NEST i4.0
User Manual

OneProd
ACOEM Group

oneprod.com

NEST i4.0
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CHAPTER 1. GENERAL PRESENTATION

1.1 ACKNOWLEDGEMENTS

Thank you for choosing ONEPROD System, which is our dedicated condition monitoring solution for rotating machinery.

The ONEPROD platform results from 30+ years of experience acquired by ACOEM (previously known as S'tell Diagnostic, 01dB-Stell, 01dB Acoustics & Vibration, and 01dB-Metravib) in the field of condition monitoring, with our eDiag, DivaLine, SurvaoDiag, Moviscope, Survao, Vimex, NEST and other software products.

1.2 INTRODUCTION

Machine condition monitoring systems have since long proven their relevance and efficiency for all industrial sectors, where:

- Worker and installation safety can easily be compromised by a malfunction of a rotating machine;
- Unplanned machine downtime induces major additional costs as the result of production loss and the necessary repairs.

NEST i4.0 is part of ONEPROD Condition Monitoring System., and is composed of new generation software modules designed to provide an easy and performant access to the most efficient monitoring and analysis tools.

NEST i4.0 Network version is a real multi-user platform offering the possibility to share the condition monitoring work between several people from different locations over an Intranet network..

NEST i4.0 is compatible with FALCON data collector. It offers an easy to use and fast solution to implement your condition monitoring

NEST i4.0 includes the following modules:

"Setup machine" manages the organisation of the machines in the databases. It includes a powerful tool to easily create a new machine based only on its mechanical description. This fast setup can also be manually adjusted: see CHAPTER 5

"Setup route" manages lists of machines that can be used as routes to load the data collector or as filter in Analyst: see CHAPTER 6

"Collect" sends route data from or to the data collector: see CHAPTER 7

"Analyst", includes powerful tools for machine analysis as the Health Matrix, merged spectra to help you to confirm the Automatic diagnosis or to build up your own analysis and recommendations: see CHAPTER 8

"Administration" includes licence and database management and for the Network version user management: see CHAPTER 9

1.3 COPYRIGHT AND BRANDS

CHAPTER 2. INSTALLATION AND UPDATE

NEST i4.0 v1.0 is available for two architectures:

- Desktop version: it is dedicated to be installed on 1 workstation for 1 user. It did not include user management and login page
- Network version: it includes 2 components
  - NEST i4.0 server, installed on a server
  - NEST i4.0 client, installed on one or several workstations. They communicate with the server either on your network (LAN or WAN).

  This version has a multi user management.

Before any update of NEST i4.0, it is recommended to make a backup of all the databases (see § 3.3)

2.1 NEST I4.0 DESKTOP INSTALLATION OR UPDATE

IMPORTANT: Installation and update must be done using an **administrator** account

- Launch the setup
  (Desktop_NEST i4.0 Vx.xx\SETUP Vx.xx\ Setup_Nesti40Desktop.exe)
  Note: default settings are:
  - Program folder: C:\Program Files (x86)\ACOEM\Nest i4.0\
  - Data folder: C:\ProgramData\ACOEM\Nest i4.0\Data\

  You can select other settings from the function 
- Click on: 

and follow instructions
- After the 1st installation, you need to input licence information:
  - Start NEST i4.0,
  - Go to in the Administration module
  - Select “Licence” tab
  - Click on "Update"
  - Enter Company information (name, postal code and country code) listed on the form
  - Enter the licence number
  - Click on “OK”

2.2 NEST I4.0 NETWORK INSTALLATION OR UPDATE (MULTI USERS)

IMPORTANT:

- **Prerequisites**
  - Installation and update *on the server* must be done using an **administrator** account
  - Microsoft .NET Framework version 4.6.1 (Installed by the Setup if not there)
  - NESTi4.0 server uses the port 4513 for the client connections. Make sure that this port is usable for inbound connections. The installer takes care of Windows integrated firewall, please make sure that any other security mechanism (3rd party firewall, router,…) is configured to allow this connection.
- **Notes for update from v1.1.6 Network**
  - Backup format has been change in version v1.2. In consequence a backup done with v1.1.6 cannot be restored in v1.2 or later. Anyway it is always recommended to do a backup before the update.
  - Default database “b1” is renamed “b1_1”

2.2.1 NEST i4.0 Server installation or update

- Install NEST i4.0 server by launching the setup
  (NEST i4.0_ Network Vx.xx\Setup_NESTi40Server.exe)

  Note: default installation settings are:
  - Program folder: C:\Program Files (x86)\ACOEM\Nest i4.0 Self Hosted Web Server\
  - Data folder: C:\ProgramData\ACOEMNest i4.0 Self Hosted Web Server\Data\

  You can select other settings from the function 
- Click on “Install NEST i4.0 Server”:  and follow instructions

- After the 1st installation, you need to input licence information:
  - Start NEST i4.0
  - Go to in the Administration module
  - Select “Licence” tab
  - Click on "Update"
  - Enter Company information (name, postal code and country code) listed on the form
  - Enter the licence number
  - Click on “OK”

- NEST i4.0 Network licence activation
  The licence you have received with your software needs to be activated within 30 days from the installation date. This activation is done on our licence server:

  http://activation.acoemgroup.com/client

  - Copy/Paste in this page the following information accessible from NESTi4.0/ “Administration” module/ “Licence” tab/Update:
    - Non-activated licence
    - Activation code
  - Click on “Validate”, you will get in return your final activated licence.
    - Copy/Paste this value in NESTi4.0/ “Administration” module/ “Licence” tab/Update
    - You can also upload your final licence form

2.2.2 NEST i4.0 Client installation

- Install NEST i4.0 client by launching the setup
  (NEST i4.0_ Network Vx.xx \Client\Setup_NESTi40Client.exe).
  Note: it can be downloaded from the server with following URL:
  http://<Server address>:4513/01db.OneProd.Server.Services/Static/Nesti40.html
  Launch the client setup
- Click on: 

and follow instructions

2.2.3 NEST i4.0 Client update

*Note: update from version v1.1.6 must be done once more using an **administrator** account. This will not be necessary for further versions.*

- Launch the previous version of the client NEST i4.0, a message indicates that a new version is ready
- Click on the link to download the setup of the new version.
- Launch the downloaded setup “SetupNestOneClient.exe”
- Click on: 

CHAPTER 3. LOGIN AND DESKTOP

3.1 LOGIN

Click on the NEST i4.0 icon  to start the application.

The Network version displays a login window:

- Server: the address of the server hosting NEST i4.0 server application. See with your network administrator.
  Select “Server requires secure connection” is the selected server uses encryption
- Login: user name (Default initial value “u1”)
- Password: user password (Default initial value “u1”)

3.2 HOME SCREEN

It gives access to the following modules according to the software licence and rights granted by the system administrator (see CHAPTER 9):

“Setup machine” manages the organisation of the machines in the databases. It includes a powerful tool to easily create a new machine based only on its mechanical description. This fast setup can also be manually adjusted: see CHAPTER 5

“Setup route” manages lists of machines that can be used as routes to load the data collector or as filter in Analyst: see CHAPTER 6

“Collect” sends route data from or to the data collector: see CHAPTER 7

“Analyst”, includes powerful tools for machine analysis as the Health Matrix, merged spectra to help you to confirm the Automatic diagnosis or to build up your own analysis and recommendations: see CHAPTER 8

“Administration” includes licence and database management and for the Network version user management: see CHAPTER 9

3.3 USER MENU

 It is available in the top bar from any modules.

It gives access to following functions:

- User preferences:
  - Unit preferences: you can select the unit for each type of parameters (acceleration, velocity, absolute displacement, relative displacement, running speed, power, and temperature). They are used as default setting during the setup of a machine and for all displayed values.
  - Language: select the language of the user interface

- Change password (Network version only)

- Backup database: backup of the current database. To restore a database see administration module § 9.1

- Predefined notes: manage a list of predefined inspection notes.
  This list is transferred to the data collector with each route. It is accessible from the instrument in the “Text note” screen.
  This list is associated to the current database. Use the functions “Export” and “Import” to transfer this list to another database.
  Note: each note can have up to 32 characters

- Bearing database:
  NESTi4.0 is supplied with a bearing database indicating for each bearing reference the fault frequencies.
  If you have some bearings which are not in this database, this function can be used to add custom bearings.
  The list of custom bearings is associated to the current database. Use the functions “Export” and “Import” to transfer selected references to another database.
  Bearing references can be associated to each bearing in the machine setup module (see § 5.3.2), then bearing fault frequencies are displayed in spectrum background.

- About: detail on software installation

CHAPTER 4. USER INTERFACE DESCRIPTION

This chapter describes the main principle of the user interface of NEST i4.0 modules

4.1 TOP BAR

The top bar includes:

Go directly to the Home screen

Display the pictogram of the current module. A click on ▾ gives direct access to any other module

Go to previous or next item pointed by the navigation bar

Navigation bar to navigate from the database to machine level

Access to user setting and preferences: see § 0

4.2 BOTTOM STATUS BAR

The bottom bar is a status bar. It displays:

- Path of the current item (location or machine)
- Current user name (Network version only)
- Current module name
- Server name (Network version only)
- NEST i4.0 version number

4.3 LEFT NAVIGATION PANEL

This panel is available in Analyst and Machine setup. It is another way to navigate in databases. For Analyst module, it is possible to apply filters:

- By alarm status: Danger, Alarm, Pre-alarm, OK, unprocessed
- By advice: Excellent, Good, Fair, Critical, No advice
- By date: measurement overdue or not: see § 5.3.6
- By route

When a filter is selected the mode is switched to flat mode and if a map mode is selected it is switched to icons.

The panel can be open or close using functions  and  .

4.4 RIGHT FUNCTION BAR

This bar is contextual. There are the following cases:

- Select the type of display in screen showing locations or machines:
  Information type:
  - Advice,
  - Alarm,

  Display type:
  - Icons,
  - List (Click on the title of each column to sort in ascending or descending order).
  - Map

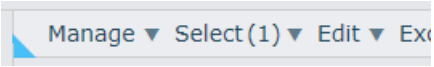
  Mode:
  - Tree or
  - Flat (all machines under the selected location and its sub-locations)

  Note: this mode is not available in the “Setup machine” module

- Screens with modification:
  - Save: save the modification and return to the previous screen
  - Cancel (if modification) or Return (if no modification): return to previous screen without modification
  - Apply: validates the modification and remains on the screen. This also allows access to the top bar.

  Note: Save and Apply functions are not accessible if:
  - No modification is done
  - Mandatory information is missing. In this case such information is framed in red.
  - If modifications are done the navigation bar is not accessible until they are either accepted (Save or Apply) or cancelled.

4.5 ZONE CONTEXTUAL MENU BAR



Contextual menu bar is in a light grey above concerned area. The blue corner indicates that the bar is active.

- Functions can be active or not according to selected items in the area.
- The keyboard shortcut is shown in the tooltip.

4.6 COLOUR CODES

The various equipment statuses are colour-coded as follows:

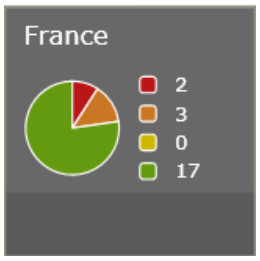
Alarm Status	Expert Advice
UNPROCESSED	NO ADVICE
OK	EXCELLENT
PRE-ALARM	GOOD
ALARM	FAIR
DANGER	CRITICAL
ERROR	-

An ERROR status indicates an instrument error (faulty measurement chain), which, in turn, indicates that the machine is not being monitored properly.

4.7 ADVICE DISPLAY TYPE

In a global view, machines and sites are represented by labels, whereby a machine label exhibits the colour of the last advice issued and contains the following information:

- The colour of the last expert advice (main label colour)
- The name of the machine
- The last expert advice attributed to the machine
- The date of this advice
- The colour of the three previous advices, in chronological order from left to right



A site label contains the following information:

- The name of the site
- The numbers and distribution (as a pie chart) of the state of health of the various machines that are located at the site in question

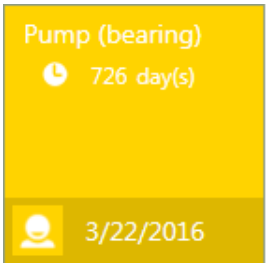
Note: machines without advice are not tracked.

Contextual function:

- Send to instrument: this function is accessible once FALCON is ready for communication using the USB interface:
  - Connect FALCON connector H to a USB port of the PC
  - From FALCON home screen select the “Communication” module:
  - In NEST, click on “Load” to transfer the selected machine to FALCON.

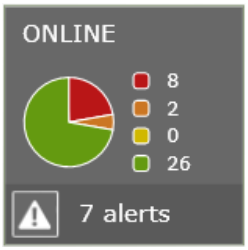
4.8 ALARM STATUS VIEW

In a global view, machines and sites are represented by labels, whereby a machine label contains the following information:



- The alarm status colour of the last measurement stored in the database (main label colour)
- The machine name
- The measurement delay counter indicating the number of days since the last expected measurement date. If the measurement is transmitted on the expected date, the interval remains set to 0.
- The number of alerts (escalation to an aggravating alarm status) detected since the last expert advice for the relevant machine.
  Note: 1 alert is a change
  - from OK or pre-alarm to Alarm or Danger or Error
  - from Alarm to Danger or Error
- In the secondary information area:
  - The last expert advice attributed to the machine
  - The date of this advice

A location label contains the following information:



- The name of the location
- The number and distribution (shown as a pie chart) of the statuses of the various alarms for the machines that are part of this site, relative to the last measurement stored for each machine.
- In the secondary information area:
    - The number of alerts (escalation to an aggravating alarm status) detected for all machines at the relevant site, since the last expert advice for each machine.

Note: machines without an alarm status are not tracked.

Contextual function:

- Send to instrument: this function is accessible once a FALCON is ready for communication using the USB interface:
    - Connect FALCON connector H to a USB port of the PC
    - From FALCON home screen select the “Communication” module: 
    - In NEST i4.0, click on “Load” to transfer the selected machine to FALCON.

CHAPTER 5. SETUP MACHINE

This module is used to create locations and machines in the database. The creation of a machine is made in automatic mode from a simple description of kinematics. This fast setup can be manually adjusted. It is also possible to create machines using copy / paste in the same database or export / import between several bases.

The initial database contents three main folders:

- Asset hierarchy: it contains all machines to be monitored. Machines can be organised in a tree structure (Location/sub location/…/machine). There is no limit in the number of sub location levels.
- Templates: points of its machines can be used as template to create other machines (see § 5.3.3, function "Use template". Machines with templates are supplied with NEST i4.0 media.
- Recycled: it includes all deleted machines. It has the "Empty bin" function to delete permanently the machines. To use again some machines, use the edit functions "Cut" and "Paste" to move them back in the "Asset hierarchy" folder.

Notes:

- "Templates" folder cannot contain any machine created with Accurex mode (automatic diagnosis).
- "Templates" and "Recycled" folders are not displayed in Analyst modules.
- In this module the display is always in Tree mode

5.1 MACHINE MANAGEMENT

Contextual functions are:

- Manage:
  - New machine: see § 5.3
  - New location: see § 0
  - Modify: modify the properties of selected item.

- Select: the number indicates the number of selected items
  - Select all
  - Unselect all

  Note: selecting/unselecting is done by a click on each item.

- Edit:
  - Copy: copy selected items in the clipboard
  - Cut: cut selected items in the clipboard
  - Paste with measurements: paste the clipboard in current location with all measurements
  - Paste without measurements: paste the clipboard in current location without measurements
  - Merge with an existing machine: if the current location contents a machine with the same name and same structure, the clipboard is added on the existing machine.

    Notes:
    - This function can be used to add measurement date on an existing machine.
    - Typical example:
      - In FALCON data collector a machine is loaded in a standard route
      - A 1st measurement is done in the standard route
      - In FALCON copy the machine to the OFF_ROUTE and take a 2nd measurement
      - Download the standard route and the OFF_ROUTE
      - Copy of the machine downloaded in in the OffRoute to the clipboard
      - Merge it with the original machine: it adds the 2nd measurement.
    - Only one machine can be merged at a time

- Merge can only be used if machine configurations are compatible.
- The merge function updates also rotation speed, power, speed ratio of transmissions, measurement settings.

Note: Edit functions are not possible from a database to another one. For that, use the Export/Import functions

- Exchange: those functions are used to export items (locations and or machines) from a database in a format that can be imported in another one.
  - Export with measurements: export selected items with all measurements.
  - Export without measurements: export selected items without measurements
  - Import: import selected NEST i4.0 export file in current location.
  - *NEST3 import:*
    - *Import from NEST3: import selected NEST3 export file in the current location*
      Notes:
      - ***Only data managed by NESTi4.0 v1.2** are imported, for more detail see application note "DOC3149 - NEST i4.0 v1.2 - Migration from NEST3 EN"*
      - *If some data are not imported, a report is displayed to check the result. It is possible to save it for further analysis.*
    - *Open NEST3 Import report: display a report previously saved.*

- Send to instrument: this function is accessible once a FALCON is ready for communication using the USB interface:
  - Connect FALCON connector H to a USB port of the PC
  - From FALCON home screen select the "Communication" module: 
  - In NEST i4.0, click on "Load" to transfer the selected machine to FALCON.

- Create a route: it is a shortcut going directly in the Route module and create a Route including selected machines. Modify route name if necessary and save to create it.

- Delete: delete selected items. The machines deleted are moved in the "Recycled" location.
  Note: to restore a deleted machine go in "Recycled" location and use the Copy/Paste functions.

- Empty bin: only available in "Recycled" folder. It deletes definitively selected machines.

Note: in this module the display is always in Tree mode

5.2 LOCATION PROPERTIES

The properties of a location are:

5.2.1 "Identity" tab

- Name: up to 20 characters
- Designation: up to 40 characters
- Comment: up to 250 characters

5.2.2 "Photo" tab

- Contextual functions:
  - Change photo
  - Remove photo
- Possibility to change the position of the items on the photo by drag and drop.

Note: compatible formats: JPEG and PNG

5.3 MACHINE PROPERTIES

Properties of a machine are accessible through the following tabs:

5.3.1 "Identity" tab

General machine information:

- Name: up to 20 characters
- Designation: up to 40 characters (optional)
- Comment: up to 250 characters (optional)
- Model (optional)
- Serial number (optional)

5.3.2 "Schematic" tab

Introduction:
This tab is to describe the machine component by component. This description is used to automatically generate all points and measurements. Two modes are available: Monitoring and Automatic diagnosis.

Interface description:

- Machine properties:
  Note: Limited editing mode. This mode is set when measurements are already done on a machine. In this case, only the rotation speed and the power of the driving component can be modified as well as speed ratio of transmission components.
  - Sensor type:
    - **Triaxial**: the setup generates 3 points in 3 directions for each bearing of the machine
    - **Single axis**: the setup generates 1 point in radial direction for non-drive end bearings and 2 points (1 radial and 1 axial) for drive end bearings. For the Custom component, it generates 2 points (1 radial and 1 axial) for each bearing.
  - Setup mode:
    - **Template**: the generation of measurements is based on the selection of point templates
      Notes:
      - Machines with template points must be in the "Templates" location of the database
      - Accurex machines cannot be used as template.
    - **Accurex** (Automatic diagnosis): the generation of measurement is fully automatic and an automatic diagnosis is performed after measurement in FALCON data collector.
      Note: machines generated using Automatic diagnosis mode are only managed with FALCON data collector equipped with the Diagnosis option
  - Machine type: select if machine is at fixed rotation speed (speed not measured and not modifiable) or if machine is at variable speed (speed is measured). In this 2nd case, select also how the rotation speed is measured.
    - Fixed speed

- Variable speed (Keyboard input): the value is input manually from keyboard in the data collector
- Variable speed (DC): the value is measured from a continuous voltage. In this case the sensitivity must be defined.
- Variable speed (Rot trigger): the value is measured from the tachometer input.

Notes:

- For variable speed machines, it is also possible to use FALCON built-in stroboscope to measure the rotation speed.
- The detection of the rotation speed is essential for the diagnosis. With Accurex (Automatic diagnosis) mode, if you are not sure of the accurate value of the rotation speed (+/- 20 CPM), it is recommended to set the machine to variable speed. In this case, rotation speed can easily be adjusted with the FALCON built-in stroboscope.

- Speed unit: Hz or RPM
- Vibration velocity unit: in/s or mm/s
- Power unit: hp or kW
- Main direction (vertical machine): for machines with a vertical shaft, this label defines the main radial direction (North-South for example). It is to help the user to mount the sensor in the correct position.

- Components:
  They are selected from the bar of components by double clicking, dragging and dropping to the working area or contextual function “Add”. There are 4 types of components: Driver, Coupling, Transmission and Driven.
  Notes:
  - Coupling, pulley and chain transmission are not associated to any measurement location. One of these components must be inserted between all other types of components.
  - *Each standard component can be customized:*
    - *Name of the component used for bearing naming and for Accurex diagnosis result*
    - *Short name used for point naming*

Motors:

- **Bearing type**: Rolling element or Journal.
  Note: For journal bearings, bearing defects specific to this type are not detected in this version.
- **Mounting**: Rigid or Flexible
- **Power**: Nominal power of the motor. This value is mandatory.
- **Output speed**: Nominal speed of the motor.
  Notes:
  - This value is mandatory
  - For Automatic diagnosis mode and fixed speed machine, the value must be as close as possible from the effective rotation speed (+/- 20 CPM). FALCON gives the possibility to adjust the rotation speed with its stroboscope. **In this case, when downloading the route, the new rotation speed is used to update NEST i4.0 initial setting**.
- **Output orientation**: horizontal or vertical. It defines the true orientation of the machine (not the one of the drawing).

Notes: when the motor is selected, it is possible to rotate its drawing and all connected component with the function  located near the motor in the working area. It defines the machine orientation on the drawing (not the true one).

 Flexible coupling:

- **Number of elements**: optional, number of coupling elements.

 Rigid coupling

 Belt/pulley transmission:

- **Multiplication factor**: output speed / input speed ratio (this value is mandatory).
- **Number of belts**: optional.

 Chain transmission:

- **Multiplication factor**: output speed / input speed ratio (this value is mandatory).
- **Number of chains**: optional.

 Gearbox transmission:

- **Bearing type**: Rolling element or Journal.
  Note: For journal bearings, bearing defects specific to this type are not detected in this version.
- **Mounting**: Rigid or Flexible
- **Multiplication factor**: output speed / input speed ratio (this value is mandatory):
  - If the detail of the gearbox is unknown, give directly the ratio
  - If the detail is known click on “Gearbox detail known” and set:
    - The number of stages: 1 to 4
    - For each stage:
      - Number of teeth of driving gear
      - Number of teeth of driven gear

 Angular or bevel gearbox transmission:

- **Rotation**: Turn right or left (on the drawing)
- **Bearing type**: Rolling element or Journal.
  Note: For journal bearings, bearing defects specific to this type are not detected in this version.
- **Mounting**: Rigid or Flexible
- **Multiplication factor**: output speed / input speed ratio (this value is mandatory):
  - If the detail of the gearbox is unknown, give directly the ratio
  - If the detail is known click on “Gearbox detail known” and set:
    - The number of stages: 1
    - Number of teeth of driving gear
    - Number of teeth of driven gear
- **Output orientation**: horizontal or vertical. It defines the true orientation of the machine (not the one of the drawing). This is only for component with a horizontal input. If Input is vertical the output is forced to horizontal.


Pump:

- **Bearing type**: Rolling element or Journal.
  Note: For journal bearings, bearing defects specific to this type are not detected in this version.
- **Mounting**: Rigid or Flexible
- **Rotor position**: Between bearing or Over hung
- **Number of blades**: optional.


Fan:

- **Bearing type**: Rolling element or Journal.
  Note: For journal bearings, bearing defects specific to this type are not detected in this version.
- **Mounting**: Rigid or Flexible
- **Rotor position**: Between bearing or Over hung
- **Number of blades**: optional.


Centrifugal compressor:

- **Bearing type**: Rolling element or Journal.
  Note: For journal bearings, bearing defects specific to this type are not detected in this version.
- **Mounting**: Rigid or Flexible


Lobe compressor:

- **Bearing type**: Rolling element or Journal.
  Note: For journal bearings, bearing defects specific to this type are not detected in this version.
- **Mounting**: Rigid or Flexible


Alternator or generator:

- **Bearing type**: Rolling element or Journal.
  Note: For journal bearings, bearing defects specific to this type are not detected in this version.
- **Mounting**: Rigid or Flexible

Shaft:

- **Bearing type**: Rolling element or Journal.
  Note: For journal bearings, bearing defects specific to this type are not detected in this version.
- **Mounting**: Rigid or Flexible


Roller:

- **Bearing type**: Rolling element or Journal.
  Note: For journal bearings, bearing defects specific to this type are not detected in this version.
- **Mounting**: Rigid or Flexible

Custom driver component:

This component is fully adjustable. It cannot be used in Accurex mode and it is necessary to add measurements manually or from template in the “Measurements” Tab. Use it if the standard components listed above does not match to your machine.

- **Name** *
- **Short name** *
- **Number of bearings**: 1 to 8
- **Number of outputs**: 1 or 2
- **Power**: Nominal power of the motor. This value is mandatory.
- **Input speed**: Nominal speed of the driver. This value is mandatory
- **Output orientation**: horizontal or vertical. It defines the true orientation of the machine (not the one of the drawing).
- For each output: **Output speed ratio** (output speed / input speed ratio)
  - If gear detail is unknown, give directly the ratio
  - If gear detail is known click on “Gear detail known” and set:
    - Number of teeth of driving gear
    - Number of teeth of driven gear

* used to generate location and point names. Location and point names can also be modified manually

Note: when the driver is selected, it is possible to rotate its drawing and all connected component with the function . It defines the machine orientation on the drawing (not the true one).

Custom driven component:

This component is fully adjustable. It cannot be used in Accurex mode and it is necessary to add measurements manually or from template in the “Measurements” Tab. Use it if the standard components listed above does not match to your machine.

- **Name** *
- **Short name** *
- **Number of bearings**: 1 to 8
- **Number of outputs**: 1 or 2
- **For each output**: Output speed ratio (output speed / input speed ratio)
  - If gear detail is unknown, give directly the ratio
  - If gear detail is known click on “Gear detail known” and set:
    - Number of teeth of driving gear
    - Number of teeth of driven gear

* used to generate location and point names. Location and point names can also be modified manually

- Contextual functions:
  - Add: add the component selected in the bar to the working area.
  - Delete: delete the selected component from the working area.
  - Set as photo: the drawing of the working area is used for the machine display in Analyst or FALCON (map mode).
-
- Working area
  - Connecting components: just drag the driven component close to the output of a driving shaft
    Note: Coupling, pulley and chain transmission must be inserted between all other types of components otherwise connection is not possible.
  - Disconnecting: just click on the link
  - Drawing rotation: select the driver component and click on to make a 90° clockwise rotation.
  - Location properties: click on to display them:
    - Variable speed reference point: select it where the rotation speed is effectively measured. The location is then displayed in blue: . For the custom component, the speed ratio of this location is forced to 1.
    - Use this place: unselect it if you do not want to take any measurement on the location.

Note: the setup always creates a machine with a motor. If you want to measure only the driven components just unselect the both locations of the motor.

- Bearing: select the bearing reference from the bearing database (see § 3.3*).* It is possible to select up to 3 references per location.
- Speed ratio: only for custom components:
  - If gear detail is unknown, give directly the ratio
  - If gear detail is known click on “Gear detail known” and set:
    - Number of teeth of driving gear
    - Number of teeth of driven gear

  Note: For the variable speed reference location, the speed ratio is forced to 1.
- Radial directions: for horizontal shaft, select used direction for radial:
  - Horizontal / Vertical
    or
  - Oblique / Oblique

  For the Custom component, there is also the option “Other”, it can be used to generate other configurations to take 1, 2, 3 or 4 channel measurement with FALCON. Default value is 4 channels.
- Directions: select the direction to be measured. The names of directions depend of the shaft direction:
  - For an horizontal shaft:
    - Axial, horizontal and vertical
      or
    - Axial, oblique and oblique

    depending of the selection in “Radial direction”
  - For a vertical shaft: Axial, Main and Perpendicular (see the definition of the main radial direction in “Machine properties”).

5.3.3 “Measurements” tab

Introduction:
Complete or adjust measurements (parameters and signals) for each points created on the “Schematic” tab

Interface description:
The interface is split in 2 areas:

- The upper part displays the process data and the Health Matrix.

  The Health Matrix displays the vibration data:
  Each line of the matrix can be:
  - a measured parameter (Hard parameter displayed in **bold** characters)
  - a processed parameter (Soft parameter displayed in normal characters)
  - a measured signal: spectrum, envelope, time wave (displayed in **bold** characters)

  Each column is a point linked to machine kinematic (point = direction of measurement on a bearing location)

- The lower part shows the machine schematic. It works in interaction with the other area to select a location and to show selected points.

Process data working area
Process data can be organized by “group”. A group can include several parameters, for instance a group for pressure measurements or a group for all data collected in a control room. For FALCON a process group is a measurement point.

- *Contextual functions:*
  - *Process group/Add scalar group (DC)*
  - *Add parameter: add a parameter on selected group. See § 10.1.5 and 10.1.7 the list of available options.*
  - *Modify: modify selected item*
  - *Delete: delete selected items*

Health Matrix working area

- It is possible to make a multiple selection with the mouse and with ctrl or shift keys
- To duplicate a cell, just click on it and then click on the "**+**" displayed in the free cells
- To reorder a line, drag the sign  and drop it on its new position
- To rename a line, use the function ✎.
  Note: 2 lines cannot have the same name

- Contextual functions:
  - Setup input:
    - Input type: select the item corresponding to the used sensor type. The list is:
      - Acceleration IEPE (sensor is power supplied)
      - Acceleration AC (no sensor power supply)
      - Vibration velocity IEPE (sensor is power supplied)
      - Vibration velocity AC (no sensor power supply)
      - Displacement AC
        Notes:
        - If measurements are already selected, it is not possible to change acceleration to velocity or displacement.
        - Not accessible on multi-selection with different input types and measurements are already selected.
    - Sensitivity: in mv/input unit according to the user unit preference.
    - Name: change the name generated automatically. It is not accessible if several columns are selected.
  - Use template: one or several columns can be completed or fully programmed using another point as template.
    Notes:
    - To be accessible, the template machine must be located in the "Templates" folder at the root of the database. It is possible to move any machine in the "Template" location using copy/paste or export/import functions (see § 5.1). Templates to be imported are available on NEST i4.0 media.
    - To be accessible, the template must have the same type of input as the selected points.
  - Add: add a parameter or a signal on selected columns. See § 10.1 the list of available options.
  - Modify: modify selected parameters or signals
    Notes:
    - The function is not accessible if several lines are selected
    - It is not possible to modify a parameter or signal generated in Accurex mode (Automatic diagnostic)
  - Delete: delete selected parameters or signals
    Note: it is not possible to modify a parameter or signal generated in Accurex mode (Automatic diagnostic)

5.3.4 "Photo" tab

Define the picture used in the background of the map mode display. By default, the picture is the one define from 'Schematic' tab.

- Contextual functions:
  - Change the photo
  - Delete
- Possibility to change the position of the items on the photo by drag and drop.

Notes: Compatible formats: JPEG and PNG

5.3.5 "Document" tab

Technical documents (pdf, doc, xls, …) can be associated with each machine and then consulted directly from this tab.

- Contextual functions:
  - Add: select a new document
  - Open: open or save the selected documents. If Save is selected, documents are saved in "My document/NEST" folder.
  - Delete: delete selected documents from the database.

5.3.6 "Strategy" tab

- Periodicity: definition of expected measurement periodicity according to the machine alarm condition. These values are used to check if the measurement of a machine is overdue or not.
- Operating condition: definition of the operating conditions of the machine. Up to 9 conditions can be created. The list is loaded in Falcon data collector. The operator can then select the operating condition when he made his measurements
  - Contextual functions:
    - Add: add a new condition. Properties are:
      - Name: up to 18 characters
      - Abbreviate: up to 10 characters
      - Colour
    - Remove: remove selected conditions

CHAPTER 6. SETUP ROUTE

Setup route manages lists of machines that can be used as routes to load the data collector or as filter in Analyst.

6.1 ROUTE LIST

The screen lists all routes of selected database. Information listed is:

- Route name
- Creation date
- Number of machines in the route
- Number of points

Contextual functions are:

- Add: create a new route
- Modify: modify properties of current route.
- Delete: delete selected routes.

6.2 ROUTE PROPERTIES

6.2.1 Machine selection

1. Use the left navigation panel (see § 4.3) to select the location from which you want to choose some machines.
2. Use the right function bar (see § 4.4) to set the type of display at your convenience for the selection area.
   Note: the flat mode is available with the list display and can be used to select the machine of several locations in one operation.
3. Use the selection area in the middle to add or remove machines in the route.
4. Use the right area showing the route properties to reorder or remove machines.
5. Use the right function bar (see § 4.4) to save or cancel modification.

6.2.2 Selection area

This is the area to select the machines to add in the route. Machines already selected are indicated by the ★ symbol in icons and map display modes or highlighted in orange in list mode.

Contextual functions are:

- Select: the number indicates the number of selected items
  - Select all
  - Unselect all

  Note: selecting/unselecting is done by clicking on each item.
- Add: add in the route all selected machines. The order of selection is the order in the route. If a machine is selected in the route, the machines are added after this one.
- Remove: remove selected machines from the route.

6.2.3 Route properties area

This area shows the properties of the route:

- Name of the route
- Comment: this comment is loaded in FALCON and can be used to gives special instruction to the person making the measurements.
- List of machines.
  Note: selection is done by clicking on each item. A multiple selection can be done using ctrl or shift keys. Selected machines can be moved with a drag and drop.

Contextual functions are:

- Remove: remove from the route selected machines.
- Reorder:
  - First: move all selected machines at the beginning.
  - Up: move all selected machine one rank up.
  - Down: move all selected machine one rank down.
  - Last: move all selected machines at the end.

  Notes:
  - The machine order can also be done with a drag and drop.
  - It is possible to reorder a route point per point in the collect module (see § 7.2).

CHAPTER 7. COLLECT

Collect module is used to send route data from or to the data collector.

7.1 "COLLECTOR" TAB

This tab is used to set the communication mode and manage the list of data collectors.

7.1.1 Communication mode

- Direct transfer: it is used if you connect directly the instrument to the PC.

  With **FALCON**, 2 communication modes are available:
  - USB: if you connect FALCON connector H to a USB port of the PC. The PC automatically selects the connected instrument and creates it in the list if necessary.
  - Ethernet: if you connect FALCON and the PC on the same network (Ethernet or Wi-Fi). In this case, it is necessary to "Add" or "Modify" a collector in the list with following information:
    - FALCON serial number (Ex: 10015)
    - Address:
      - IP address (e.g., 192.168.0.1)
        or
      - DNS name (e.g., Falcon_10015)

  From FALCON home screen, select the "Communication" module:  . Once the connection is set, the line is highlighted in orange, you can now go in the "Load" tab.

- Via intermediate files: in this case, it is not needed to have a direct connection.
  - To load a route, NEST i4.0 generates a .zld. This file can be imported in FALCON, once copied in a folder "Import" on a USB memory stick or in FALCON internal memory.
  - To download a route, FALCON exports a .zdl file. This is located in a folder "Export" on a USB memory stick or in FALCON internal memory. It can be imported in NEST i4.0 from the "Instrument > NEST" tab.

7.1.2 List of data collectors

It lists the data collectors known by the system. The listed information is:

- FALCON serial number
- IP address or DNS name: needed if Ethernet communication is used. See FALCON user manual for more information
- Comment: optional
- Sensor: optional, sensor identification for traceability
- Cable: optional, cable identification for traceability

Contextual functions are:

- Add: to add a new collector in the list.
- Modify: to modify the properties of selected collector
- Delete: to delete selected collector
- Refresh connected collectors: to detect connected collector.
  Reminder: FALCON must be set in communication mode: from home screen select the "Communication" module:  .

7.2 "NEST → INSTRUMENT" TAB

This tab is accessible if:

- a data collector is detected and selected
  or
- the communication mode set to "Via intermediate files" and a data collector is selected

The list shows all routes of selected database. Listed information is:

- Loading status: OK or Error
- Route status:
  - OK if the route is not present in the data collector
  - Overwrite if the route is already present in the data collector.
    - Overwrite option is selected if measurement have already been downloaded
    - Overwrite option is unselected if there are measurement which have not been downloaded. If the option is selected measurement stored in FALCON will be lost.
- Route name
- Creation date
- Number of machines in the route
- Number of points

Contextual functions are:

- Send: send selected routes to the instrument. If "Via intermediate files" is selected, NEST i4.0 creates one zld file per route.
- Reorder measurement points: this function displays the point list of selected route. Select one or several points (several using either Shift or Ctrl key) and move the selection with a drag and drop. Point order can also be modified with following functions:
  - Reset: point order is set back to the initial order of the route.
  - Order by last measurement date: this function change automatically the order to take the measurement in the same order that it has been done during the previous data collection.

  Notes:
  - Once the order is modified, the route is flagged in the list by the symbol★.
  - If the route is changed from the "Setup Route" module, the order will be reset.
  - If points are added to the machine (or speed changed fixed /variable), the order will be reset.

7.3 "INSTRUMENT → NEST" TAB

This tab is accessible if:

- a data collector is detected
  or
- the communication mode set to "Via intermediate files" and a data collector is selected

The list shows all routes of the connected data collector which were initially loaded from the current database.
For "Via intermediate files" mode add the route using contextual function "Add".
The listed information is:

- Uploading status: OK or Error
- Route status:
  - Green, Warning: route not yet uploaded
  - Grey, Warning: route has been uploaded
  - Blue for the OFF_ROUTE
  - Orange, Server error: the route has been loaded from another server, it will be uploaded in OffRoute
  - Orange, Off-Route: machine from this server but unknown in current database. It will be uploaded as Off-Route.
- Route name
- Loading date
- % of completion
- Number of machines in the route
- Number of points in the route

Contextual functions are:

- Send: send measurements from selected routes from the instrument to the database. At the end of the transfer, it is possible to display the download report and to save it
- Measurement log:
  - Display last measurement log.
  - Open saved measurement .json file
- Refresh: refresh the list of routes ("Direct transfer" mode).
- Add: add a route in the list form a .zdl file ("Via intermediate files" mode).

Notes:

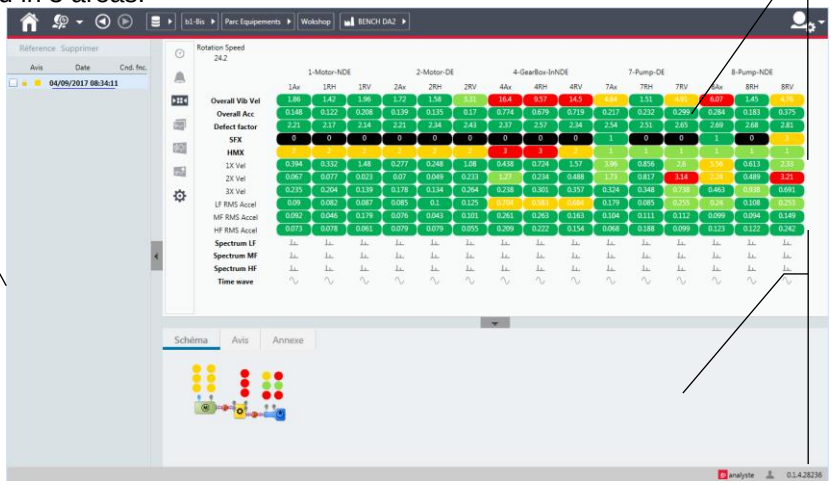
- "OFF_ROUTE" measurements are downloaded in the OffRoute location of the database.
- Unknown machines (deleted machines, or route loaded from another NESTi4.0 database) are also downloaded in the OffRoute location of the database.
- Limitations: only data managed by the current NESTi4.0 version can be saved. It excludes:
  - "Other" AC input type
  - Signal triggered spectrum and time waves
  - Time wave or envelope spectrum with integration
  - Machine including points with multiple input type
  - Machines generated by NEST3

CHAPTER 8. ANALYST

Analyst module includes powerful tools for machine analysis as the Health Matrix, merged spectra to help you to confirm the Automatic diagnosis or to build up your own analysis and recommendations

8.1 DETAILED VIEW ORGANISATION

The screen is divided in 3 areas:



AREA 1

Measurement date management

See § 8.2

AREA 2

Health Matrix

See § 8.3

AREA 3

Tabs for
- Schematic: § 8.4
- Advice: § 8.5
- Appendix: § 8.6

8.2 MEASUREMENT DATE MANAGEMENT

This area lists all dates of measurements of the current machine with the following information:

- Protection status (to avoid unwanted deletion). The protection is automatically when the analyst completes the analyse
- The advice level (see § 8.5)
- The date
- The operating condition (see § 5.3.6)

The selection of date updates the display of areas 2 and 3

Contextual functions are:

- Baseline: used to set the selected date as the new baseline. Baseline is usually the first measurement after machine installation or repair
- Delete: used to delete all selected dates. Dates with advice, diagnosis or recommendation are automatically protected; they need a double confirmation to be deleted.

8.3 HEALTH MATRIX

Data are displayed in 2 parts:

- *The process data, including the running speed at the top of the screen*
- The Health Matrix displays all parameters and signals of the machine as a matrix:
  - **Lines list**:
    - Parameters with their value and status colour code. There are 2 types of parameters:
      - measured parameters (Hard parameter displayed in **bold characters**)
      - processed parameters (Soft parameter displayed in normal characters)

      It shows at a glance which type of defect you may have on the machine
    - Measured signals: spectrum, envelope, time wave
  - **Each column** is a point linked to machine kinematic (point = direction of measurement on a bearing location). You can see at a glance where is the defect

To make further analysis the Health Matrix gives a direct access to display any parameter trend, spectrum and time wave.
It is possible to make a multiple selection of cells:

- A complete line if you click on its title
- Contiguous cells with a mouse drag and drop or using the Shift key
- Cells anywhere using the Ctrl key

The Health Matrix is also interactive with the Schematic tab: see § 8.4

Health Matrix functions:

Monitoring adjustments:


adjust the value of the running speed. The modification is applied only for the current measurement date. You can apply the modifcation to the active point, its bearing (all directions), shaft or the whole machine.


adjust the alarm threshold of selected parameters. The modification is applied for all measurement dates


/ Compress / Extend the Health Matrix


draw the data of each selected cells in separate windows


superimpose the data of selected cells in 1 window


add the data in the active graphic window


/ open / close the panel to select the plot options:

- **Spectrum** type of display:
  - Single: selected spectrum is displayed in normal way
  - Merged: if the point includes several spectra in different frequency ranges, they are all merged in a unique curve showing the complete vibration behaviour of the point.
  - 3D: selected spectrum is displayed in a 3D view. If no specific dates are selected, all measurements are displayed. If some dates are selected, the display is limited to the selected ones. For the 3D view,  and  are not accessible.
- **Add**: use this function to add automatically the baseline and/or the previous measurement for spectrum and time wave display.
  Note: if some other dates are selected in list of dates, corresponding measurements are also displayed.

For more details on the graphic windows see § 8.7

8.4 "SCHEMATIC" TAB

It shows the machine schematic or its picture with point's positions. It is interactive with the Health Matrix:

- Points selected in the Health Matrix are highlighted on the schematic
- A selection on the schematic will move the Health Matrix horizontal slider if the selected points is not in the window

8.5 "ADVICE" TAB

This tab gives access to all information needed to store the result of the analysis. When using the "Automatic diagnosis" mode, the results are given automatically and can be adjusted by the expert.

Listed information:

- The Advice selected in a list
- The Diagnosis with Title (120 char max) and detailed description (not limited)
- The Recommendation with Title (120 char max) and detailed description (not limited)

Note: detail description includes a spellcheck function for English, Spanish, German and French languages

"Advice" tab functions:


Generate the report:

- DOCX Expertise report.
- DOCX Analysis report.
- DOCX full report (Expertise + Analysis)

Notes:

- DOCX reports are template based (see § 8.8.3)
- Expertise report does not include dates with no Advice
- a global report is also available (see § 8.8.)


cancel current modifications

Note: modifications are automatically saved if another date, another machine or another module is selected.

8.6 "APPENDIX" TAB

This tab shows complementary information to the measurement date. It is possible to manage:

- Pictures: there are 3 possibilities to add pictures:
  - Inspection pictures coming directly from FALCON
  - Trends, spectra, time waves captured from vibGraph
  - Any pictures imported from jpg or png files

  Each picture can be completed by a comment and appears in the diagnosis report.

  Contextual functions:
  - Graphic capture: import a copy of all open vibGraph windows (spectra, time waves, and trends). Note: vibGraph windows must not be minimized or partly outside the main screen boundaries
  - Add from file: import jpg or png file.
  - Delete: delete selected picture.

- Notes: it contains inspection notes coming from FALCON. It can be modified

8.7 VIBGRAPH

8.7.1 Introduction

vibGraph is the tool used to display trends, spectra and time waves. This chapter gives a quick description. For more details refer to vibGraph user manual (ref DOC3103 - VIBGRAPH User manual EN).

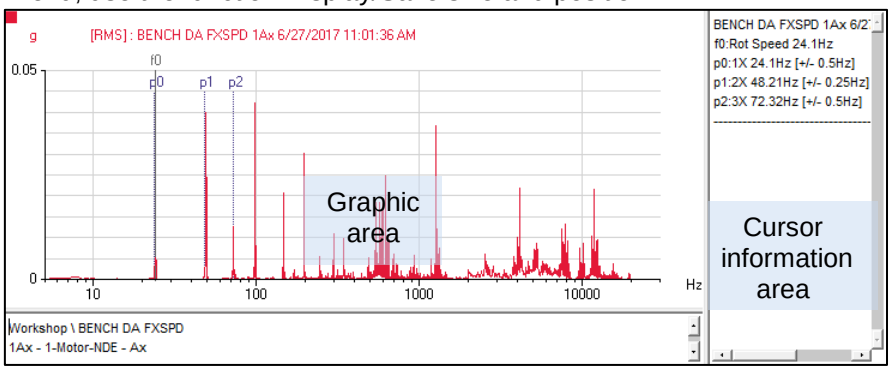
The first time a plot is open two windows appear:

- vibGraph main window in the background. It is used if you want to adjust the user preferences.
- The graphic windows itself.

There are different ways to open one or several graphic window with one or several curves. It is detailed in § 8.3

8.7.2 Customize the graphic

- **Adjust size and position of graphic windows**
  - Open a graphic
  - Adjust window size and position, including the comment area (below the graphic) and the cursor information area (right hand side of the window).
  - In the menu, use the function Display/Save size and position.



The next window of the same type will be open using this new setting.
Note: settings are independent for trend, simple spectrum, envelope, merged spectrum (concatenated) and 3D spectrum.

- **Adjust the unit display for spectrum and time wave**
  - In vibGraph main window
  - In the menu, use the function Preferences/Unit management.
  - Select the unit for each type of data: acceleration, velocity, displacement or frequency

- **Adjust the unit conversion for spectrum: acceleration, velocity or displacement**
  - In vibGraph main windows
  - In the menu, use the function Preferences/Type of chart
  - Select the type of chart: Single spectrum, Merged spectrum (concatenated)
  - In “Left Y axis” tab, adjust the conversion as needed: initial (no conversion), acceleration, velocity or displacement

- **Select linear or logarithmic scale for spectrum**
  - In vibGraph main windows
  - In the menu, use the function Preferences/Type of chart
  - Select the type of chart: Single spectrum, Merged spectrum (concatenated)
  - In “Left Y axis” tab, adjust the type as needed: linear or logarithmic

Notes:

- To use vibGraph in a separate screen, it is recommended to have vibGraph on the main screen and NEST i4.0 on the secondary one.
- Numerous other adjustments can be done, please see vibGraph user manual (ref DOC3103 - VIBGRAPH User manual EN).

8.7.3 Zoom management

- Use the right button of the mouse to select the area to be zoomed.
- Use the function 1:1 to go back to the initial view.

8.7.4 Cursor management

- Select the type of cursor:
  - : Single cursor
  - : Double cursor
  - : Harmonic cursor
  - : Sideband cursor
- Create the cursor with a single click (single or harmonic cursor). For double or sideband cursor, it is necessary to click another time to select the second position of the cursor.
  Note: to point a peak in the curve just click somewhere above, the nearest peak is automatically selected

It is possible to open several cursors. Use the following buttons to manage them:

- : select next cursor
- : select previous cursor
- : delete active cursor

8.7.5 Fault frequencies

Fault frequencies generated by the kinematic setup are displayed in the spectrum background. It is possible to scan them with the harmonic cursor using and buttons.

8.7.6 Curve management

It is possible to open several superimposed curves. Use the following buttons to manage them:

- : select next curve
- : select previous curve
- : delete active curve

8.8 GLOBAL REPORT GENERATION

The Analyst module integrates a powerful tool to generate a global report on any group of machines. This report is issued in docx format (It can be open using a word processor software as Microsoft Word or LibreOffice). It is based on template documents and can be easily customised to your particular requirements.

The generation of a report is done in 2 quick steps.

8.8.1 Step 1: selections of the machines

The first step is to select the machines from the Analyst global view of the machines. There are several ways to make the selection:

- Select machines one by one, in this case the machines appear in the report in the order of selection.
- Use the different filters available in the left hand side navigation panel to select machines according to:
  - Alarm status: Danger, Alarm, Pre-alarm, OK, unprocessed
  - Advice: Excellent, Good, Fair, Critical, No advice
  - Date: measurement overdue or not
  - By route. In this case a global selection will use the route order for the report
- Use the list mode display ( ) in Tree mode ( ) or flat ( ), you can then reorder the report according to the different columns of the list by clicking on its title:
  - Names
  - Alarm status
  - Measurement date
  - …

8.8.2 Step 2: Report configuration

- Once the machine selection is done, use the “Report” function of the contextual menu bar.
- Select the different parts of the report:
  - Title: first page and table of content
  - Synthesis report
  - Expertise report
  - Analysis report
- Skip measurement dates with no Advice. This option is used to not have measurement dates in the report that have not been seen by the expert.
- Select the measurement date: by default, it is the current date. The report is built with the information dated just before the selected date.
- Click on “Report”: NESTi4.0 builds up the report and opens it using the computer word processor associated to docx files.
- Click on OK to update the table of content.

8.8.3 Report customisation

The report is based on docx word template documents. You can use your word processor to adjust the templates to your requirements:

- Add Company logo
- Change text format
- Remove useless information
- Add static text or comments

There are 4 different templates associated to each part of the report:

- Title: it includes the Title page, the table of content, page header and footer
- Synthesis chapter
- Expertise chapter
- Analysis chapter

IMPORTANT NOTE: NESTi4.0 uses important information in the template files. Some modifications can lead to make impossible the construction of the report. Here are listed the main modifications **that must not be done**:

- Change Title numbering and levels
- Change the markers in the file: a marker is the label between [and] characters
- Remove Row markers, markers including 'Row' characters.

Template modification:

- Click on "Report" function of the contextual menu bar (at least one machine must be selected)
- Click on  (Top right of the report configuration window)
  - Click on  to open the template in the word processor
  - Make required modifications
  - Save and close the word processor
  - In NESTi4.0 click on "Apply"

  All next reports will use the new template

Process to reset templates:

- Click on "Report" function of the contextual menu bar (at least one machine must be selected)
- Click on 
- Click on 
- Confirm with "OK"

All next reports will use the initial template

Recommendation:

Once a template modification is finished, it is recommended to save it, in case of problem during a future modification you will have then the possibility to go back to the current state.

Process to save template: proceed as for modification to open the template and save it in an accessible folder. Depending of the configuration of your Windows user profile, you may have to validate 2 safety messages.

Process to restore a saved template: proceed as for modification to open the template and then replace its contents with the one of the saved template.

Template organisation:
Each data base has its own templates. They can be adjusted without any interference between databases.
When a new database is created, the new database uses the set of templates located in the following folder of NESTi4.0 server:

- Desktop installation: C:\ProgramData\ACOEM\Nest i4.0\Templates
- Network installation: C:\ProgramData\ACOEM\Nest i4.0 Web Server\Templates

CHAPTER 9. ADMINISTRATION

9.1 "DATABASES" TAB

It gives access to all the functions to manage databases. It lists the existing databases with following information:

- Database name
- Size in MB
- Description
- User access (Network version only): it is possible to modify the specific access profile for each user

Contextual functions:

- Add: add a new database on the system.
- Delete: delete the selected database.
- Restore: add on the system a new database restored from a backup file (see § 3.3).

9.2 "PROFILES" TAB (NETWORK VERSION ONLY)

The system has 6 predefined default user profiles. They cannot be modified or deleted.

Function	Predefined user profiles				
	Administrator	Analyst	Technician	Customer	No access
Collect	Yes	Yes	Yes	No	No
Machine setup - modification	Yes Yes	Yes Yes	Yes No	No No	No No
Route	Yes	Yes	Yes	No	No
Analyst - modification - template modif.	Yes Yes Yes	Yes Yes Yes	Yes No No	Yes No No	No No No
Administration - Databases and users - Profiles - Licence	Yes Yes Yes Yes	No No No No	No No No No	No No No No	No No No No
User menu – Backup	Yes	Yes	Yes	No	No
User menu – Predef notes	Yes	Yes	Yes	No	No
Bearing DB	Yes	Yes	No	No	No

Contextual functions: it is possible to create other profiles to meet your requirements:

- Add: add a new profile.
- Delete: delete the selected profile.

9.3 "USER" TAB (NETWORK VERSION ONLY)

It gives access to all the functions to manage users. It lists the existing users with following information:

- User name (Max 17 characters)
- Connection status
- Default profile: profile used by this user for all the databases if no database specific profile is defined
- Specific profile per database: to be used if the organisation requires that a user has not the same level of access for all the databases. If a specific profile is defined for a database, it is used instead of the default one.
- Domain administration property:
  - It is special privilege. Only a domain administrator has the possibility to see and to grant the "Domain administration privilege" to another user.
  - Limitations for users without "Domain administration privilege":
    - No access on this privilege
    - No access to Default profile
    - No access to username and password of users with "Domain administration privilege":
    - Any user created has a "No access" default profile
    - If he adds a new database his current profile is used as specific profile for this new database

Contextual functions:

- Add: add a new user on the system. There are two ways to create a user:
  - Add a local user: you will have to define its name and password
  - Add a LDAP user: in this case the user is selected from the LDAP directory of your organisation. The user will have the same login (name and password) as his Windows session.
    Note: to use "LDAP user", the system must be configured to communicate with the LDAP directory of your organisation (see manual "DOC3151 - NEST i4.0 v1.2 - Secure communication and LDAP")
- Delete: delete the selected user.

IMPORTANT NOTE: after installation the system has a default local user (u1/u1). This user is administrator of the complete installation and cannot be deleted or modified with the exception of its password. For security it is recommended to modify its password.

User counts: in Network version, the number of simultaneous connection is limited by the licence.

9.4 "LICENCE" TAB

The licence is used to manage the options of NEST i4.0

The licence information is supplied on "NEST i4.0 Licence form" document.
To enter the licence:

- Click on "Update"
- Enter Company information (name, postal code and country code) listed on the form
- Enter the licence
- Click on "OK"

CHAPTER 10. **APPENDIX**

10.1 APPENDIX 1: PARAMETERS AND SIGNALS

10.1.1 Hard parameters and signals with IEPE or AC acceleration input

- **Overall level (Acceleration, Velocity, Absolute displacement)**:
  - Detection: RMS, true or equivalent peak, true or equivalent peak-to-peak
  - High-pass filter: None*, 2 Hz (120 CPM), 10 Hz (600 CPM), 3 kHz (180 kCPM)*
  - Low-pass filter: 300 Hz (18 kCPM), 1 kHz (60 kCPM), 2 kHz (120 kCPM), 3kHz (180 kCPM), 20 kHz (1200 kCPM), 40 kHz (2400 kCPM)
  - *Measurement time: 1 to 20 s*
  - *Peak hold: Off, On*

  * Not available for Velocity and Displacement

- **Bearing defect factor**:
  - *Measurement time: 1 to 20 s, default value : 7 s*

  Note: Recommended thresholds are 6 for the Alarm and 9 for Danger.

- ***Kurtosis**:*
  This processing computes the Kurtosis on the signal filtered by a band-pass filter. This indicator detects the presence of shocks in the signal and is suitable for machines with slow rotation speeds. The Kurtosis processing is mathematically defined as the 4th-order centred moment of the time series.
  - *High-pass filter: from 50 Hz to half of the value of the low-pass filter*
  - *Low pass filter: from twice the high-pass filter to 20 kHz. Minimum value is 500 Hz*
  - *Measurement time: 1 to 5 s*

- **Spectrum (Acceleration, Velocity, Absolute displacement)**:
  - High-pass filter: None*, 2 Hz (120 CPM), 10 Hz (600 CPM)
  - Frequency range: 80 kHz (4800 kCPM), 40 kHz (2400 kCPM), 20 kHz (1200 kCPM), 10 kHz (600 kCPM), 5 kHz (300 kCPM), 2 kHz (120 kCPM), 1 kHz (60 kCPM), 500 Hz (30 kCPM), 200 Hz (12 kCPM), 100 Hz(6000 CPM), 50 Hz (3000 CPM)
  - Number of lines: 100, 200, 400, 800, 1600, 3200, 6400, 12.8k, 25.6k, 51.2k, 102.4k
  - Number of averages: 1 to 4096
  - *Overlapping: 0%, 50%, 75%*
  - *Weighting window: Hanning, rectangular, flat top*
  - *Averaging: Linear, Peak*

  * Not available for Velocity and Displacement

- **Envelope spectrum (Acceleration)**:
  - Frequency range: 80 kHz (4800 kCPM), 40 kHz (2400 kCPM), 20 kHz (1200 kCPM), 10 kHz (600 kCPM), 5 kHz (300 kCPM), 2 kHz (120 kCPM), 1 kHz (60 kCPM), 500 Hz (30 kCPM), 200 Hz (12 kCPM), 100 Hz(6000 CPM), 50 Hz (3000 CPM)
  - Number of lines: 100, 200, 400, 800, 1600, 3200, 6400, 12.8k, 25.6k, 51.2k, 102.4k
  - Number of averages: 1 to 4096
  - Band-pass filter width: Frequency input range divided by 2, 4, 8 … ,128
  - Band-pass filter central frequency: Value in Hz
  - *Overlapping: 0%, 50%, 75%*
  - *Weighting window: Hanning, rectangular, flat top*
  - *Averaging: Linear, Peak*

- ***Phased spectrum (Acceleration, Velocity, Absolute displacement)****:*
  - *High-pass filter: None*, 2 Hz (120 CPM), 10 Hz (600 CPM)*
  - *Frequency range: 40 kHz (2400 kCPM), 20 kHz (1200 kCPM), 10 kHz (600 kCPM), 5 kHz (300 kCPM), 2 kHz (120 kCPM), 1 kHz (60 kCPM), 500 Hz (30 kCPM), 200 Hz (12 kCPM), 100 Hz(6000 CPM), 50 Hz (3000 CPM)*
  - *Number of lines: 100, 200, 400, 800, 1600, 3200, 6400*
  - *Number of averages: 1 to 4096*

  ** Not available for Velocity and Displacement*

  Notes:
    - *Weighting window is set to Hanning*
    - *This type of measurement requires a trigger input used as phase reference. It measures also the rotation frequency. This frequency value is stored along with the phased spectrum and used as running speed by the vector extraction parameter (see § 0).*

- **Time wave (Acceleration)**:
  - High-pass filter: None, 2 Hz (120 CPM), 10 Hz (600 CPM)
  - Sampling frequency: 204.8 kHz, 102.4 kHz, 51.2 kHz, 25.6 kHz, 12.8 kHz, 5.12 kHz, 2.56 kHz, 1.28 kHz, 512 Hz, 256 Hz
  - Number of samples: 256, 512, 1K, 2K, 4K, 8K, 16K, 32K, 64K. With FALCON long time wave option: 128K, 256K, 512K, 1M, 2M and 4M

- **Synchronous Time wave (Acceleration)**:
  - High-pass filter: None, 2 Hz (120 CPM), 10 Hz (600 CPM)
  - Sampling frequency: 204.8 kHz, 102.4 kHz, 51.2 kHz, 25.6 kHz, 12.8 kHz, 5.12 kHz, 2.56 kHz, 1.28 kHz, 512 Hz, 256 Hz
  - Number of samples: 256, 512, 1K, 2K, 4K, 8K, 16K, 32K
  - Number of averages: 1 to 4096

  Notes: this type of measurement requires a trigger input used to trigger each average. Averaging reduce the influence of the part of the signal not synchronous with the trigger signal.

10.1.2 Hard parameters and signals with IEPE or AC velocity input

- **Overall level (Velocity, Absolute displacement)**:
  - Detection: RMS, true or equivalent peak, true or equivalent peak-to-peak
  - High-pass filter: None*, 2 Hz (120 CPM), 10 Hz (600 CPM), 3 kHz (180 kCPM)*
  - Low-pass filter: 300 Hz (18 kCPM), 1 kHz (60 kCPM), 2 kHz (120 kCPM), 3kHz (180 kCPM), 20 kHz (1200 kCPM), 40 kHz (2400 kCPM)
  - *Measurement time: 1 to 20 s*
  - *Peak hold: Off, On*

  * Not available for Displacement

- **Spectrum (Velocity, Absolute displacement)**:
  - High-pass filter: None*, 2 Hz (120 CPM), 10 Hz (600 CPM)
  - Frequency range: 80 kHz (4800 kCPM), 40 kHz (2400 kCPM), 20 kHz (1200 kCPM), 10 kHz (600 kCPM), 5 kHz (300 kCPM), 2 kHz (120 kCPM), 1 kHz (60 kCPM), 500 Hz (30 kCPM), 200 Hz (12 kCPM), 100 Hz(6000 CPM), 50 Hz (3000 CPM)
  - Number of lines: 100, 200, 400, 800, 1600, 3200, 6400, 12.8k, 25.6k, 51.2k, 102.4k
  - Number of averages: 1 to 4096
  - *Overlapping: 0%, 50%, 75%*
  - *Weighting window: Hanning, rectangular, flat top*
  - *Averaging: Linear, Peak*

  * Not available for Displacement

- ***Phased spectrum (Velocity, Absolute displacement)***:
  - *High-pass filter: None*, 2 Hz (120 CPM), 10 Hz (600 CPM)*
  - *Frequency range: 40 kHz (2400 kCPM), 20 kHz (1200 kCPM), 10 kHz (600 kCPM), 5 kHz (300 kCPM), 2 kHz (120 kCPM), 1 kHz (60 kCPM), 500 Hz (30 kCPM), 200 Hz (12 kCPM), 100 Hz(6000 CPM), 50 Hz (3000 CPM)*
  - *Number of lines: 100, 200, 400, 800, 1600, 3200, 6400*
  - *Number of averages: 1 to 4096*

  ** Not available for Displacement*

  Notes:
    - *Weighting window is set to Hanning*
    - *This type of measurement requires a trigger input used as phase reference. It measures also the rotation frequency. This frequency value is stored along with the phased spectrum and used as running speed by the vector extraction parameter (see § 0).*

- **Time wave (Velocity)**:
  - High-pass filter: None, 2 Hz (120 CPM), 10 Hz (600 CPM)
  - Sampling frequency: 204.8 kHz, 102.4 kHz, 51.2 kHz, 25.6 kHz, 12.8 kHz, 5.12 kHz, 2.56 kHz, 1.28 kHz, 512 Hz, 256 Hz
  - Number of samples: 256, 512, 1K, 2K, 4K, 8K, 16K, 32K, 64K. With FALCON long time wave option: 128K, 256K, 512K, 1M, 2M and 4M

- **Synchronous Time wave (Velocity)**:
  - High-pass filter: None, 2 Hz (120 CPM), 10 Hz (600 CPM)
  - Sampling frequency: 204.8 kHz, 102.4 kHz, 51.2 kHz, 25.6 kHz, 12.8 kHz, 5.12 kHz, 2.56 kHz, 1.28 kHz, 512 Hz, 256 Hz
  - Number of samples: 256, 512, 1K, 2K, 4K, 8K, 16K, 32K
  - Number of averages: 1 to 4096

  Notes: this type of measurement requires a trigger input used to trigger each average. Averaging reduce the influence of the part of the signal not synchronous with the trigger signal.

10.1.3 Hard parameters and signals with Displacement input

- **Overall level (Relative Displacement)**:
  - Detection: RMS, true or equivalent peak, true or equivalent peak-to-peak
  - High-pass filter: 2 Hz (120 CPM), 10 Hz (600 CPM)
  - Low-pass filter: 300 Hz (18 kCPM), 1 kHz (60 kCPM), 2 kHz (120 kCPM), 3kHz (180 kCPM), 20 kHz (1200 kCPM), 40 kHz (2400 kCPM)
  - *Measurement time: 1 to 20 s*
  - *Peak hold: Off, On*

- **Position**:
  - *Measurement time: 1 to 20 s*
  - *Peak hold: Off, On*

- **Spectrum (Relative displacement)**:
  - High-pass filter: None, 2 Hz (120 CPM), 10 Hz (600 CPM)
  - Frequency range: 80 kHz (4800 kCPM), 40 kHz (2400 kCPM), 20 kHz (1200 kCPM), 10 kHz (600 kCPM), 5 kHz (300 kCPM), 2 kHz (120 kCPM), 1 kHz (60 kCPM), 500 Hz (30 kCPM), 200 Hz (12 kCPM), 100 Hz(6000 CPM), 50 Hz (3000 CPM)
  - Number of lines: 100, 200, 400, 800, 1600, 3200, 6400, 12.8k, 25.6k, 51.2k, 102.4k
  - Number of averages: 1 to 4096
  - *Overlapping: 0%, 50%, 75%*
  - *Weighting window: Hanning, rectangular, flat top*
  - *Averaging: Linear, Peak*

- ***Phased spectrum (Relative displacement)***:
  - *High-pass filter: None, 2 Hz (120 CPM), 10 Hz (600 CPM)*
  - *Frequency range: 40 kHz (2400 kCPM), 20 kHz (1200 kCPM), 10 kHz (600 kCPM), 5 kHz (300 kCPM), 2 kHz (120 kCPM), 1 kHz (60 kCPM), 500 Hz (30 kCPM), 200 Hz (12 kCPM), 100 Hz(6000 CPM), 50 Hz (3000 CPM)*
  - *Number of lines: 100, 200, 400, 800, 1600, 3200, 6400*
  - *Number of averages: 1 to 4096*

  Notes:
  - *Weighting window is set to Hanning*
  - *This type of measurement requires a trigger input used as phase reference. It measures also the rotation frequency. This frequency value is stored along with the phased spectrum and used as running speed by the vector extraction parameter (see § 0).*

- **Time wave (Relative displacement)**:
  - High-pass filter: None, 2 Hz (120 CPM), 10 Hz (600 CPM)
  - Sampling frequency: 204.8 kHz, 102.4 kHz, 51.2 kHz, 25.6 kHz, 12.8 kHz, 5.12 kHz, 2.56 kHz, 1.28 kHz, 512 Hz, 256 Hz
  - Number of samples: 256, 512, 1K, 2K, 4K, 8K, 16K, 32K, 64K. With FALCON long time wave option: 128K, 256K, 512K, 1M, 2M and 4M

Synchronous Time wave (Relative displacement):
  - High-pass filter: None, 2 Hz (120 CPM), 10 Hz (600 CPM)
  - Sampling frequency: 204.8 kHz, 102.4 kHz, 51.2 kHz, 25.6 kHz, 12.8 kHz, 5.12 kHz, 2.56 kHz, 1.28 kHz, 512 Hz, 256 Hz
  - Number of samples: 256, 512, 1K, 2K, 4K, 8K, 16K, 32K
  - Number of averages: 1 to 4096

  Notes: this type of measurement requires a trigger input used to trigger each average. Averaging reduce the influence of the part of the signal not synchronous with the trigger signal.

10.1.4 Hard Broad band (spectrum):

This parameter extracts the overall value of the spectrum in the indicated frequency range. It is computed in the instrument.

- Fmin in Hz: lower frequency of the band in Hz
- Fmax in Hz: upper frequency of the band in Hz
- Detection: RMS, equivalent peak, equivalent peak-to-peak
- Parameter: Acceleration, Velocity, Displacement
- Signal to process: select the spectrum

10.1.5 Hard process parameters

A process parameter is defined by

- *Name*
- *Input type: DC input or keyboard input*
- *Unit:*
  - *If temperature: °C or °F*
  - *If "Other": input the unit name*
- *If Input type is "DC"*
  - *Sentivity in mV/Unit*
  - *Measurement time: 1 to 20 s*
  - *Peak hold: Off, On*

10.1.6 Soft parameters computed on signal (post-processing)

- **Peak (Spectrum: AxRS + B Hz +/-I)**:
  This parameter extracts the amplitude of the spectrum at the indicated frequency.
  - A in Order: 1 to extract the running speed, 2 for harmonic 2, …
  - B in Hz: used to extract the amplitude at a fixed frequency.
  - Search range in line: integer to indicate in line the search interval around "AxRS + B".
  - Detection: RMS, equivalent peak, equivalent peak-to-peak
  - Parameter: Acceleration, Velocity, Displacement, As signal*
  - Signal to process: Merged spectrum or select the spectrum. Merged spectrum does not manage Envelope spectrum.
    * "As signal" is not accessible for merged spectrum

- **Broad band (spectrum)**:
  This parameter extracts the overall value of the spectrum in the indicated frequency range.
  - Fmin in Hz: lower frequency of the band in Hz
  - Fmax in Hz: upper frequency of the band in Hz.
  - Detection: RMS, equivalent peak, equivalent peak-to-peak
  - Parameter: Acceleration, Velocity, Displacement, As signal*
  - Signal to process: Merged spectrum or select the spectrum. Merged spectrum does not manage Envelope spectrum.
    * "As signal" is not accessible for merged spectrum

- ***Vector extraction (Phased spectrum: AxRS)**:*
  This parameter extracts the amplitude or the phase of the phased spectrum at the indicated frequency order.
  - *A in Order: 1 to extract the running speed, 2 for harmonic 2, …*
  - *Result: Amplitude or Phase*
  - *Detection: RMS, equivalent peak, equivalent peak-to-peak*
  - *Signal to process: select the phased spectrum.*

  Notes:
  - *The running speed used is the one stored within the phased spectrum and not the one shown on the health matrix.*
  - *Extracted amplitude may be slightly higher than the one of the phased spectrum as this processing relies on an algorithm to limit the estimation error due to the weighting window.*

- ***Kurtosis (time wave)**:*
  Kurtosis is a performant indicator to detect shocks in a time wave. The Kurtosis processing is defined mathematically as the 4th order centered moment of the time series:

$$Kurtosis = \frac{1}{N}\sum_{i=1}^{N}\left(\frac{x_i - \mu}{\sigma}\right)^4$$

  - *Result:*
    - *Overall Kurt.: return the Kurtosis value of the time signal*
    - *Nb of sections > Threshold: return the number of sections with Kurtosis exceeding the threshold per section.*
    - *Max Kurt.: return the Max value of the Kurtosis computed on each sections*
    - *Detected impacts: return '1' if the number of sections exceeding the 'Kurt threshold per section' is greater than 'Threshold in nb of sections' if not return '0'.*
  - *Number of sections: integer value. Number of calculation sections. Not used if "Resul" = "Overall Kurt."*
  - *Kurt threshold per section: Detection threshold for a section. Not used if "Resul" = "Overall Kurt." or "Kurt. Max"*
  - *Threshold in nb of sections: Number of exceeding sections to validate the detection of an impact. Integer value < Number of sections. Used only if "Resul" = "Detected impacts"*
  - *Start in s*: starting abscissa for Kurtosis processing (in second)*
  - *End in s*: ending abscissa for Kurtosis processing (in second)*

  ** If Start = End = 0 then Kurtosis is calculated over the whole signal*

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10.1.7 Combination soft parameters (post-processing)

This list of post-processing can be used to compute a parameter by arithmetic or logical combination of other parameters from the same point. It can be vibration or process parameters:

- **a x P + b**:
- **Sum:** P1 + P2 + …:
- **P1 - P2**:
- **Quadratic sum**: $\sqrt{P1^2 + P2^2 + \cdots}$
- **Quadratic difference**: $\sqrt{P1^2 - P2^2}$
  Note: there is no result if P2 is greater than P1.
- **Multiplication:** P1 * P2 * …:
- **P1/P2**
  Note: there is no result if P2=0
- **Logical combination**: it is used to combine logically alarm statuses of several indicators of the same measurement point. It does not give any value to the indicator. Its alarm status only is worked out depending on the alarm status of the operand indicators
  - **P1 and P2 and …**: the resulting status is the most important alarm status
  - **P1 or P2 or …**: the resulting status is the less important alarm status

Notes:

- For temperature parameters only the combination “P1-P2” is possible.
- For the combinations axP+b, sum and difference, quadratic sum and difference, if the unit of the arguments is the same, it is preserved otherwise the resulting unit is unlabelled.
- For Multiplication and Division combinations the resulting unit is unlabelled.
- When the resulting unit is unlabelled, the values used to combine the parameters are in the storage unit (g, mm / s, µm for vibration data)

10.1.8 Specific parameters for Accurex machines

- **SFx**: Shock Finder index is generated automatically on machines created in Accurex mode. It is based on the ACOEM Shock Finder technology. This indicator has a value from 0 to 5 with Alarm and Danger thresholds at 3 and 5. You can see at a glance the location on the machine generating shocks without the need to analyse in detail every time waves.
  Note: The alarm status of this parameter is not taken into account for the global machine alarm status.
- **HMx**: Harmonic index is also generated automatically on machines created in Accurex mode. It indicates if low or medium frequency spectra include significant harmonic families. This indicator has a value from 0 to 3 with Alarm and Danger thresholds at 2 and 3. You can see at a glance the location on the machine generating high level of harmonics without the need to analyse in detail every spectra.
  Note: The alarm status of this parameter is not taken into account for the global machine alarm status.

10.1.9 Coast-down profile and duration post-processing.

- **Coast-down profile**: This processing allows controlling the slow-down duration of a machine. The deceleration can be checked by measuring the slow-down time between two speed thresholds called “Beginning speed” and “Ending speed” thresholds. Duration shorter than expected can reveal friction hence damage to the machine.
    - Beginning speed: Recording triggering threshold for slow-down time of the machine. From 12 to 60000 RPM (0.2 to 1000 Hz)
    - Ending speed: Stopping threshold for the measurement of slow-down time. From 12 to 60000 RPM and < Beginning speed.
    - Delta TIME (sec): Maximum time between 2 points of the sampled signal: if speed has not varied significantly since the last point, a point is recorded after the indicated time delta. From 0.1 to 60.
    - Delta speed: points of the sampled signal: a point is recorded after a speed variation higher than or equal to the indicated RPM delta for a time period shorter than the time delta. From 0 to 600.
    - Full scale: Full scale value during recording for the y-axis. Greater than Beginning speed.

  Notes:
    - The maximum number of recorded samples is 1024 for a slow-down profile.
    - The end speed can be set to 12 RPM but the time accuracy will depend on the passing moment for the last pulse of the shaft rotation during the last revolution.
    - Recommendations for setting :
        - As a general rule, a slow-down profile with about 500 points is accurate enough to interpret the measurement and compare it with a reference curve.
        - The delta time and delta speed parameters must be adjusted, in particular for machines with a high initial rotation speed (> 3000 rpm) for a long shutdown time (>60 s).
        - For the other machines, delta speed can be set to 0 (maximum resolution with respect to the rotation speed)
    - Measurement, operating mode:
        1. Wait for the display by the collector of the instantaneous rotation speed
        2. Wait for the rotation speed of the machine to be higher than the Beginning speed parameter value
        3. Wait for the bargraph displayed by the collector to switch to red and for the display of the “wait for measurement to start” message
        4. Start the measurement
        5. Wait for 2 seconds to make sure the collector has taken into account the measurement triggering signal
        6. Ask the operator to start the slow-down of the machine

- **Duration**: this post-processing is applied on a coast-down signal and allows determining the time required to go from the Start value to the End value:
    - Start value
    - End value
    - Signal to process: select the Coast-down profile to process.

10.2 APPENDIX 2: MAIN NEW FUNCTIONS AND COMPATIBILITY

10.2.1 Version v1.2

Each new function listed below is described in the corresponding chapter. To help you spot the upgrades of this new version within a chapter, *they are written in italics*.

- Management of process data :
  - Setup: see § 5.3.3 and 10.1.5
  - Analyst: see § 8.3
- Flexibility to rename machine setup standard components: see § 5.3.2
- New measurement types:
  - Kurtosis: see § 10.1.1
  - Hard broad band from spectrum: see § 10.1.4
  - Phased spectrum: see § 10.1.1 to 10.1.3
  - Coast down profile: see § 0
- Access to additional measurement properties:
  - For overall values: measurement time and peak hold: see § 10.1.1
  - For spectrum: averaging type, weighting window, overlapping: see § 10.1.1
- New post processing:
  - Vector extraction (from phased spectrum): see § 10.1.5
  - Kurtosis (from time wave): see § 10.1.5
  - Duration (from coast down profile): see § 0
  - Combinations: see § 10.1.7
- Accurex: Threshold levels are adjusted to conform to ISO10816-3. These new thresholds are applied to new machines or if a machine is modified.
- XPR import: you can now import more data from NEST3: see § 5.1 and application note "DOC3149 - NEST i4.0 v1.2 - Migration from NEST3 EN"
- For Network version:
  - Administration: user management: see § CHAPTER 9
    - Possibility to use LDAP directory to create a new user.
    - User defined profile
    - Profile per data base
  - Installation or update of the client workstation does not need an administrator account.
  - Possibility to use encrypted communication between client workstation and the server: see § 3.1 and manual "DOC3151 - NEST i4.0 v1.2 - Secure communication and LDAP").

Compatibility:

- FALCON v1.57 or later is **mandatory**

10.2.2 Version v1.1

- Network version:
  - Installation: see § 2.2
  - User management: see § 0
- Machine setup with new "Custom" components: see § 5.3.2
- Template based report in docx format:
  - One machine report: see § 8.5
  - Multi-machine global report: see § 8.8
- FALCON Off-Route data management:
  - Upload Off-route data: see § 7.3
  - Merge Off-route data with existing machine: see § 5.1
- Route machine order modification using drag and drop: see § 6.2.3
- Route point order modification: see § 7.2
- Predefined inspection notes management: see § 3.3
- Custom bearing database: see § 3.3
- Multiple reference bearing selection: see § 5.3.2
- Spellcheck function for Advice and Recommendation (Limited to English, Spanish, German, French): see § 8.5

Compatibility:

- FALCON v1.52 or later

10.2.3 Version v1.0

Initial version
Compatibility:

- FALCON v1.47 or later

About ACOEM

ACOEM Group
Reduce your environmental impact

In today's fast-moving world, the environment is increasingly impacted. The ACOEM Group is committed to sustainable development and help companies and public authorities limit their environmental impact by offering products and services that:

- Prevent and control air, noise and vibration pollution
- Increase the productivity and reliability of industrial machinery
- Contribute to the development of effective, robust & noiseless products
- Protect soldiers, sites and vehicles in military theaters of operation

Across the world, ACOEM's 670 employees innovate in the measurement, analysis and control of all environmental parameters through the 01dB, ECOTECH, ONEPROD, FIXTURLASER, MEAX and METRAVIB brands.

For more information, please visit our website at acoemgroup.com