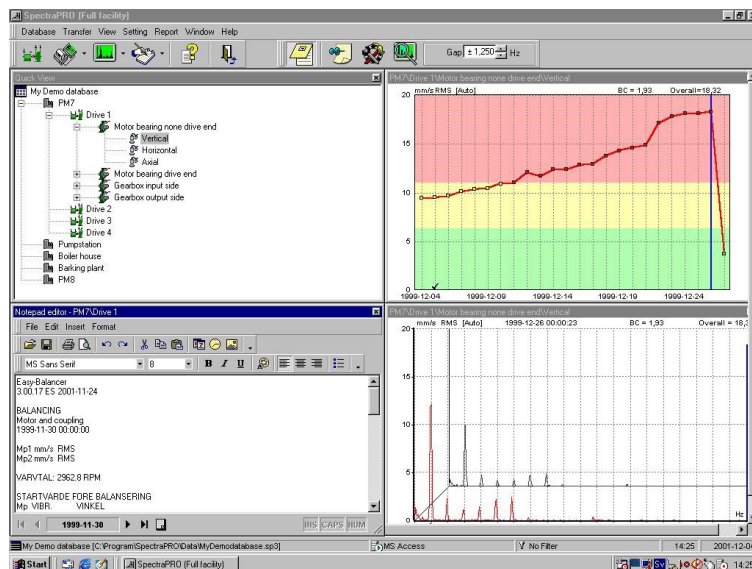# SpectraPro

Smart products for smart people

SpectraPro is an anaysis program for VIBER X5™

X-Viber, Easy-Viber and Easy-Balancer.

SpectraPro

With:

Easy Database design with templates and machine pictures

- Alarm indicators in the database tree

Calculation of machine fault frequencies including a bearing database

Several shaft speed tools at evaluation with

- Speed set in database
- Calculated speed
- Measured speed
- Selected speed

Transfer analysis based on alarm settings and fault frequencies

Note pad for:

- Machine description
- Evaluation results and maintenance actions

Spectrum view options with:

- Quick view
- Spectra from the whole machine
- Selected spectra
- Trend of total and bearing condition levels

Spectrum analysis with:

- Harmonic and side band cursors
- Calculated fault frequencies
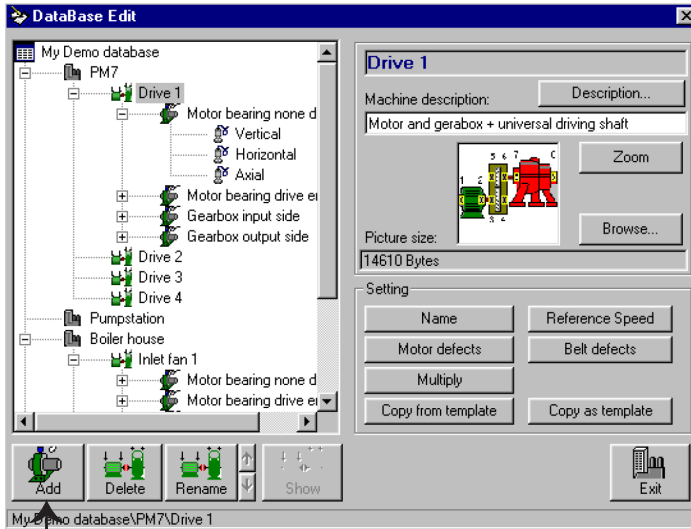- Reference spectra
- On line list with the highest levels

Automatic report generators for:

- Job reports
- Machine history reports
- Machine description and machine properties
- Transfer reports
- Spectrum reports with automatic comparison with fault frequencies
- Trend reports

Narrow band analysis

- Analysis of the latest measurements
- Comparison with a reference measurement
- Possibility to create up to 32 bands for every measuring direction from calculated, defined or measured frequencies
- Automatic alarm setting from the reference measurement

Creating a database structure

DataBase Edit

My Demo database
- PM7
  - Drive 1
    - Motor bearing none d
      - Vertical
      - Horizontal
      - Axial
    - Motor bearing drive e
    - Gearbox input side
    - Gearbox output side
  - Drive 2
  - Drive 3
  - Drive 4
- Pumpstation
- Boiler house
  - Inlet fan 1
    - Motor bearing none d
    - Motor bearing drive e

Drive 1

Machine description: [Description...]

Motor and gerabox + universal driving shaft

[Zoom]

Picture size: [Browse...]

14610 Bytes

Setting
Name	Reference Speed
Motor defects	Belt defects
Multiply	
Copy from template	Copy as template

Add   Delete   Rename   Show   Exit

My Demo database\PM7\Drive 1

You can correct pictures of almost all formats to the database and also zoom the picture.

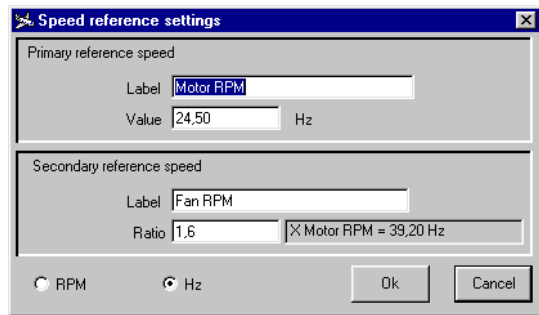**Settings** for calculation of fault frequencies such as:
- Rotor bars
- Power nets
- Bearings
- Gearboxes
- Belt drives
- Multiples (fan blades)

Harmonic and side-band frequencies are automatically calculated.

The **Add**-button is adding
- Departments
- Machines
- Measuring points
- Directions to the database

Setting of alarm limits. These levels are used for sorting machines in the transfer report and are also used at the trend display.

Alarm settings

Overall alarms

Unit [mm/s] [RMS]

Warning [ ] [2,80] mm/s RMS
Danger [ ] [7,10] mm/s RMS   [ISO 2372]

Bearing condition alarms

Warning [ ] [1,00] g
Danger [ ] [2,00] g   [BC Value]

Route settings

Max. spectrum freq. [2000] Hz
Spectrum resolution [0,5] Hz
Nos of spectrum sample [0]
Transducer selection [0]

Collected:
- ☑ BC
- ☐ Envelope
- ☐ Time signal

○ Hz   ○ RPM

[Copy]   [Paste]   [Save]   [Exit]

PM7\Drive 1\Motor bearing none drive end\Vertical

Speed reference settings

Primary reference speed

Label [Motor RPM]
Value [24,50] Hz

Secondary reference speed

Label [Fan RPM]
Ratio [1,6] [X Motor RPM = 39,20 Hz]

○ RPM   ● Hz   [Ok]   [Cancel]

The primary reference shaft speed is the basis for all fault frequency analysis. When this speed is changed all fault frequencies and the analysis are recalculated.
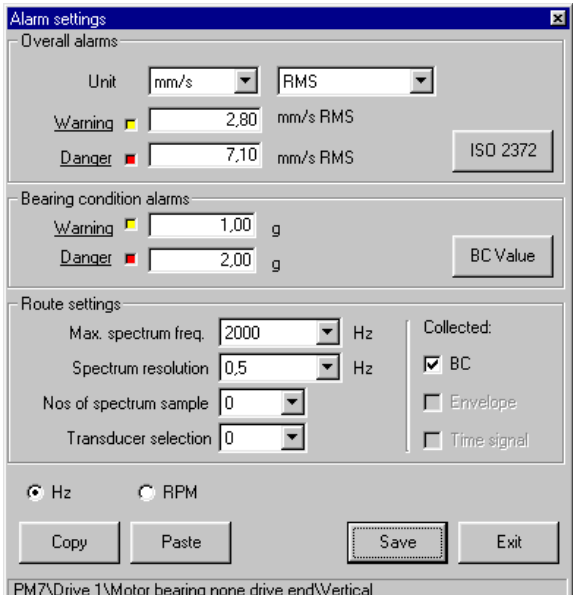
Frequency and resolution settings used at **Route measurements.**

Note! Works only together with the Easy-Viber instrument.

Calculation of mechanical fault frequencies

Belt Setting

Pulley

Speed

Motor RPM = 24,5 Hz

Pitch diameter

400 mm

Belt

Length 6250 mm

Frequency = 4,93 Hz

Frequency label Belt

○ RPM ● Hz Ok Cancel

Enter the diameter of the pulley and the length of the belt and the fault frequency is calculated

Gear box defects

Gear box definition

Motor rpm

49,5 Hz × 19 = 940,5 Hz

Gearmesh

Z1 Frequency label Z1

Output gear

17,41667 Hz × 54 = 940,5001 Hz Z2

Gearbox output

○ RPM ● Hz Ok Cancel

Enter the number of teeth and select the output shaft and the gear mesh frequency is calculated

Bearing Library

Manufacturer

McG
MES
MRC
NDH
NTN
REX
ROL
SEA
SKF

Bearing type

6203
6204
6205
6206
6207
6208
6209
6210
6211

d/D 0,2363
Z 7,998
Angle 0,0000 °

● Rotating inner race
○ Rotating outer race

BPFO 3,0540   FTF 0,3822
BPFI 4,9440   BSF 1,9980

New   New
Edit   Edit
Delete   Delete

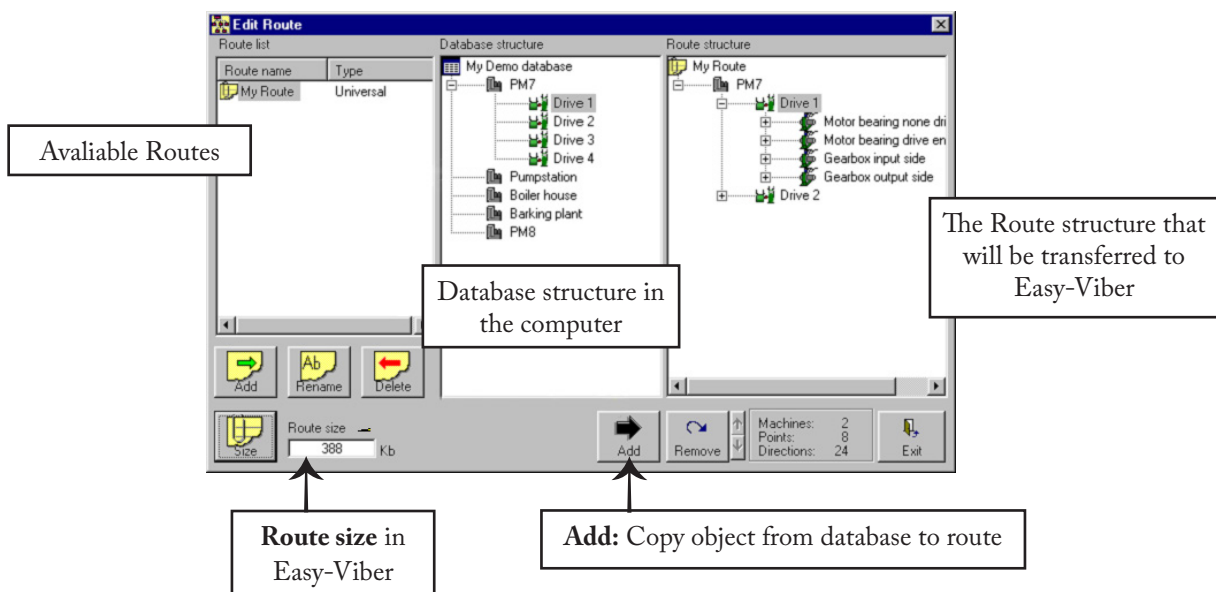Search   Ok   Cancel

Bearing manufacturer and Bearing type

Calculation of mechanical fault frequencies

You can connect 4 different bearings to the same measuring point
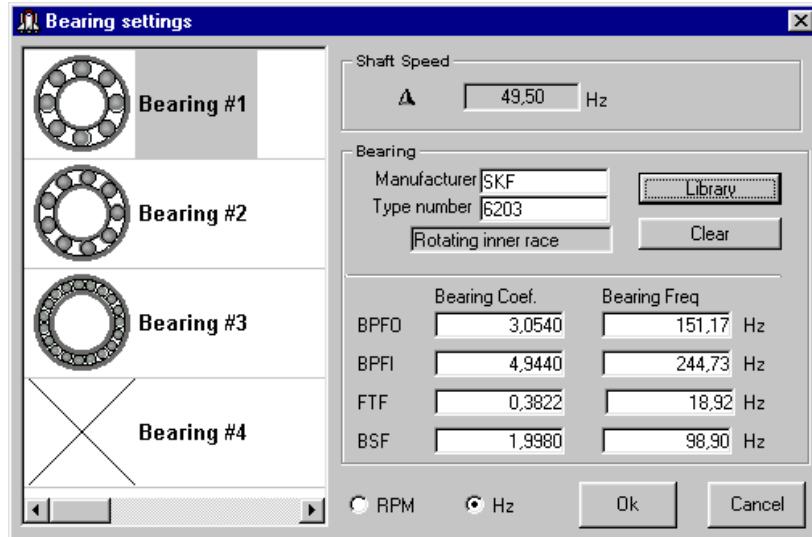
Calculated bearing fault frequencies.

Harmonics and sideband frequencies are automatically calculated at spectrum analysis.

Creating a Route

Avaliable Routes

Database structure in the computer

The Route structure that will be transferred to Easy-Viber

Route size in Easy-Viber
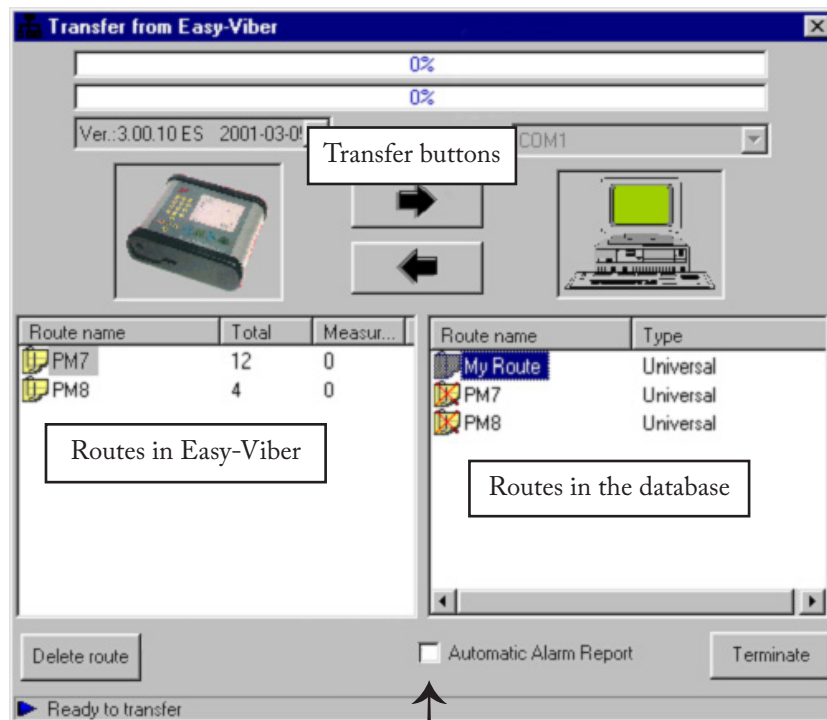
Add: Copy object from database to route

Instrument communication Route transfer Only with Easy-Viber

Select the instrument
Easy-Viber
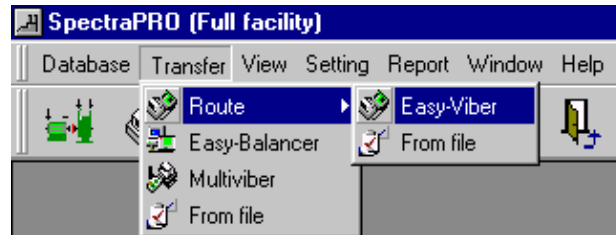
This window is used
for two way
communication

Transfer buttons

Routes in Easy-Viber

Routes in the database

A mark here will
generate a
transfer report

Transfer of a single spectrum and other information from Easy-Viber and Easy-Balancer to the SpectraPro program

Transfer from Easy Balancer

Spectrum data

Transfer button

3.00.10 E

Name	Date	N...	
INLET FAN1 1V	2001-12-06...	1/1	
EXHFAN2 1H3...	2001-12-06...	1/2	
EXHFAN2 1H3...	2001-12-06...	2/2	
EXHAUST FA...	2001-12-06...	1/2	
EXHAUST FA...	2001-12-06...	2/2	
INLET FAN1 2V	2001-12-06...		

My Demo database
- PM7
- Pumpstation
- Boiler house
  - Inlet fan 1
    - Motor bearing none driv
      - **Vertical**
      - Horizontal
      - Axial
    - Motor bearing drive end

Delete   ☐ Automatic delete   Automatic Alarm Report ☐   Terminate

▶ Ready to transfer data

You can select the type of data to be transferred:
- Spectrum
- Coast-Down
- Balancing

Click the data that should be transferred

Measurements in the instrument

Database structure in the computer

Click the target, where the data will be stored and press the transfer button

A mark here will generate a transfer report

Route inspection code

Code no.	Description
1	Bearing temp
2	Bearing leakage
3	Hot bearing
4	Bearing noise
5	
6	Hot sealing
7	Seal leakage
8	Seal noise
9	
10	
11	Water temp
12	Water leakage
13	Water pressure
14	0
15	0

Print   Exit

With the route inspection code you can transfer both text messages and pre-made messages from the instrument to the computer

Transfer of a single spectrum and other information from Easy-Viber and Easy-Balancer to the SpectraPro program

In the SpectraPro menu there are three different program parts for loading data to a file for later transfer to the database or for emailing

- MSDE Database manager
- Easy-Balancer transfer to file
- Easy-Laser transfer to file
- Easy-Viber transfer to file
- EB and EV software loader
- Multiviber transfer to file
- Protection key test
- SpectraPro
- Translate message
- Uninstall SpectraPro
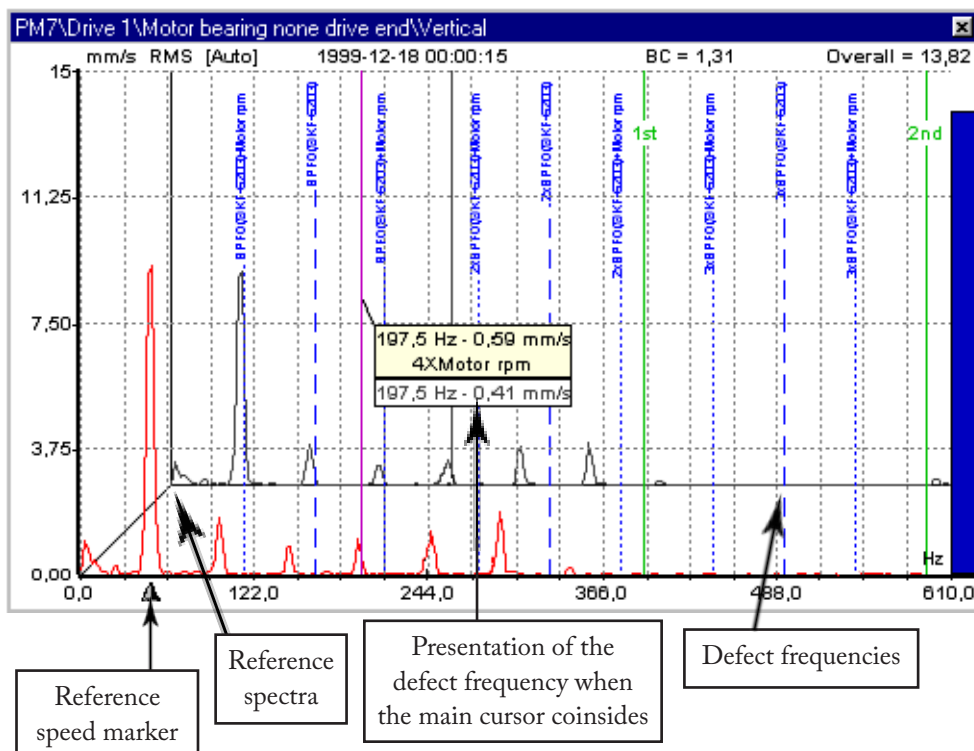- GraphView editor
- SpectraPro help

Transferring measurements from VM110 to SpectraPro

From the VM110 the measurements can be transferred in three different ways.
- Scheduled
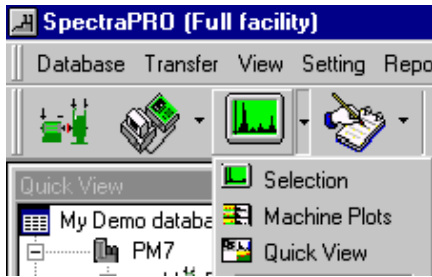- On alarm, up to ten stored measurements can be included
- Manually

The transfer works on-line via the SpectraLive software

Analysing a spectrum with SpectraPro

Reference speed marker

Reference spectra

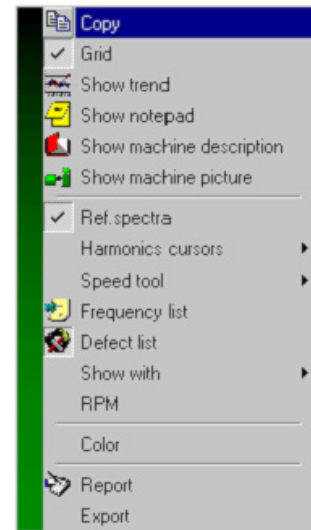Presentation of the defect frequency when the main cursor coinsides

Defect frequencies

Analysing a spectrum with SpectraPro

You can cause view the spectra in many ways:

- Selected spectra from the whole database
- All spectra from a whole machine
- Database tree, trend, spectra and notebook

Click on the right mouse button and you will activate the spectra tools window
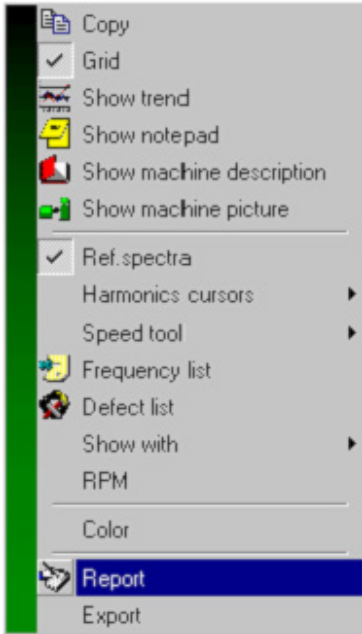
Quick analysis

Instead of analysing each frequency in the spectra you can use the window with the 30 highest peaks with automatic:

- Sorting with the highest levels first
- Estimation of correct peak level and frequency
- Comparison between the spectra frequencies and the calculated fault frequencies
- The fault frequency labels will be presented for all frequencies the coincide

PM7\Drive 1\Motor bearing none drive end\Vertical

| Nos	Hz	im/s RMS	Observation
1	48,80	10,68	Motor rpm, Nätfr , 6XRemfel
2	292,91	1,91	6XMotor rpm, 3XBSF(SKF-6203)-2XMotor r
3	244,08	1,85	5XMotor rpm, 3XBSF(SKF-6203)-3XMotor r
4	97,60	1,74	2XMotor rpm, 6XRemfel +1XMotor rpm
5	195,11	1,11	4XMotor rpm, 6XRemfel +3XMotor rpm
6	146,38	1,00	3XMotor rpm, 6XRemfel +2XMotor rpm, 7X
7	9,27	0,48	4XPP , Remfel , 7XRemfel -1XMotor rpm
8	536,62	0,33	3XBSF(SKF-6203)+3XMotor rpm
9	24,04	0,29	10XPP , 3XRemfel
10	341,81	0,24	7XMotor rpm, 3XBSF(SKF-6203)-1XMotor r
11	37,05	0,12	?
12	61,28	0,10	3XFTF(F afnir-1105)
13	71,55	0,10	?
14	172,26	0,09	10XOutput gear , 3XRemfel +3XMotor rpm,
15	217,24	0,08	?
16	585,68	0,08	?
17	439,32	0,07	9XMotor rpm, 3XBSF(SKF-6203)+1XMotor r
18	388,43	0,07	3XBPFO(SKF-6203)-2XMotor rpm, 3XBSF(S
19	105,90	0,06	Remfel +2XMotor rpm, 7XRemfel +1XMoto
20	368,76	0,06	?
21	781,07	0,06	?
22	121,33	0,05	7XOutput gear , 3XRemfel +2XMotor rpm

Automatic report generators

Click the right mouse button
and then on Report

With the spectra window active the report generator will automatically create this report with the selected Spectra and the Quick analysis in the same report

With the design Editor the user can change the design of all the report documents and also add their own logo
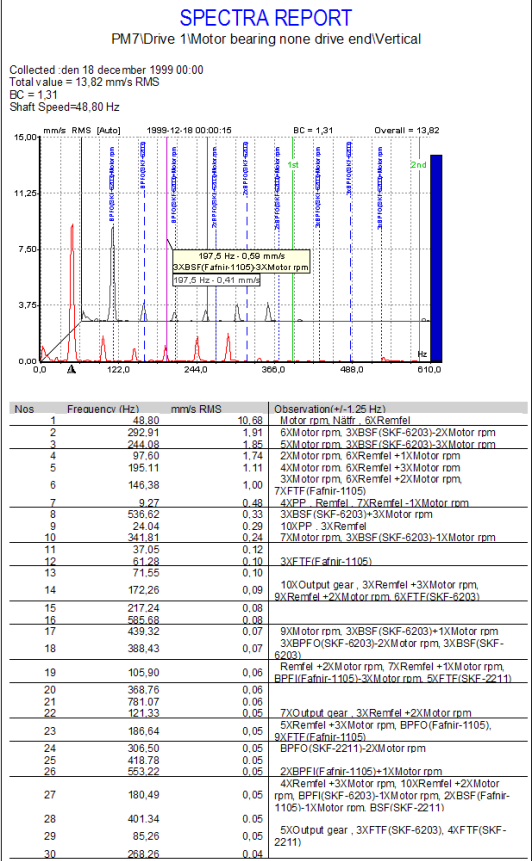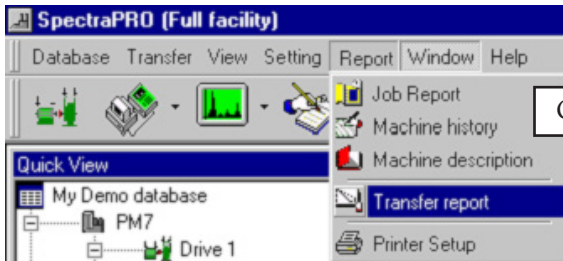
A click on the Word icon will automatically open the Windows Word program and paste this as a word document that can be edited as a normal word document
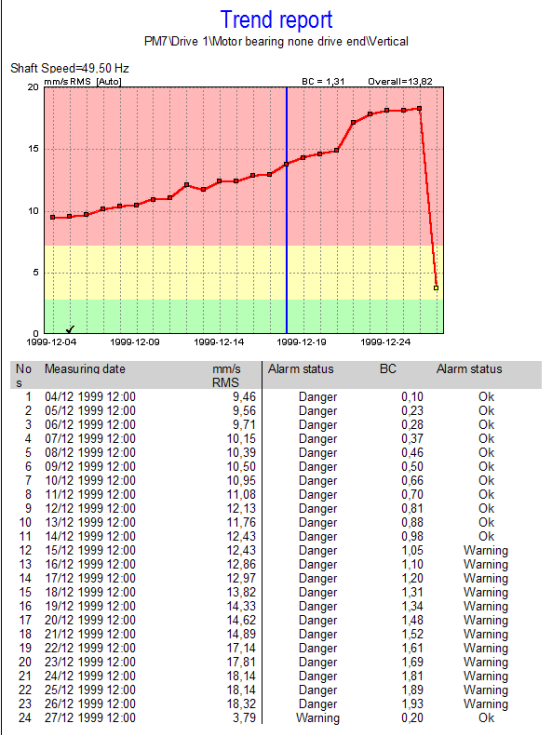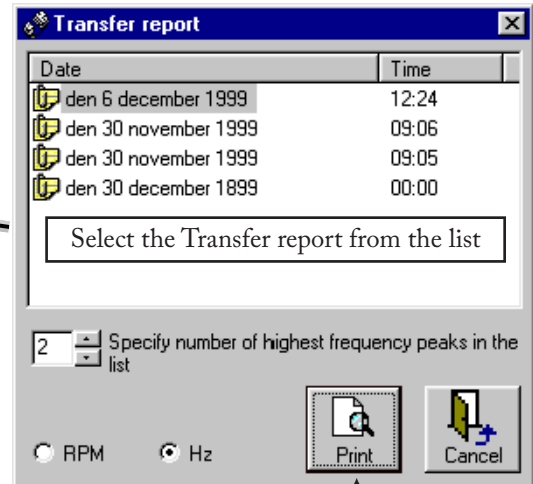
With the trend window active the report generator will automatically create this report with the selected Trend diagram and a list of all the measurements in the same report

Automatic report generators

SpectraPRO (Full facility)

Database Transfer View Setting Report Window Help

Job Report
Machine history
Machine description
Transfer report
Printer Setup

Quick View
My Demo database
PM7
Drive 1

Other reports

Transfer report

Date	Time
den 6 december 1999	12:24
den 30 november 1999	09:06
den 30 november 1999	09:05
den 30 december 1899	00:00

Select the Transfer report from the list

2 Specify number of highest frequency peaks in the list

RPM Hz Print Cancel

Press the Print button

Transfer report
Transferred measurements : den 30 november 1999 09:06

1. PM8\Drive 2\Motor bearing none drive end\Vert

Collected :den 30 november 1999 09:06 Alarm status Warning Danger
Total value = 1,617 mm/s RMS   Ok   4,500   7,100
BC = 0,21   Ok   0,50   1,00
Shaft Speed=24,74 Hz

Frequency list
Nos   Frequency (Hz)   mm/s RMS   Observation(+/-0,25 Hz)
1   24,74   1,143   PrimaryRPM
2   1385,76   0,706   2XRBP

2. PM8\Drive 2\Motor bearing drive end\Vert

Collected :den 30 november 1999 09:06 Alarm status Warning Danger
Total value = 1,374 mm/s RMS   Ok   4,500   7,100
BC = 0,08   Ok   0,50   1,00
Shaft Speed=24,74 Hz

Frequency list
Nos   Frequency (Hz)   mm/s RMS   Observation(+/-0,25 Hz)
1   24,74   0,972   PrimaryRPM
2   1385,76   0,600   2XRBP

3. PM8\Drive 2\Gearbox input side\Vert

Collected :den 30 november 1999 09:06 Alarm status Warning Danger
Total value = 1,539 mm/s RMS   Ok   4,500   7,100
BC = 0,27   Ok   0,50   1,00
Shaft Speed=24,74 Hz

Frequency list
Nos   Frequency (Hz)   mm/s RMS   Observation(+/-0,25 Hz)
1   24,74   1,258   PrimaryRPM
2   1485,76   0,031

4. PM8\Drive 2\Gearbox output side\Vert

Collected :den 30 november 1999 09:06 Alarm status Warning Danger
Total value = 2,001 mm/s RMS   Ok   4,500   7,100
BC = 0,08   Ok   0,50   1,00
Shaft Speed=24,74 Hz

Frequency list
Nos   Frequency (Hz)   mm/s RMS   Observation(+/-0,25 Hz)
1   24,74   1,635   PrimaryRPM
2   1485,76   0,040

The Transfer report gives a quick overview of all the transferred spectra. A Transfer report contains information about:

- Date and time of the measurement
- Total vibration level compared with alarm limits
- Bearing condition level with a comparison with alarm limits
- Quick analysis

Of course there are more reports than we can mention here

SpectraPro works with the following operating systems: Windows 95, 98, NT4.0, 2000, XP, and Vista. This is a 32 bit application.

Hardware requirements:

CPU: Pentium 200 MHz or faster

Hard disk: 500Mb or more

Memory: 32Mb or more

Display: 1024x768, 256 colours or more

Printer: Windows compatible

Serial port for instrument communication

VMI International AB

Sweden

www.vmiab.com