the first transfer from the PC to the MX300. However, via changes to the port or otherwise, it is possible to manually access the configuration, via the **CONFIGURATION** button, which opens this window:



#### Data Transfer Program - Configuration Window:

**COM Port:** Select the available port in the PC for connecting the transfer cable.

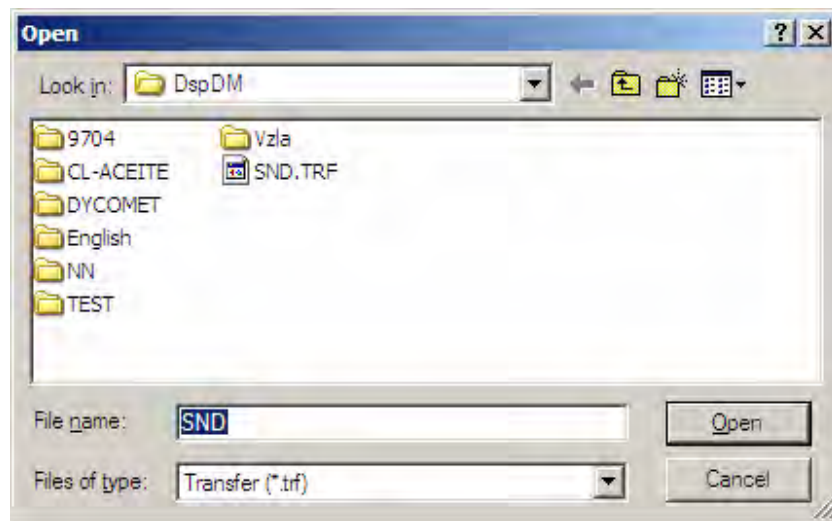
**Speed:** Always select the 115200 value. Only in the case that a communication arises would a slower speed be selected.

**Files:** Configure the files to be read by the MX300, and later the file that it will create when it transfers when the measurements are completed.

If the installation does not show the configuration of the file in this window, a new configuration must be done so the MX300 is prepared to receive and send data.

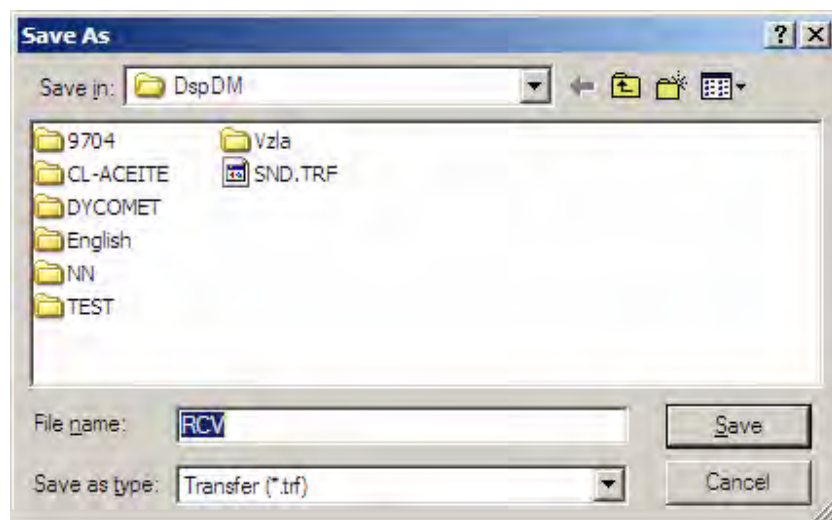
#### File Configuration:

When the SEND button is clicked, a window opens for the selection of the corresponding file:



Search in the PC's drive where the DSP DM software was installed (for example, in the C:\DSPDM directory). When found, select the file SND.TRF by using the "Open" command.

When the RECEIVE button is clicked, a window will open for the selection of the corresponding file.



Again, search the drive where the program DSPDM was installed, open it, and select the file RCV.TRF. If the file does not exist type RCV in "File Name" as indicated in the above window, and save the selection with the "Save" command.

**Files Always Requested:** The program will open a dialog window to specify the location of a file, whenever sending or receiving.

**DO NOT Select in Normal Operation:** This command allows sending the Transfer file which contains the equipment to be monitored.

### IMPORTANT

When performing data transfer to the MX300, **first** activate the **Receive** command in the data collector, then click **Send** in the PC software.

### E-Mail Transfers:

In some cases, when the PC and the MX300 are separated physically, for example, a remote operator may send the data route and equipment package by using this function.


To activate this application, follow the same procedure described before for a Transfer, except click on this ICON:



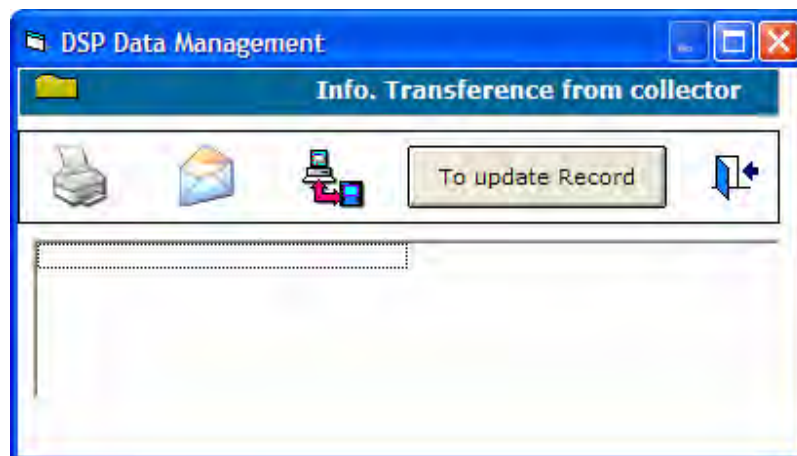
### TRANSFERS - Receive:

Using this application, the DSP software can receive the measurement data taken on-site by the MX300 data collector.

When the window is open, select the application TRANSFER in the initial screen found at the start of the DSP program.

With the ICON  the Transfer program will open to communicate from the MX 300 to the PC.

This application allows DSP software to receive the Transfer file containing data from equipment already monitored.



### IMPORTANT

When the data is transferred to the PC, **first** activate the **Receive** command in the PC and then the **Send** command in the MX300.

After the Transfer is complete, the values must be entered into the database of the system, using this command:

To update Record

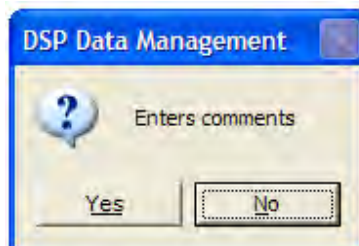
When this command is running, a bar will indicate the progress of the operation. When complete, a screen will show a list of the sent and/or received data in a widow like this :

Equipment	Point	Measurement	Condition	Comment	Date	Hour	Value	
01AB0594-P335B	1H	SPCAL	Without Meas.		02/03/2006	:55:09 a.	0,63	
		SPCVL	Without Meas.		02/03/2006	:55:09 a.	2,01	
	1V	SPCAL	Without Meas.		02/03/2006	:56:09 a.	0,29	
		SPCEL	Without Meas.		02/03/2006	:56:09 a.	0,33	
	1A	SPCAL	Without Meas.		02/03/2006	:56:09 a.	1,69	
		SPCVL	Without Meas.		02/03/2006	:56:09 a.	0,48	
MOTOR P335A	3H	SPCAL	Without Meas.		02/03/2006	:56:09 a.	2,01	
		SPCVL	Without Meas.		02/03/2006	:53:09 a.	0,15	
	3V	SPCAL	Without Meas.		02/03/2006	:54:09 a.	0,37	
		SPCEL	Without Meas.		02/03/2006	:54:09 a.	0,25	
	3A	SPCAL	Without Meas.		02/03/2006	:54:09 a.	0,48	
		SPCVL	Without Meas.		02/03/2006	:54:09 a.	0,25	
	4H	SPCAL	Without Meas.		02/03/2006	:54:09 a.	0,14	
		SPCVL	Without Meas.		02/03/2006	:54:09 a.	0,93	
		SPCAL	Without Meas.		02/03/2006	:54:09 a.	0,11	
		SPCVL	Without Meas.		02/03/2006	:54:09 a.	0,34	

In this window the measurement values and status of the measurements obtained on-site with the MX300 data collector can be seen.

By double-clicking the the mouse on the measurement, the spectrum of the measurement will be seen.

When printing a spectrum from this screen, the system will ask whether the user wishes to enter comments:



When “Yes” is selected, a text-entry window will appear as follows.



Any entered comment will remain associated with the equipment and will be listed in the spectrum. It can also be considered as a request for repairs or maintenance on the equipment.

This is an example of a repair order related to the equipment and the spectrum

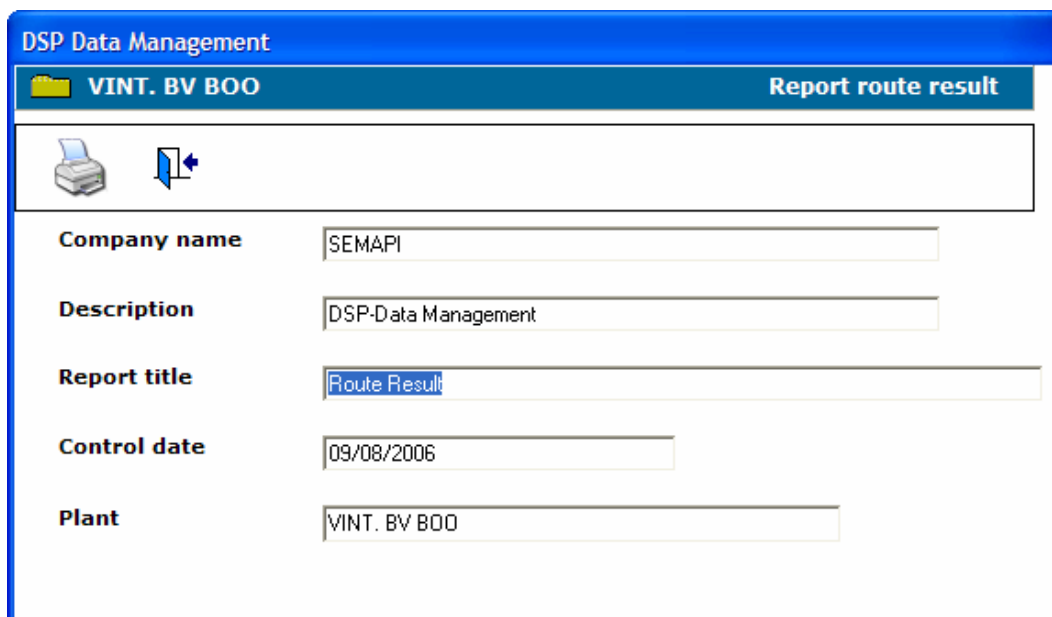
When the list of data received from the MX300 is printed, the software will generate a report of the measured plant, indicating the repairs detailed in each spectrum.

An asterisk (\*) will designate all equipment for which a repair order is printed and indicated in the spectrum.

The equipment with no repair order will be identified with an **N**. The equipment that was not operating when measurements were taken will be identified with a **P**.

### Report Data :

Before printing a Report, the data detailed in the last screen must be entered.



The screenshot shows a software window titled "DSP Data Management". Inside, there is a header bar with a folder icon, the text "VINT. BV BOO", and a button labeled "Report route result". Below the header, there is a section with a printer icon and a document icon with a plus sign. The main area contains a form with the following fields:

Company name	SEMAPI
Description	DSP-Data Management
Report title	Route Result
Control date	09/08/2006
Plant	VINT. BV BOO

Upon leaving the application after a data report is generated, the legend DELETING AUXILIAR will appear.

This legend does not mean that the data records are being deleted; it simply indicates the deletion of data stored on an auxiliary file.

### **E-mail Transfers:**

The software allows e-mail transfer of data on measured plants. This can be done manually or automatically.

The default setting on the software is manual. To send an e-mail with such data it is necessary, after the Transfer from the MX300 to the PC is complete but before entering data, to activate this command:



The software will open the address book to select the recipient of the e-mail. When the e-mail is sent, it will be necessary to enter the values to the database. It is not necessary to do this before entering values. Whenever this function is activated, it will send the last transfer entered into the system.

In the automatic setting, the data transfer will be done when the command for sending values is activated.

Before updating the database, the software will create an e-mail containing the Transfer file. When the address is selected, the e-mail will be sent out. After that, the database will be updated. To activate this command, the line of the file DSPDM.INI must be corrected to read as follows:

SendTranfeXMail=0