

Using SKF MARLIN (Machine Reliability Inspection System) as an Information Center

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Introduction

Involving operators in a plant's reliability procedures often requires that documents and spreadsheet data be available to the operator in the field. This may not be possible if data is kept locked in filing cabinets or in a PC. This application note describes how information can be made available bidirectionally using SKF MARLIN Windows CE devices.

Information, not data

Many industries have operating procedures, machine setup and process setup information available in control rooms and offices. If this information is not made readily available to operators, it is a wasted opportunity to improve machine reliability.

With standardized documents and data formats, this information can easily be placed in the hands of operators and maintainers when they need it, at the machine.

What is required?

The new generation SKF MARLIN platforms are ideal data managers and information centers. They are supplied with the SKF MARLIN Machine Inspector software that can be used to replace the paper log sheet method of gathering machine performance and condition information. The SKF MARLIN data manager hardware uses a Windows CE operating system and, as a result, has the ability to store and display Windows format documentation and data.

Using some very simple tools that are available through the Machine Analyst software or through a third party supplier, such as Word documents and Excel spreadsheets, data can be transferred to/from the SKF MARLIN hardware (SKF MARLIN data manager) and displayed as required. This application note is not intended to discuss all forms or documents that may be used; it merely examples how data may be managed, transferred, input and synchronized between your host PC and the SKF MARLIN data manager (MDM).



Procedure

When the MDM is not used with SKF MARLIN software, the MDM needs to communicate with the host PC using a protocol called "ActiveSync". This communication protocol is available from Microsoft's website: <http://www.microsoft.com/mobile/pocketpc/downloads/activesync35.asp>.

Note that ActiveSync is not required when MDM loads and unloads its ROUTE data from SKF's PRISM⁴ Surveyor, Machine Inspector or Machine Analyst data management software. When installed, ActiveSync displays its icon in the right of the Windows task bar (→ **fig. 1**).

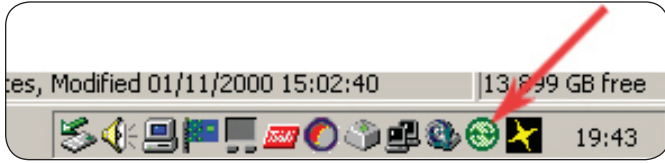


Fig. 1. ActiveSync icon.

Before proceeding, you must enable direct connections on the MDM.

- On the MDM, select **Start/Control Panel/Communications**. Select the **PC Connection** tab and enable the **Enable Direct Connections** checkbox.
- With ActiveSync installed on the PC and the MDM enabled for direct communications, turn the MDM on.
- Connect the MDM to the PC using a serial cable. ActiveSync will start the ActiveSync wizard to connect your MDM to the PC.



Fig. 2. ActiveSync installation wizard.

There are two ways to connect your MDM to the PC: connect as a guest or as a partnership.

Connect as a guest

This allows you to transfer files between the PC and SKF MARLIN using Windows Explorer. The SKF MARLIN will appear to be another device on your PC, as if it were a floppy disk or network drive to or from where the files are transferred.

Connect as a partnership

This automatically creates a synchronized files folder, allowing files to be automatically synchronized whenever the SKF MARLIN is connected. You can set up a number of partnerships with different SKF MARLIN devices, as long as each device is given its own personality (→ fig. 3).

During the ActiveSync installation, you are prompted to create a partnership with your mobile device. You must create a partnership between your computer and your MDM. This partnership specifies how information is synchronized (passed back and forth) between your PC and the MDM. After you identify the MDM in the ActiveSync File menu, ActiveSync manages synchronization of specified files between the two devices.

When you set up a partnership, you select synchronization and file conversion settings that are stored in a file on your PC. This file enables your PC to manage synchronization with the MDM (→ fig. 3).

Partnerships have the same name as the corresponding device. Your PC can set up partnerships with many different mobile devices, but a device can have partnerships with only two PCs. Having two partnerships enables you to share your personal information software and other information among three computers, the two PCs and the MDM. Regardless of where you are viewing information, you will have the latest information readily available.

If you wish to manage your data and information in a dynamic manner, continuous synchronization is preferred.

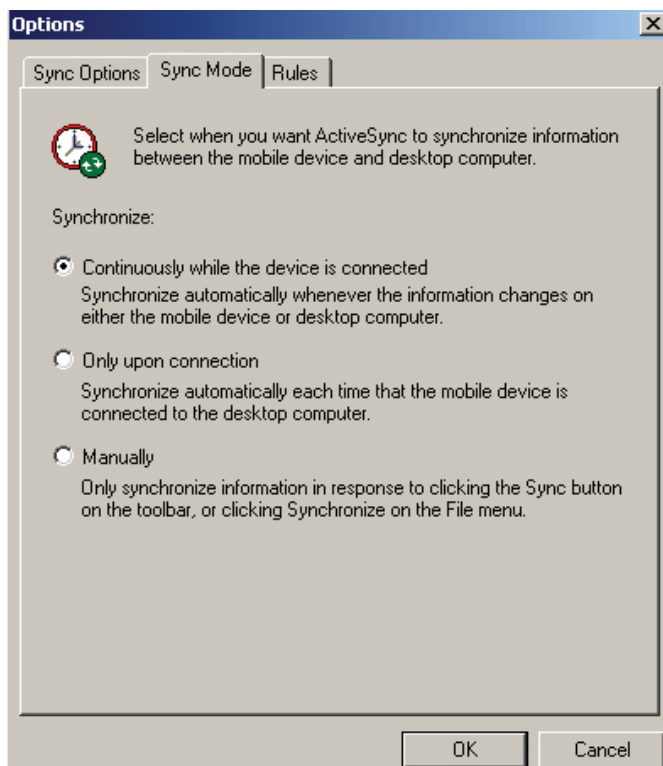


Fig. 3. ActiveSync Options dialog.

Managing connections

Due to PC limitations and communication ports, conflicts may occur when using synchronization software. They may also occur when using cell phone synchronization software to manage address book details. The best way to avoid this is to stay in control of the connection at all times.

If the **Connection Settings** dialog's **Allow serial cable...** checkbox is enabled, the PC is continuously monitoring the serial port, waiting for a device to connect. In this case, if you attempt to use SKF's Machine Inspector software to load or unload an MDM, you will receive a communication error in Machine Inspector.

When connecting to the PC to transfer ROUTES or data between Machine Inspector and an MDM, the **Allow serial cable...** checkbox must not be selected.

To connect and synchronize using ActiveSync (→ **figs. 4 and 5**):

- Enable the **Allow serial cable...** checkbox, then connect the MDM's serial cable to the selected COM port and click the **Get Connected** button; the MDM will connect. If you selected the **Sync Mode** tab's **Synchronize: Continuously** option, the files on the PC and MDM will automatically synchronize to the file with the latest timestamp. That is, between the two devices, the file with the most recent timestamp will automatically be copied over the file with the older timestamp.

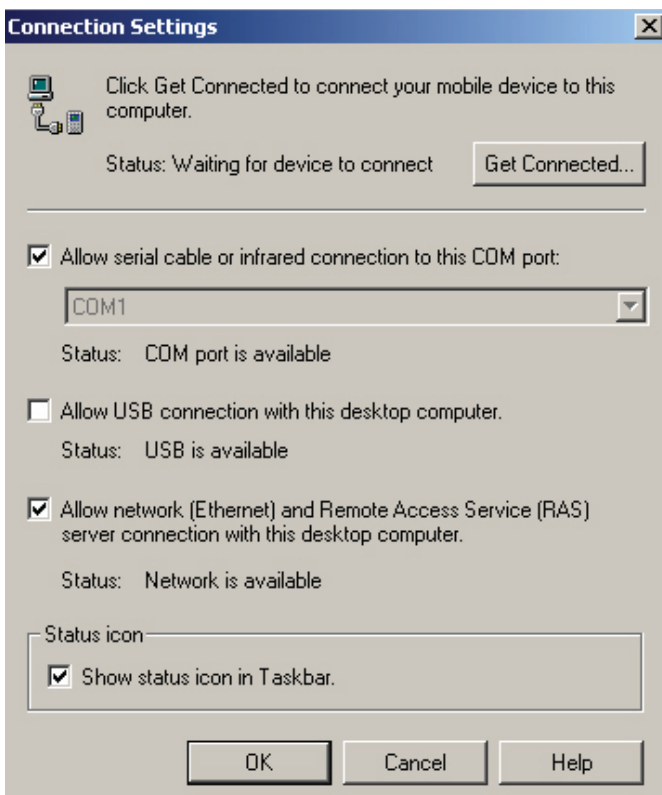


Fig. 4. ActiveSync File menu's Connection Settings dialog.



Fig. 5. ActiveSync Details window.

Transferring other files or programs

Files can also be transferred using Windows Explorer. If you choose the **My Computer** icon from the Windows desktop when the MDM is connected, you will be able to manage files on the MDM as if it were another device on the PC or network. For example, you can use copy/paste commands to transfer files between the PC and MDM. All of the features work with the SKF MARLIN Pro-NI, SKF MARLIN Pro-IS or SKF MARLIN Pocket Pro products.

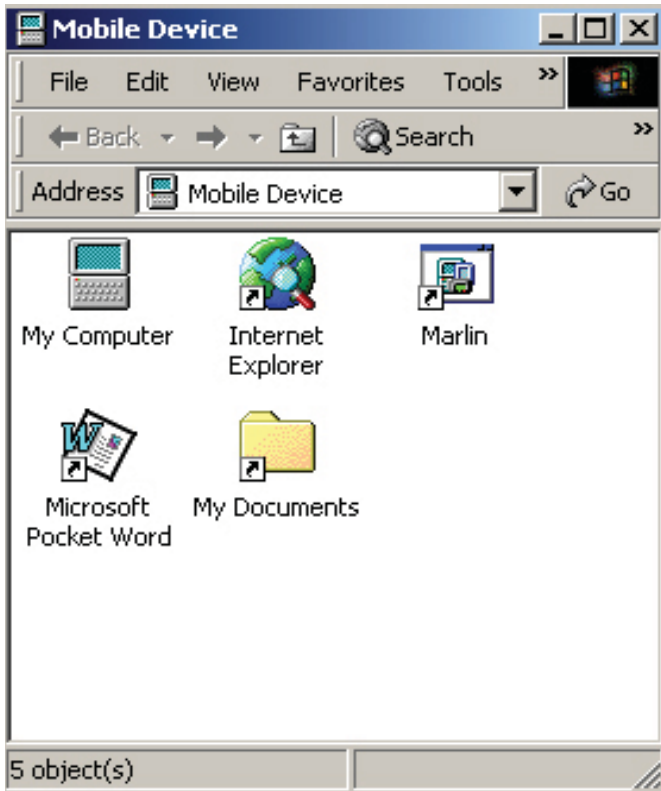


Fig. 6. Mobile Device folder using Windows Explorer.

Examples

Following are examples of files and programs that can be used to allow the SKF MARLIN to be used as an information center.

The SKF MARLIN Pro NI and IS use Windows CE version 2.11. This indicates that they have Pocket Word already installed. This allows the SKF MARLIN to be used for machinery information documentation. Refinery information systems, for example, contain a vast amount of information on how the machinery and systems should be operated; these are sometimes called Equipment Operating Procedures. This can be made available as a Word document on the SKF MARLIN.

Inspection routines, such as sensory oil tests, may need to be carried out in a certain manner. The SKF MARLIN ROUTE based program can be used to schedule and trend the results, but a Word document may be required to ensure that the correct methods are used to test the oil.

In **fig. 7**, the SKF MARLIN program has been used to schedule and record plant data, but Pocket Word has been used to inform the operator how to take tests of the lube oil, and also to prompt the operator to take certain readings on a pump under test to ensure it is running on its curve.

When the relevant files have been identified, they should be saved in the synchronized files folder that is relevant to the particular instrument or operator. The files should then be identified as being required for synchronization in the ActiveSync program's **File Synchronization Settings**.

Whenever the MDM, with the personality of the preset instrument, is connected to the PC and ActiveSync is activated, these files will be synchronized by transferring the copy with the latest timestamp from either the host PC to SKF MARLIN or from SKF MARLIN to host PC.

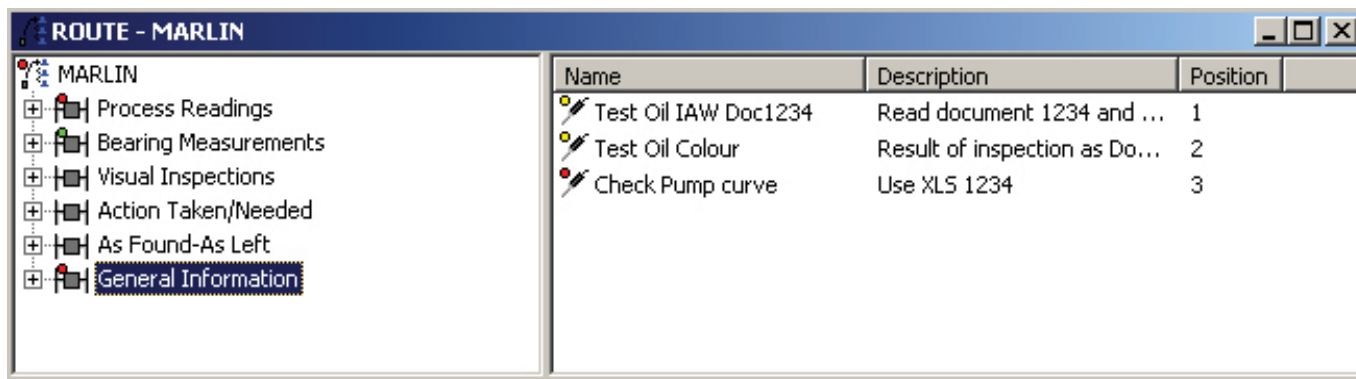


Fig. 7. SKF MARLIN used to schedule and record plant data.

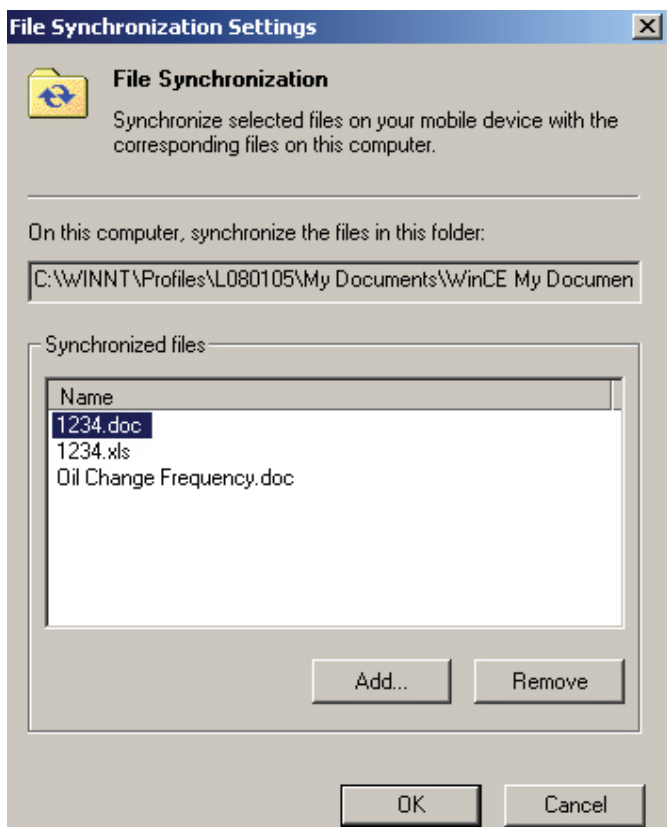
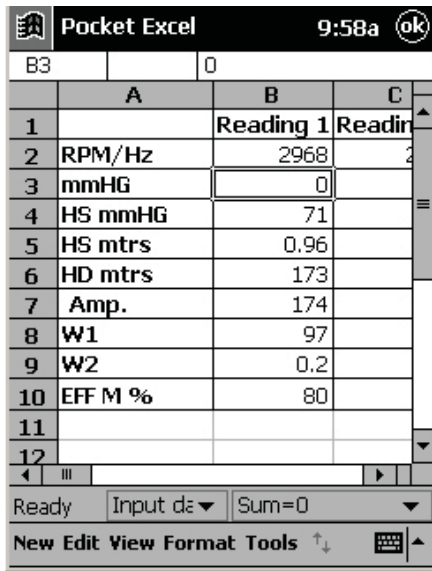


Fig. 8. ActiveSync File Synchronization Settings window.

Pocket PC

The SKF MARLIN Pocket Pro uses a different version of the Windows CE operating system, called Pocket PC, which has PocketWord and Pocket Excel.



	A	B	C
1		Reading 1	Reading 2
2	RPM/Hz	2968	
3	mmHG	0	
4	HS mmHG	71	
5	HS mtrs	0.96	
6	HD mtrs	173	
7	Amp.	174	
8	W1	97	
9	W2	0.2	
10	EFF M %	80	
11			
12			

Fig. 9. Pocket Excel.

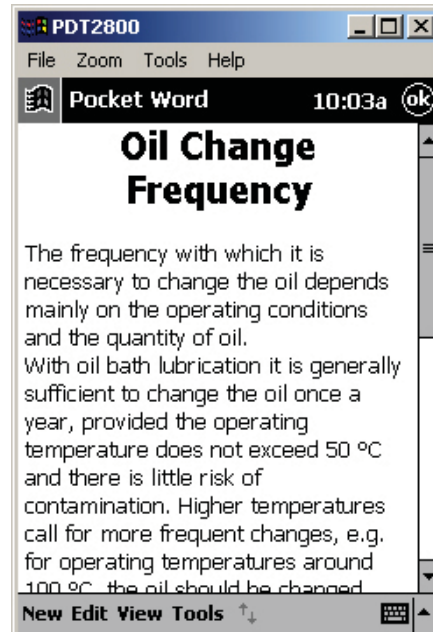


Fig. 10. Pocket Word.

Using Excel files makes the SKF MARLIN an even more powerful information system. Files such as pump curves and fan performance data can be stored on the MDM and made available in the field, when performance checks are required.

For example, on the MDM, the SKF MARLIN program can be used to schedule data collection for a machine's efficiency rating. During data collection, the operator can switch from the SKF MARLIN program to Pocket Excel, enter the appropriate machine information, and use an Excel spreadsheet to calculate efficiency. The resulting efficiency data can then be stored in the MDM's SKF MARLIN program for system-wide distribution and trend comparison to other machinery operating parameters.

Another example of using industry standard file formats is when interfaces to systems such as CMMS are required. In these cases, there is a strong possibility that the CMMS system can read an Excel or Access database file. The SKF MARLIN can be used to collect and store data. The data can then be transferred and a master document updated using Windows synchronization tools. This can then be read by management software systems and the data can be turned into necessary information.

Excel is not preinstalled on the SKF MARLIN Pro-IS and Pro-NI, but third party applications are available that can be used to read and edit Excel spreadsheets in the same manner. Use care when choosing the third party application, as it needs to be compatible with the processor fitted to the SKF MARLIN Pro hardware. One system that has been used successfully is SpreadCE. It is available as a download from www.byedesign.co.uk and can be evaluated as a shareware product before purchase. The version that is compatible with the SKF MARLIN Pro and Pro-IS is the MIPS HPC, so you need to download the **spremhen** file. The executable program can be loaded to the SKF MARLIN by copy/paste operation after synchronizing with ActiveSync.

It is highly recommended that an ATA flash storage card be used for the storage of all files used; this will ensure file security even if batteries are allowed to fully discharge.

Summary

The use of Windows technologies enables the SKF MARLIN system to be used as a flexible data and information platform. Examples shown in this document are suggestions on managing data. Individual operations and maintenance requirements will identify specific procedures for using the SKF MARLIN as an information center in your facility.

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