

A photograph of industrial machinery, including large yellow and blue electric motors and grey pipes, with a semi-transparent digital overlay showing data charts and graphs.

Real time vibration monitoring and offline vibration analysis



Real time vibration monitoring

Online monitoring: optimizing processes, increasing product quality



Offline vibration analysis

Detailed analysis, parameterization and configuration

| | |
|---------------------------------------|-----------|
| ibaInSpectra | |
| Real time vibration monitoring | 3 |
| Online monitoring of vibrations | 6 |
| Automatically learn spectral analysis | 8 |
| Monitoring the shaft motion | 10 |
| Deployment of ONNX models | 12 |
| ibaAnalyzer-InSpectra | |
| Detailed offline analysis | 13 |
| Success stories | 15 |
| Order information | 18 |

Real time vibration monitoring



ibaInSpectra is used to continuously monitor any vibrations in real time in order to detect possible sources of error at an early stage. As ibaInSpectra is integrated ibaPDA, not only mere vibration analyses can be performed, but also possible relations between vibrational effects and process behavior can immediately be detected.

Open and versatile

In contrast to many other vibration monitoring systems, ibaInSpectra is not a manufacturer-specific system or limited to individual machines, but rather uses the wide connectivity of iba products. Thus, it is perfectly made for the use in heterogeneous automation structures, that are characterized by a great number of different technical disciplines and controller types.

Due to the smooth integration in ibaPDA, vibrational measurement data as well as other machine, process, material and quality data can be acquired centrally and

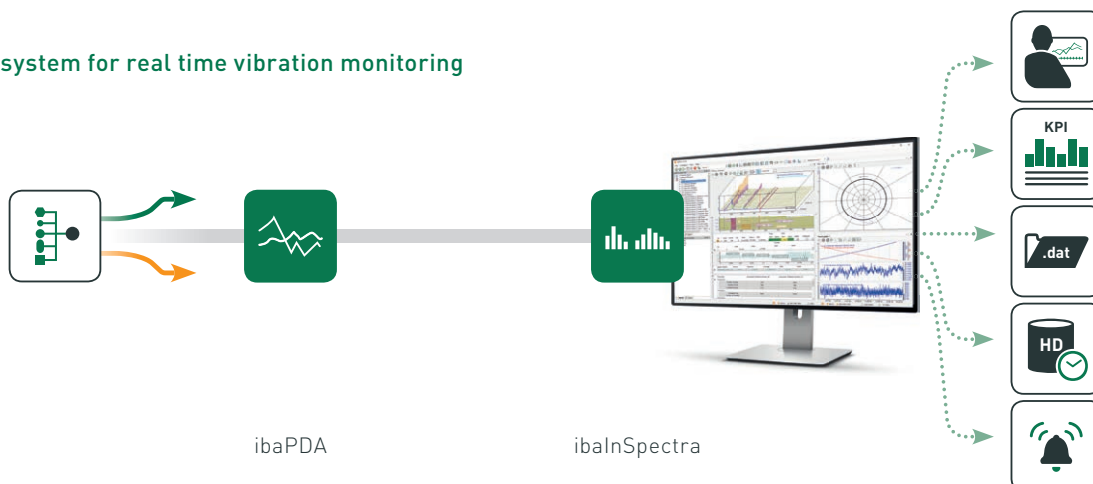
At a glance

- › Real time analysis of vibrations
- › Wide connectivity
- › Comprehensive configuration options
- › Calculation profiles for multiple usage
- › Customized visualization
- › Alarming in case of exceeded limit values
- › Correlation of vibration and process data
- › Expert modules for frequency spectrum and orbit monitoring

related to each other. Hence, besides the pure vibration analysis of a single machine, also possible effects of the vibrations on the process stability and product quality can be detected.

In addition to mechanical vibrations, any other signals can also be monitored and analyzed in the frequency spectrum with ibaInSpectra.

iba system for real time vibration monitoring



Real time analysis

With ibalnSpectra, the signals can be monitored time-synchronously and continuously and the current frequency analyses can be displayed in real time. ibalnSpectra thus differs from condition monitoring systems, which are designed for long-term trends and that often only analyze vibration sensors briefly at intervals of hours or days. Acute vibration phenomena, such as chatter or imbalances, can thus be detected immediately and corresponding alarms can be triggered in real time.

Alarming

Critical conditions or exceeded limit values can be signaled immediately, which contributes significantly to the protection of man, machine and material. Moreover, process parameters that influence the vibrational behavior, can be adapted automatically online.

Example for FFT and orbit view

Frequency spectrum of the input signal, displayed as single spectrum, contour plot or as isometric waterfall diagram with order tracking (marker)

Flexible configuration

Designed as an integrated technology module of ibaPDA, ibalnSpectra serves to monitor vibrations. ibalnSpectra provides various modules for specific applications:

ibalnSpectra modules

The **Expert module** offers the most diverse parameterization options for the frequency band analysis and is the preferred tool for vibration experts.

i Detailed information about the Expert module can be found at page 6

The Auto-Adapting module

automatically learns spectra for different process conditions and uses this as a reference to detect changes in the spectrum over time.

i Detailed information about the Auto-Adapting module can be found at page 8

The **Orbit module** is used to monitor and analyze the shaft motion, for example of plain bearings.

i Detailed information about the Orbit module can be found at page 10

An **ONNX module** is available for evaluating the spectra with neural networks.

i Detailed information about the ONNX module can be found at page 12

Operation and visualization

ibalnSpectra modules have an own branch in the ibaPDA signal tree. For the display, just a suitable view needs to be opened and the ibalnSpectra module has to be dragged in by means of drag & drop. The views offer various display options such as waterfall, contour, orbit view, etc. and can be customized as required.



Control elements for the display

Orbit display with orbit, key phasor, centerline, speed stages and clearance circle

Consistency up to offline analysis

When recording with ibaPDA, the ibaInSpectra modules are stored completely with all the calculated characteristic values in the data file. In ibaAnalyzer, all modules are available in the signal tree and the determined characteristic values can be dragged via drag & drop into the trend view or used for other calculations.

With ibaAnalyzer-InSpectra, module configurations can be

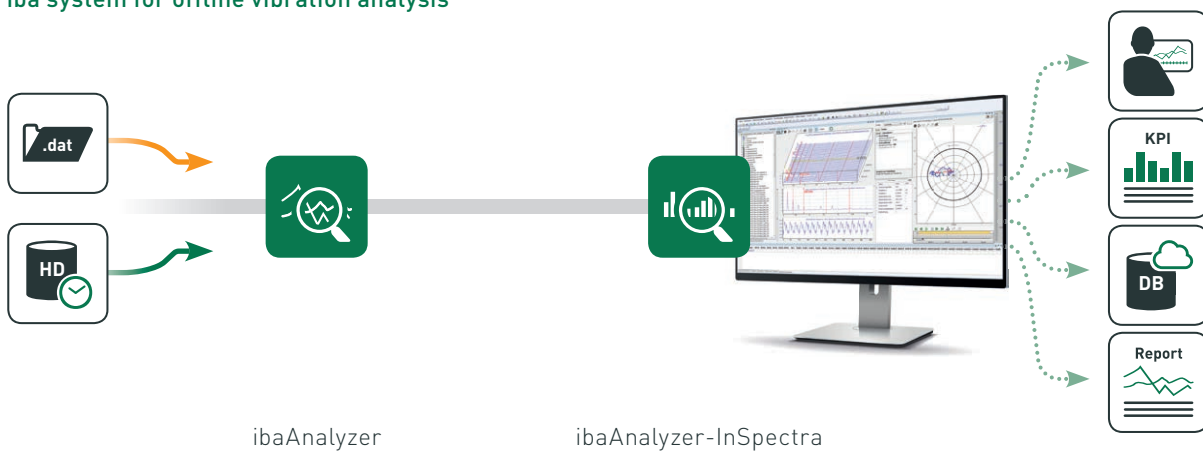
exchanged between ibaPDA and ibaAnalyzer. Analysis configurations can first be designed and tested offline in ibaAnalyzer and then transferred to ibaPDA for real time vibration monitoring. It can also be used to verify existing ibaInSpectra installations to help optimize the online calculations.

Due to the integration in ibaAnalyzer, it is very easily possible to use and compare all recorded process parameters

for the analysis. As a result, unique possibilities are offered to combine process and vibration analysis and to view the problem comprehensively.

i Detailed information about ibaAnalyzer-InSpectra can be found at page 13

iba system for offline vibration analysis



Online monitoring of vibrations

The ibalnSpectra Expert module monitors and analyzes vibrations in the frequency spectrum, which was generated using an FFT analysis. It can be used for a wide range of applications thanks to the high level of flexibility and versatility of the module.

Versatile module for individual vibration analysis

In the Expert module, the frequency bands to be monitored can be freely defined, both statically as well as dynamically depending on other measured variables.

The following parameters are determined for each frequency band as a result of the analysis:

- › Peak
- › RMS (square average)
- › Peak frequency
- › Phase
- › Crest factor

Freely configurable characteristic values can be calculated based on these parameters. In addition, it is possible to define two limits (alert, alarm) for characteristic values or individual band parameters. In addition to the values from the frequency domain, additional values are determined in the signal's time domain, such as minimum, maximum, average, RMS or Crest factor.

The calculations for the analysis can be individually adjusted, saved as profiles, and reused. In particular, the sensor type, type of spectrum and FFT calculation parameters, such as the number of samples, window shape or overlapping factor, can be set.

Different methods of averaging are also available, such as the option of detrending in order to compensate for a slow drift of the measured value.

Order analysis and envelope calculation

In the calculation profile of the ibalnSpectra Expert module, the user can select a speed signal for resampling the input signal depending on the rotation speed. This speed signal can be a pulse train, a pulse counter or an absolute speed value.

With resampling, the order analysis for changing speeds is displayed in a much more comprehensive way than with rescaling the x-axis. What makes ibalnSpectra unique is that it filters out the aliasing effects that occur during resampling, regardless of the rotation speed.

Moreover, signals can be pre-processed with the ibalnSpectra Expert module. Thus, the vibration signals can be filtered and mathematical precalculations can be done, for example, an envelope calculation with freely configurable bandpass filters. Parameters for calculation profiles are listed in the table on the right.

At a glance

- › Comprehensive configuration options
- › Calculation profiles for multiple usage
- › Customized visualization
- › Waterfall display, single spectrum or contour plot
- › Calculation of combined characteristic values
- › Display of frequency bands and characteristic values
- › Alarming in case of exceeded limit values
- › Correlation of vibration and process data
- › Order and envelope spectrum

Alert and alarm

Alert and alarm thresholds can be configured in each defined frequency band to ensure reliable alarming. As soon as a limit value is exceeded, corresponding binary signals are activated. These signals can also be made available to other systems for signaling or for interventions in process control via the output interfaces of ibaPDA.

Parameters for calculation profiles

| | |
|-------------------------------------|---|
| Sensor type | Displacement, speed, acceleration |
| Spectrum type | Displacement, speed, acceleration |
| Speed type (optional) | Pulse train, pulse counter, absolute rotation speed |
| Order analysis | Number of samples per revolution |
| Number of samples | up to 524288 |
| Number of lines | up to 204800 (depending on the number of samples) |
| Overlap | 0 to 95% |
| Suppress DC | yes/no |
| Drift compensation | yes/no |
| Window type | Bartlett, Blackman, Blackman-Harris, Hamming, Hanning, Rectangular, Flattop |
| Normalization | yes/no |
| Method | Magnitude/Power |
| Averaging type for frequency ranges | Linear, exponential, peak hold |

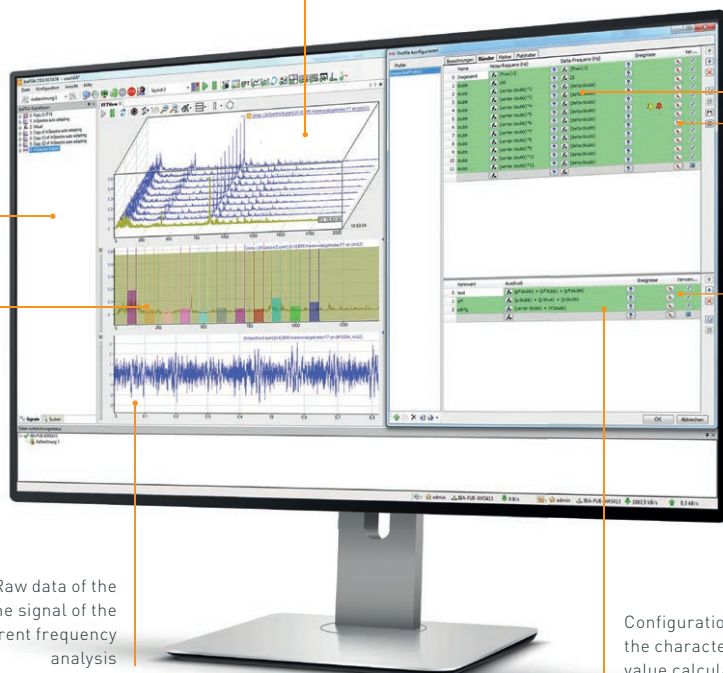
Configuration of bands and characteristic values

Real time visualization of the spectra as an individual spectrum, waterfall or contour view

Signal tree with calculated characteristic values and results of the frequency band analysis

Visualization of the frequency bands with characteristic values and alarm thresholds

Raw data of the time signal of the current frequency analysis



Configuration of the frequency bands to be analyzed

Definition of alerts and alarms for frequency bands and characteristic values

Configuration of the characteristic value calculation

Automatically learn spectral analysis

The Auto-Adapting module can be used to detect damage to machines, gearboxes and motors as well as quality-related changes in process vibrations already at a very early stage. The self-learning InSpectra module offers optimal protection for systems through automatic monitoring in real time using learned reference values.

Detecting damage at an early stage

The Auto-Adapting module is able to use a series of spectra to learn what the good condition should look like. The so-called reference spectrum can be learned for various process states, which, for example, relate to different speeds, materials or load ranges, etc.

Since ibaInSpectra is seamlessly integrated into ibaPDA, the full ibaPDA connectivity is available to acquire all possible process signals in a system and to be used to define the states.

Comparing with the good condition and the quantification of the deviation allows the user to detect changes in process behavior at a particularly early stage before quality issues occur. The Auto-Adapting module also identifies the ranges with the biggest deviations.

Learning and monitoring

Instead of having to manually configure a frequency analysis for certain ranges, all ranges of the spectrum are considered

in the Auto-Adapting module. In the process, the spectrum can be individually divided into any number of ranges. During the learning phase, characteristic values are calculated and learned across all ranges of the spectrum, and a reference spectrum is determined from these values. In the monitoring phase, the Auto-Adapting module compares the current spectrum with the reference spectrum. Since the Auto-Adapting module is based on the ibaInSpectra Expert module, it offers the same extensive options for configuring FFT calculation parameters in profiles and signal preprocessing.

Permitted deviations can be configured individually. For alerts and alarms, percentage limits can be defined that relate to a maximum or average reference spectrum.

Convincing characteristic values

The Auto-Adapting module calculates meaningful characteristic values for every state:

- › Absolute delta: Total difference between the actual spectrum

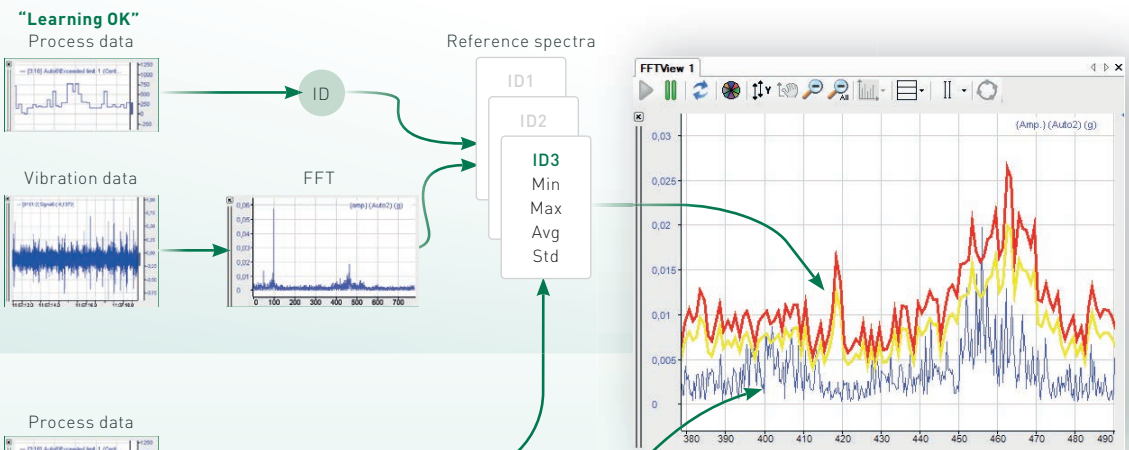
At a glance

- › Self-learning InSpectra module for spectral analysis
- › Reference spectra for various process conditions
- › Analysis across the entire spectrum
- › Automatic learning of reference values
- › Individual definition of alert and alarm limits
- › Online visualization in real time
- › Early detection of changes and damage

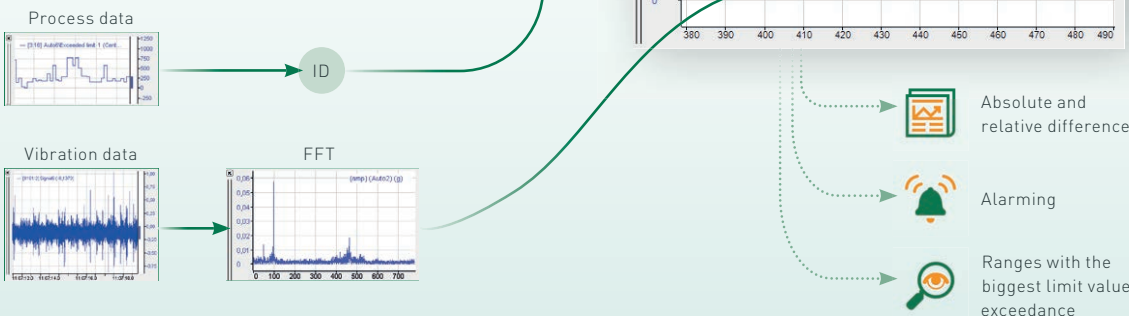
and the threshold values from the reference spectrum.

- › Relative delta: The relative percentage difference between the actual spectrum and the threshold values from the reference spectrum.
- › Center frequency, relative difference and peak value for ranges in which the biggest differences occur between the actual and reference spectrum.

LEARNING PHASE



MONITORING PHASE



Example of monitoring with the ibaInSpectra Auto-Adapting module

Signal tree with calculated characteristic values and trends of the spectra difference

Visualization of the current spectrum (blue) and the reference spectra of the alert and alarm threshold (yellow and red) in the FFT view

Real time visualization of the spectra as an individual spectrum, waterfall or contour view

Time course of the difference from the learned reference spectra as an absolute and relative value

Management and adjustment of the learned reference spectra for the different process conditions

| Bandnr. | Min.Frequenz | Delta.Frequenz | Untere | Oberer | Minwert |
|---------|--------------|----------------|------------------------|------------------------|------------------------|
| 0 | 0.000 | 0.000 | 0.00000000000000000000 | 0.00000000000000000000 | 0.00000000000000000000 |
| 1 | 14.625 | 0.075 | 0.00000000000000000000 | 0.00000000000000000000 | 0.00000000000000000000 |
| 2 | 24.375 | 0.075 | 0.00000000000000000000 | 0.00000000000000000000 | 0.00000000000000000000 |
| 3 | 24.375 | 0.075 | 0.00000000000000000000 | 0.00000000000000000000 | 0.00000000000000000000 |
| 4 | 146.875 | 0.075 | 0.00000000000000000000 | 0.00000000000000000000 | 0.00000000000000000000 |
| 5 | 146.875 | 0.075 | 0.00000000000000000000 | 0.00000000000000000000 | 0.00000000000000000000 |
| 6 | 146.875 | 0.075 | 0.00000000000000000000 | 0.00000000000000000000 | 0.00000000000000000000 |
| 7 | 146.875 | 0.075 | 0.00000000000000000000 | 0.00000000000000000000 | 0.00000000000000000000 |
| 8 | 146.875 | 0.075 | 0.00000000000000000000 | 0.00000000000000000000 | 0.00000000000000000000 |
| 9 | 146.875 | 0.075 | 0.00000000000000000000 | 0.00000000000000000000 | 0.00000000000000000000 |
| 10 | 146.875 | 0.075 | 0.00000000000000000000 | 0.00000000000000000000 | 0.00000000000000000000 |

Monitoring the shaft motion

The ibaInSpectra Orbit module monitors shaft motion in plain bearings, among other things, enabling reliable monitoring and evaluation of machine condition. For a stable calculation of the parameters, even at different speeds, the input signals are sampled depending on the speed.

Calculation of speed-dependent characteristic values

This ensures not only reliable results for all conditions but also allows an averaging of the orbit over several revolutions.

An average value can be calculated (linear) or the maximum values of the corresponding rotation angle are evaluated (peak hold).

The most important characteristic values calculated by the ibaInSpectra Orbit module:

- › Orbit counter: number of calculated orbits
- › X/Y: current shaft position
- › Centerline X/Y: position of the shaft center
- › Peak to peak max: $S(p-p)_{max}$, maximum distance between two points in the orbit
- › Peak to peak max angle: angle of the $S(p-p)_{max}$
- › Peak to peak max shaft angle: rotation angle of the shaft to which $S(p-p)_{max}$ occurs relative to the phase reference
- › Eccentricity: eccentricity of the shaft

- › Distance to clearance: minimum distance of the shaft to the clearance circle (bearing shell)

Better insight thanks to a flexible visualization

The Orbit view offers various possibilities to adjust the visualization of the shaft motion individually. So the shaft motion can be visualized including phase reference. In addition, the movement history of the shaft center can be displayed over a time period.

Another option is e.g. to display different acceleration levels during the start-up of the machine. To improve the understanding of the movement, the clearance diameter, rotation direction, sensor positions and the position of the phase reference can be displayed.

Offline detailed analysis with playback function

For a detailed offline analysis the recorded data can be opened together with the calculation

At a glance

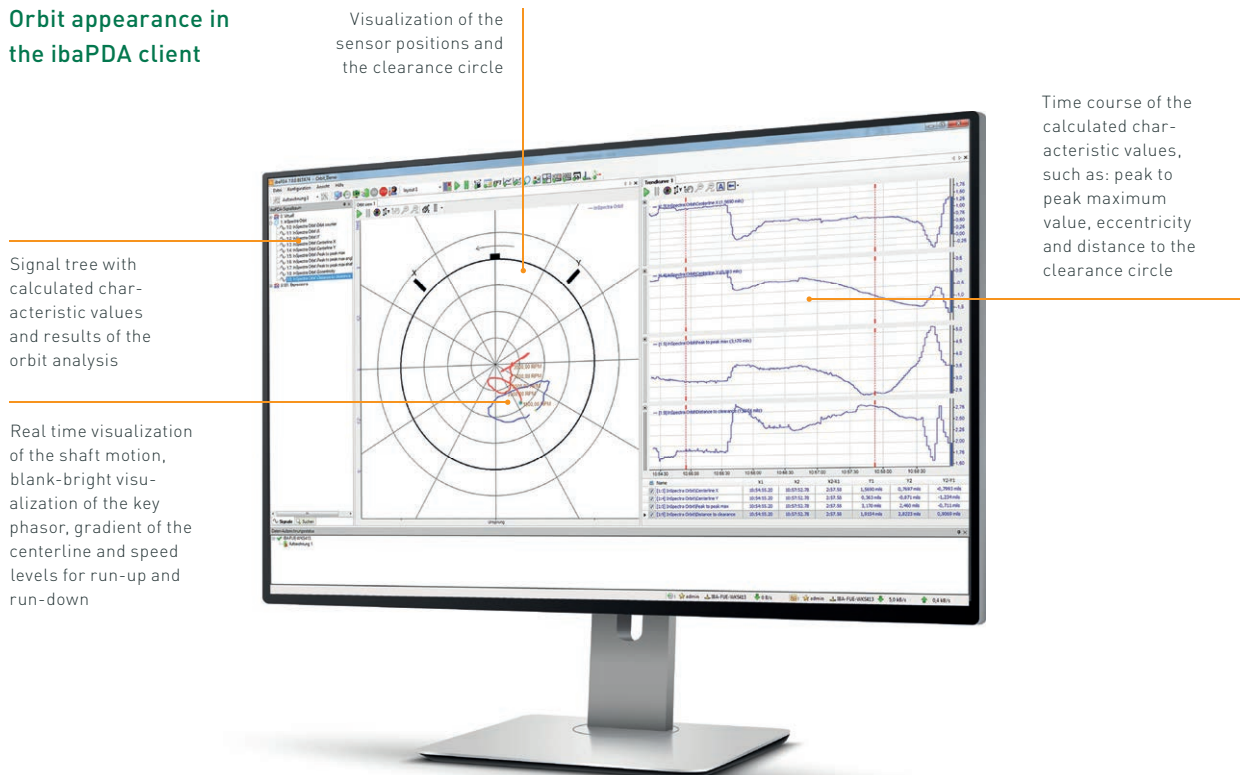
- › Calculation of characteristic values for validation and monitoring
- › Display of one or several shaft motions (orbit)
- › Display of the shaft center motion (centerline)
- › Speed-dependent resampling
- › Visualization of acceleration levels
- › Calculation profiles for multiple usage
- › Customized visualization
- › Display of the phase reference
- › Averaging over several rotations (linear or peak hold)

profiles in ibaAnalyzer-InSpectra. Shaft motions can be analyzed subsequently and can be compared with other process data to identify correlations. Additionally, the behavior can be reproduced at certain points of time, using the playback function.

Characteristic values of the Orbit module

| | |
|------------------------------|--|
| Orbit counter | Displacement, speed, acceleration |
| X/Y | Current shaft position in the coordinate system |
| Centerline X/Y | Center position of the shaft center per calculation in the coordinate system |
| Peak to Peak max | Peak to peak maximum value (S(p-p)max), maximum distance between two points in the orbit |
| Peak to peak max angle | Angle at which the S(p-p)max occurs |
| Peak to peak max shaft angle | Rotation angle of the shaft to which S(p-p)max occurs relatively to the key phasor |
| Eccentricity | Eccentricity of the shaft |
| Distance to clearance | Minimum distance of the shaft to the clearance circle |

Orbit appearance in the ibaPDA client



Deployment of ONNX models

The ONNX module can be used to apply AI models in ibaInSpectra. This allows easy deployment of ONNX models in ibaPDA and live monitoring of any measurement data.

Custom ONNX model

ONNX is an open exchange format designed specifically for representing machine learning models. It enables models to be trained according to your own requirements and then—after export—flexibly executed in different systems or environments.

Such a model can be trained using existing measurement data, for example, data from ibaHD-Server. This allows you to create customized AI models that are optimally tailored to real production or process data.

Live monitoring in ibaInSpectra

To use an ONNX model in ibaInSpectra, the model must first be available as an ONNX file. This file can be loaded directly into the ONNX module of ibaInSpectra. Measurement

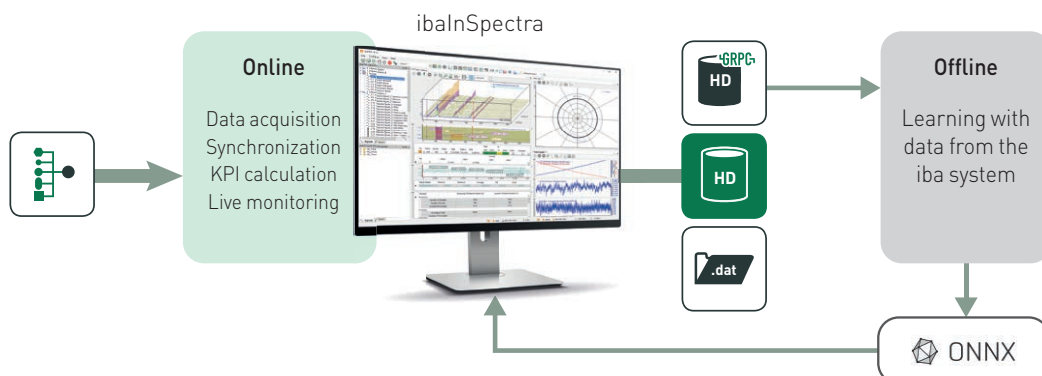
data can then be monitored live by applying the trained model to an input signal—such as characteristic values, spectra, or band vectors calculated in ibaInSpectra.

The outputs or results provided by the model are defined in the ONNX model itself. These results are available in the ONNX module and can be recorded as signals in ibaPDA. These include, for example, alarms, an anomaly indicator, or quality indicators for the monitored product.

Like all other signals in ibaPDA, these output signals can also be visualized, compared with raw data, used for further calculations, or used for alarms. This allows intelligent models to be efficiently integrated into existing measurement and monitoring systems.

At a glance

- › Easy deployment of ONNX models
- › Live monitoring of signals, calculated characteristic values, spectra, etc.
- › Online visualization of results



ibaAnalyzer-InSpectra



ibaAnalyzer-InSpectra offers the functionality of ibaInSpectra for vibration monitoring offline in ibaAnalyzer. The configuration of the online system can thus be carried out offline based on acquired data and calculations can be validated and adjusted subsequently. In addition, ibaAnalyzer allows a detailed analysis of the recorded data for process and machine diagnosis.

Integrated tool environment

ibaInSpectra is an add-on in ibaPDA and offers various options of online monitoring of vibrations and shaft motions. ibaAnalyzer is a powerful analysis tool to analyze recorded data and to diagnose the causes of problems in processes. ibaAnalyzer-InSpectra now bridges the gap between ibaPDA and ibaAnalyzer and an integrated tool chain from online monitoring to detailed offline analysis is offered. The two most important modules in this context are the Expert module for the frequency band analysis of vibrations and the Orbit module for the analysis of shaft motions.

Configuration tool for ibaInSpectra

ibaAnalyzer-InSpectra makes it possible to configure calculation rules in the form of profiles offline and to test them on already recorded data. These profiles can be transferred to ibaPDA using export and import functions and used there for live monitoring.

Existing calculation profiles from ibaInSpectra can also be transferred to ibaAnalyzer-InSpectra in order to adjust the calculations or limits values.

Validation and offline analysis

With ibaAnalyzer-InSpectra, not only raw signals and calculated characteristic values can be opened in ibaAnalyzer, but also the calculation profiles. Thus it is also possible to carry out the calculations of ibaInSpectra offline. Characteristic values that have triggered an alarm can be validated and the problem can be analyzed offline. The extensive features of ibaAnalyzer-InSpectra offer a useful option here: Changing the analysis rules gives you a better view of the information relevant to the problem being considered.

Licensing

The InSpectra Expert view is available in ibaAnalyzer without additional license. With the

At a glance

- › Offline configuration of the ibaInSpectra profiles based on recorded data
- › Fine tuning of vibration and orbit monitoring offline
- › Validation of alerts and alarms
- › Detailed analysis of the process and machine behavior taking into account all process parameters
- › Frequency band analysis using the Expert module
- › Shaft motion analysis using the Orbit module

ibaAnalyzer-InSpectra+ license, the results of the InSpectra calculations will be available in ibaAnalyzer as signals, can be exported to databases and used for further processing in reports or with ibaDatCoordinator.

ibaAnalyzer-InSpectra modules

| Expert | Orbit |
|--|--|
| Freely configurable frequency band analysis | Analysis of shaft motions |
| Calculation of statistical characteristic values | Calculations based on rotation angle |
| Calculation of combined characteristic values of the frequency band analysis | Calculation of characteristic values as per DIN ISO 7919 |
| Detailed and flexible visualization | Extensive visualization of the shaft motion |
| Order analysis through speed-dependent resampling | Display of speed levels during run-up and run-down measurements |
| Synchronization and playback of all displays with navigation pane and marker positions | Synchronization and playback of all displays with navigation pane and marker positions |

Elements in the ibaAnalyzer-InSpectra view:

Configuration area: Input signals and calculation profiles of the respective module are configured here.

Visualization area of the offline Expert module

Visualization area of the offline Orbit module

The playback area makes it possible to simulate the time sequences and jump to certain events.

The result table shows the calculated characteristic values for the current cursor position.

Both the navigation pane and the marker positions are synchronized between ibaAnalyzer and ibaAnalyzer-InSpectra.

Success stories



Detecting critical vibrations in rolling mills

In rolling mills, many vibrations may occur that have negative effects on the life cycle and the state of the plant, but also on product quality. If wear and defects are detected early enough, appropriate countermeasures can be initiated for reducing waste and downtimes.

This requires precise knowledge of the vibration behavior

of the plant and correlation with other process data from the plant. The goal is to quickly detect vibrations caused by external excitation or faults.

The characteristic values from *ibaInSpectra* and the process data from *ibaPDA* can be used to draw conclusions about the cause of undesired vibrations. The integrated alarm function

immediately informs you when predefined limits are exceeded.

Detailed information can be found at <https://www.iba-ag.com/en/success-stories/detecting-critical-vibrations-in-rolling-mills>



Automatic alarm in real time when limit values are exceeded



Easy integration in the existing *iba* system



Minimizing false alarms by taking process parameters into consideration



Conclusions about possible causes

Acoustical monitoring in the engine testing technology

Test benches at an automobile engine plant had to be retrofitted by the test bench manufacturer to include acoustics analysis. Before including an iba system, long-term tests (> 300 h.) had to be interrupted at night, as employees only work for two shifts. Therefore, a system should be retrofitted that monitors vibration and noise levels and reliably

shuts down automatically when limit values are exceeded.

The solution is the ibaPDA data acquisition system, which serves as the basis for coupling and recording all measurement data. ibaInSpectra analyzes the vibrations recorded by acceleration sensors and microphones. If a critical condition is reached on the test bench, the system

automatically shuts down. Flexibility and easy parameterization were the deciding factors in choosing the iba system.

Detailed information can be found at <https://www.iba-ag.com/en/success-stories/acoustical-monitoring-in-the-engine-testing-technology>



Uninterrupted long-term tests



Easy integration into existing test bench automation



Convenient solution for recording, displaying, and analyzing mechanical vibrations in machines and systems

Chatter monitoring – Increase productivity through precise vibration analysis

Chatter marks in the rolling process lead to quality problems, production delays, and high costs. To avoid this, the rolling speed was often reduced in the past—at the expense of productivity.

With ibaInSpectra, a solution has been introduced that directly detects roller vibrations and simultaneously records all relevant process and qual-

ity data. The integrated online spectral analysis enables continuous chatter monitoring:

At low vibration levels, the rolling speed can be safely increased. It can be adjusted immediately at high levels.

The result is optimal control of the process by the operator—and an increase in rolling speed and productivity.

The additional offline analysis allowed the causes of limit value exceedances to be clearly identified. The iba system contributes significantly to ensuring high end product quality and optimizing production times.



Easy integration in the existing iba system



Conclusions about possible causes



Increasing productivity while ensuring product quality



Vibration monitoring system for cold rolling mills and tension leveler

Critical vibrations in a process at an aluminum processing plant caused problems in production. Since the iba system for condition and vibration monitoring was installed, many critical downtimes have been avoided.

Process data is essential for the critical evaluation of a process engineering plant. In this

case, data is acquired using an ibaPDA system, while process analysis is performed on collected data using ibaAnalyzer.

However, vibration monitoring is performed on distributed edge devices. After acquiring vibration data from acceleration sensors, the ibaPDA add-on ibaInSpectra is used to analyze

this data. ibaInSpectra works with frequency band analysis. Consequently machine, process and product data is used to eliminate quality problems related to vibration of the system.

Detailed information can be found at <https://www.iba-ag.com/en/success-stories/aluminium-processing-plant>



Easy integration in the existing iba system



Avoiding critical downtime



Correlate vibration data and machine data with just one data acquisition system

Order information

Software

| Order no. | Name | Description |
|-----------|------------------------|--|
| 30.681223 | ibaInSpectra | ibaPDA license upgrade, Spectrum Analysis Library, 4 modules |
| 30.681224 | ibaInSpectra-100 | ibaPDA license upgrade, Spectrum Analysis Library, 100 modules |
| 33.010410 | ibaAnalyzer-InSpectra+ | Offline vibration analysis: trend and output of InSpectra results in ibaAnalyzer |

Training

| Order no. | Name | Description |
|-----------|---|-----------------------------|
| 61.000700 | Monitoring and analysis of vibration data with ibaInSpectra | 2-days advanced course |
| 61.002000 | Condition Monitoring and diagnostics of machines according to ISO 18436 category I | 5-days certification course |
| 61.002001 | Condition Monitoring and diagnostics of machines according to ISO 18436 category II | 5-days certification course |

The complete training program can be found at www.iba-ag.com/en/training



iba AG Headquarters Germany

Office address
Gebhardstr. 10-20
D-90762 Fuerth

Tel.: +49 (911) 97282-0
www.iba-ag.com
info@iba-ag.com

iba AG is represented worldwide by subsidiaries and sales partners.
Technical changes and errors excepted.

Mailing address
P.O. box 1828
D-90708 Fuerth

International Sales Partners

Please scan the QR code



<https://www.iba-ag.com/en/contact>