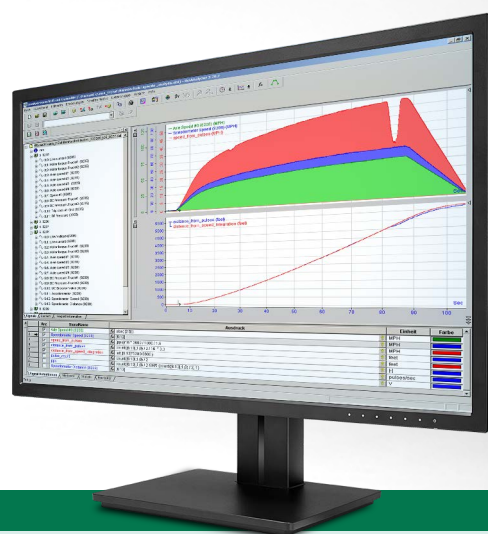**iba**

Powerful Analyzing and Evaluating of Measured Data

ibaAnalyzer

ibaAnalyzer
Powerful analyzing and
evaluating of measured data

ibaAnalyzer-Reportgenerator
Automatic generation of individual reports

ibaAnalyzer-DB
The database interface for ibaAnalyzer

ibaAnalyzer-InSpectra
Detailed offline vibration analysis

ibaAnalyzer-InCycle
Detailed offline analysis of cyclic processes

ibaAnalyzer-Maps
Display of GPS positions and routes

ibaDatCoordinator
Data management automation

Measurement Systems for Industry and Energy
www.iba-ag.com

Powerful Analysis with ibaAnalyzer

ibaAnalyzer is characterized by broad functionalities for analyzing and evaluating. The application offers an intuitive operation along with the complex scope of functions. The license for editing measurement files which have been generated with the iba system, is for free.

Flexible, powerful, free of charge

Within the iba system, ibaAnalyzer is the key element in the field of data analysis. ibaAnalyzer is a very powerful tool for analyzing measurement data efficiently and without generating additional costs and deriving information from the analyses. The license for ibaAnalyzer is free of charge for analyzing data which have been acquired with iba systems like ibaPDA, ibaQDR or ibaLogic and were saved in the dat format as well as for data that have been recorded with ibaHD-Server.

ibaAnalyzer offers a wide range of analyzing features. Analysis procedures can be flexibly created and individually adapted, so that different users get the right analysis for their special purposes,
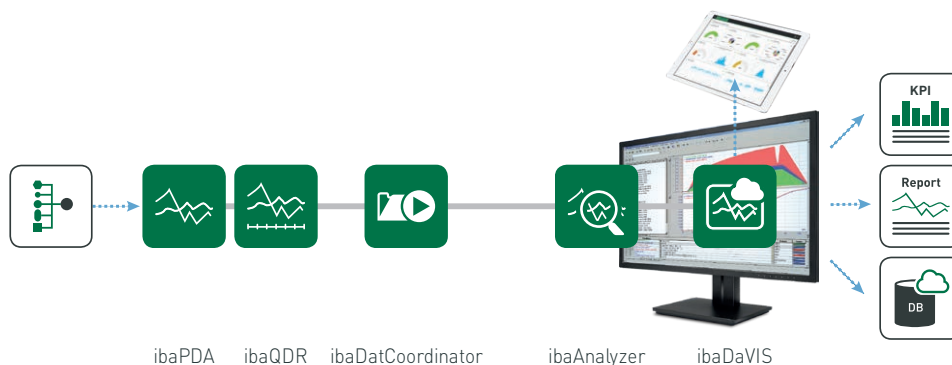
At a glance

- › Comprehensive online and offline analysis
- › Intuitive user interface with smart docking windows and drag & drop function
- › Combination of data coming from various measurement processes or data sources
- › Powerful mathematical and technological functions for manipulating, combining, calculating and generating signals
- › Powerful graphical digital fiter designer
- › Analyzing in the frequency range (FFT)
- › Reuse of analyses
- › Versatile markers for measurement of signals

such as analyzing failures but also perform long-term analyses to evaluate and optimize processes.

The wide-ranging analysis features comprise the automatic computing of specific characteristic values and statistical

values, but also product related quality data that can be used for a superordinated quality management system. Moreover, by means of powerful mathematical and technological functions signals can be combined, calculated or set into relation to the raw values.

ibaPDA   ibaQDR   ibaDatCoordinator   ibaAnalyzer   ibaDaVIS

Using ibaAnalyzer and ibaDatCoordinator, various procedures can be executed automatically.
ibaDaVIS enables the visualization of process data and characteristic values in a web browser.

All partial windows like signal tree, signal strips, value tables, search dialog etc. can be positioned freely. Markers can be used to measure signal characteristics quickly and easily.

Another feature of ibaAnalyzer is its outstanding efficiency. Recurring analysis procedures can be automated in an easy way and hence relieve the user of routine work. With the integrated Reportgenerator, reports can be generated automatically which offer individually defined contents and layouts. For further information about the Reportgenerator, please see page 9.

Analyzing measurement data
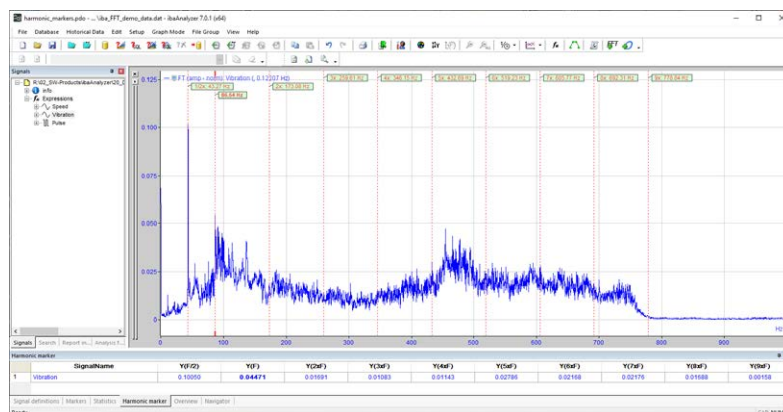
Data can be analyzed either online during the measurement procedure or independently (offline). If the measurement files are stored on a data server in the network, several interested users have access to these files and can analyze them according to their special needs. For this purpose, within one company, ibaAnalyzer can be copied and installed as often as needed, allowing any authorized user to analyze the data under electrical, mechanical or technological aspects. The files can be forwarded via e-mail to specialists who can analyze them at any place, at any time.

Intuitive use, comprehensive display

The graphical user interface of the application can be used easily and intuitively. All partial windows and tabs can be positioned freely and docked on using drag & drop. The files and signal channels are managed in a comprehensive way due to a graphical surface. On the screen, any number of signals can be displayed. For this purpose, depending on the requirements several signals can be put on a scale or each signal can be assigned to an own scale. For seeing details, the view can be zoomed up to individual measurement points only by dragging with the mouse. For a better overview, you can assign a different color to every graph. Often, analog signals are compared with sequences of digital signals to better understand process events. In ibaAnalyzer, both signal types can be combined without any problems. Text information that is stored in the measurement file can be displayed in relation to the measurement file or to an individual signal.
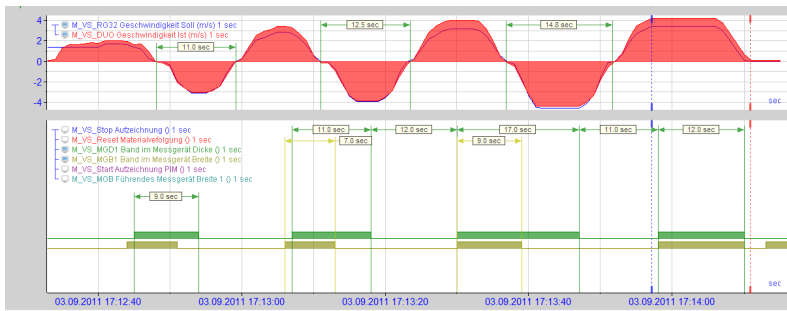
Signal-oriented analysis

In the signal trends, signal values and distances between signals can be measured using two markers. Hence, length and time segments can be determined clearly. The current values are displayed in a comprehensive way in a table.

Also statistical information like maximum, minimum, average value and standard deviation is available at a simple mouse click. The values are always calculated for a segment of the trend which can be set fast and freely using the cursor.

For accentuating certain events in the signal path, ibaAnalyzer offers additional markers, which are displayed when predefined

Signal tables with FFT results (main frequency, harmonics)

With the interval function, analog and digital signals can be measured with a simple mouse click. The measured intervals are clearly displayed.

conditions have been fulfilled. This way, e.g. a marker can be displayed where a limit value has been exceeded for the first time.

Interval function

Using the interval function, digital signals and distances between events can be measured quickly and easily during analysis. A double-click displays the duration of TRUE and FALSE states directly. The interval function is available in all X-axis modes and is displayed in the corresponding X-axis unit.

In addition, the duration of analog signals can also be measured. The beginning and the end of an interval can be defined interactively with the markers.

Formula editor, creation of virtual signals

For more detailed analysis, ibaAnalyzer offers a variety of mathematical functions that can be used to perform operations such as integral, differential, trigonometric functions, frequency filters, Fourier transformation, and statistical functions such as minimum, maximum, average, percentiles, standard deviation, correlation, and kurtosis in addition to the usual arithmetic and logical calculations. For example, if the speed signal of a machine is available, it is possible to calculate the acceleration via the derivative. For analyzing electric grids, the user

has a wide variety of functions at his disposal, for e.g. computing the RMS, effective or 3-phase values, determining distortion and power factors, etc. In addition, the mathematical functions can be used to generate virtual signals or vector signals for further calculations and analyses.
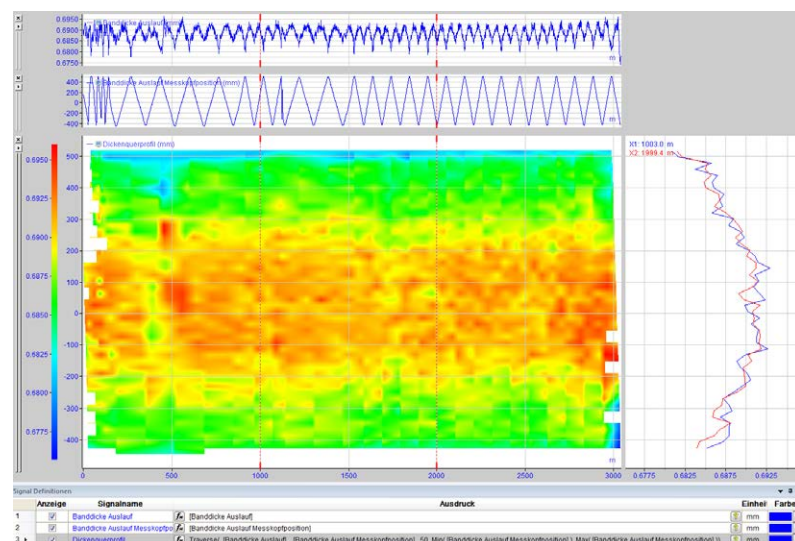
Macros

Comprehensive and standardized analysis functions can be defined and saved as so-called macros. Macros increase the clarity and are created by means of the functions mentioned above. They can be used universally, since the input and output parameters are replaced by placeholders. Macros can be stored globally and hence are also available

for other analyzing purposes. Macros can be exported and imported for exchange.
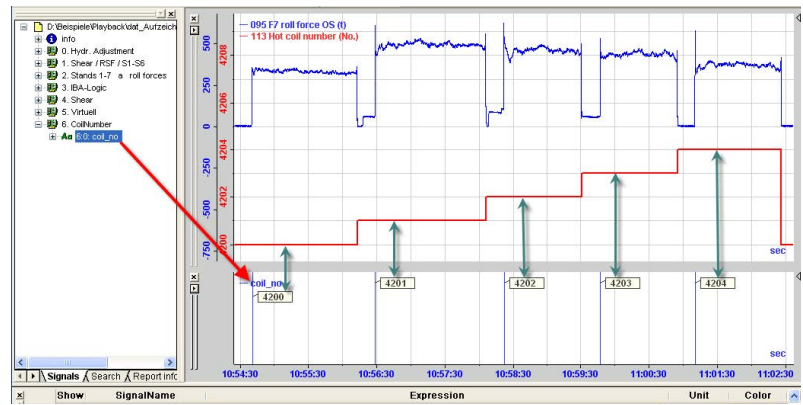
Length-based display

For analyzing the production processes of long products, like e.g. in a rolling mill in metal processing industries, ibaAnalyzer offers in addition to a time-based display also a length-based display of the signals. Especially for evaluating product quality regarding exceeded tolerances or the calculation of the start and end length section, length-based data are indispensable. The conversion function integrated in ibaAnalyzer only requires a speed or length signal from production for this purpose.

In the example above, the thickness profile of a rolling strip is shown as top view in false-color representation. On the right, the user can see the progression of the measured values for the both marker positions.

5

Display of the recorded videos in-cluding the triggering signal

Display of text channels in the signal stripes facilitate e.g. the product assignment

Filter editor

By means of a completely graphi-cal input, several digital filters can be configured, like e.g. low pass, high pass, band pass and band stop. Moreover, Butter-worth, Tchebycheff, elliptical and other filter characteristics are supported. The filters may be tested with real measurement signals or by an integrated signal generator. Once an optimum filter design has been found, it can be stored and hence is available for further analyses. Moreover, filter parameters can be expor-ted, e.g. for configuring filter function blocks in ibaLogic.

Pictures say more

If additional image informa-tion has been recorded with ibaCapture synchronously to the measurement signals, the video signals are shown together with the measurement signals in the signal tree. When playing the video, the current position of the video in the signal trend is shown by a marker. Controlling the playback speed and zoom functions support the user in viewing details. Video sequen-ces can be exported, single images can document certain events in reports as snapshots.

Analyzing ibaHD-Server data

For analyzing data that has been recorded with ibaHD-Server, a time range from the recording can be selected interactively in the ibaAnalyzer preview window or by using the calendar function. In the signal preview, individual signals can be selected which can be subsequently processed in exactly the same way as sig-nals from a measurement file. The measurement data pro-cessed like this in ibaAnalyzer, can be saved subsequently as measurement file and used outside the ibaHD-Server.
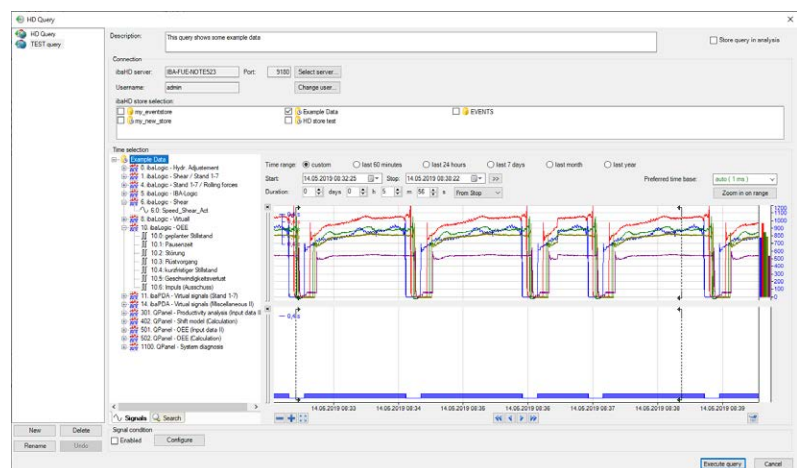
Query of signal conditions

The query of data from ibaHD-Server must not only be limited to a period of time, but can also be based on certain signal states.

Events or any expressions of signal conditions can be used as query criteria. This can be the state of a digital signal or the exceeding or falling below a value. Moreover, any conditi-ons can be created by means of logical links and thus describe any state of the process or event.
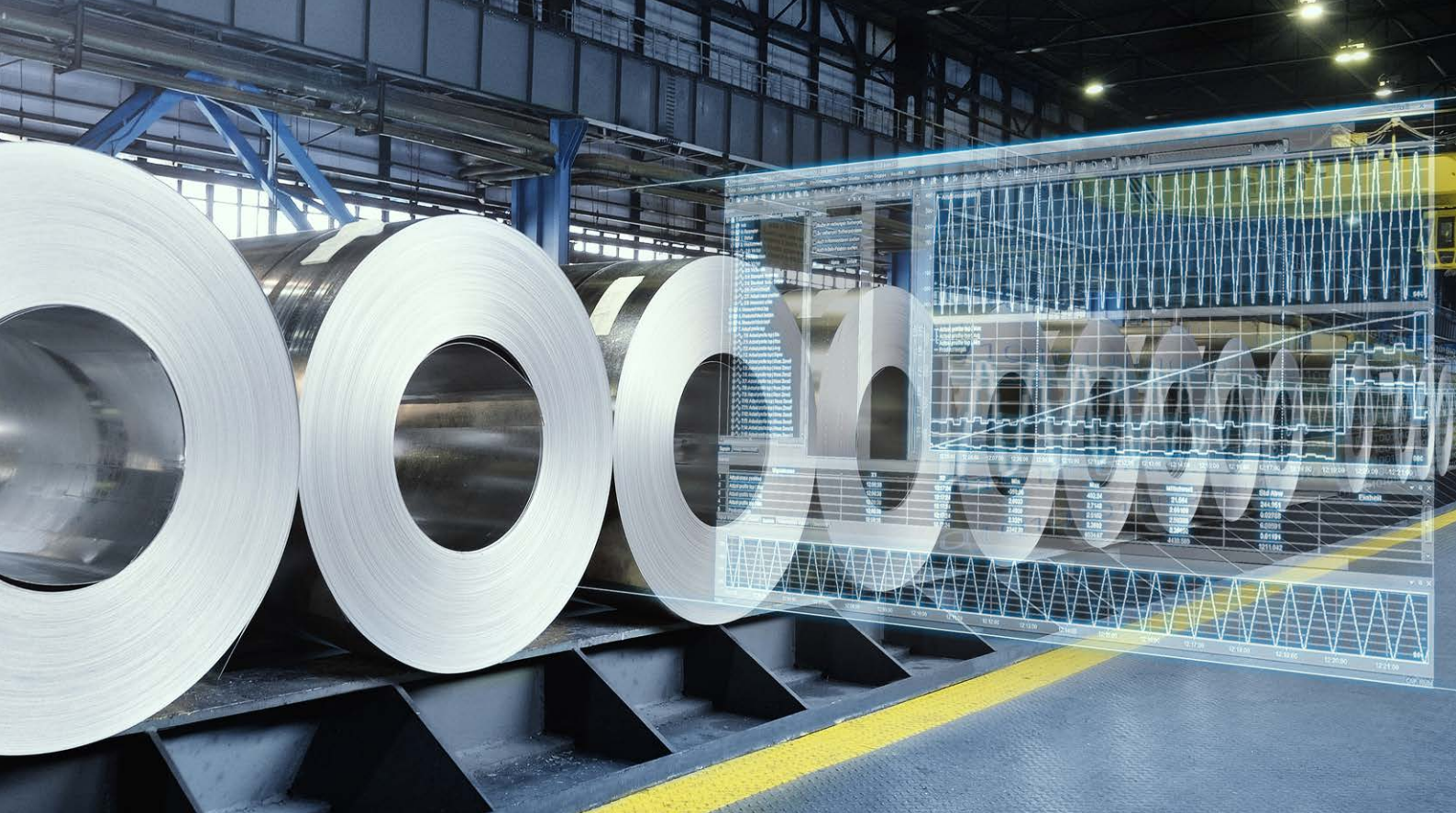
In addition, a time slot can be defined and a pre-trigger and post-trigger time can be set in

HD query dialog

order to display only the interesting signal range as a result.

If the condition is met several times within the set period, e.g. in case of a recurring event, the query returns a corresponding number of query results. These results are treated like just one group of data files. The scroll function or slide show provides a quick overview of the query results.

Reusing analysis regulations

Often the evaluation of the data over different time periods or batches should always be the same and reproducible in order to be able to recognize and compare desired results immediately. For this purpose, all settings and supplements are stored during the interactive analysis in an analysis file. Linked to an analysis file, the measurement files are always analyzed in the same and consistent way. For different purposes, different analysis files can be saved, e.g. for maintenance staff, process engineers or quality managers. In addition, it is possible to forward measurement files with an analysis file allowing the same evaluation to be carried out by other users.

Exporting data and hardcopy

With the print function a first report can be generated quickly. In addition to the currently displayed signal trends and the signal table, the marker and statistics tables or comments are also printed.

Using the export function, selected data can be exported to a file. This reduces the file size and is an advantage when the analysis is to be forwarded to third parties. Besides the well-known dat format, other export formats are possible, like e. g. a text file (ASCII), the Comtrade format or Apache Parquet. With this function, measurement files can be exchanged with other programs, e.g. spreadsheet programs.

Additional functions
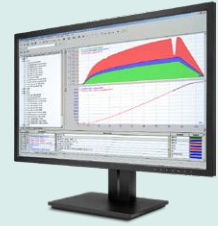
ibaAnalyzer-File-Extract

With the add-on ibaAnalyzer-File-Extract, which is subject to charge, measurement data in iba-dat format can be exported into a number of frequently used standard formats. The export can also be automated with ibaDatCoordinator. The resulting files can then be imported by other programs.

› Automated export of iba-dat files to standard formats
› Easy creation of files in ASCII format
› Other formats: COMTRADE (also according to IEC 60225-24 ed. 2: 2013), TDMS, Apache Parquet, Matlab
› Support of length-based data (ibaQDR)

ibaAnalyzer-E-Dat

With the ibaAnalyzer-E-Dat add-on, which is subject to charge, measurement files that are not available in dat format, can be analyzed using ibaAnalyzer.

› Easy import via the normal „Open data file" dialog
› Supported formats: CSV (ACII), COMTRADE, EDAS, TDMS, Danieli FDA, Apache Parquet, Matlab, wave files, PQDIF (further formats are added constantly).

ibaAnalyzer-Reportgenerator

With the Reportgenerator integrated in ibaAnalyzer customized analysis reports can be generated automatically. Contents and layout can be configured individually and issued in different file formats (pdf, jpg, html, etc.).

› For detailed information, please see page 9.

ibaAnalyzer-DB

With ibaAnalyzer-DB, the user has got the possibility to write measurement data to a database or analyze data from a database. Different database formats are supported. As a separate product, this function is subject to licensing.

› For detailed information, please see page 11.

ibaAnalyzer-InSpectra

With ibaAnalyzer-InSpectra, the configuration of the online system ibaInSpectra can be performed offline based on recorded data. Calculations can be subsequently validated and adapted. ibaAnalyzer-InSpectra can be licensed individually or is included in ibaInSpectra (add-on for ibaPDA).

› For detailed information, please see page 15.

ibaAnalyzer-InCycle

With ibaAnalyzer-InCycle, the configuration of the online system ibaInCycle can be performed offline based on recorded data and calculations can be subsequently validated and adapted. With the ibaAnalyzer-InCycle+ license, the results of the InCycle calculations become available as signals and can be processed and exported to databases.

› For detailed information, please see page 16.

ibaAnalyzer-Maps

Using ibaAnalyzer-Maps, it is possible to analyze the geographic position and position course of moving assets based on recorded GPS data. ibaAnalyzer-Maps is subject to licensing.

› For detailed information, please see page 17.

ibaDatCoordinator

With the ibaDatCoordinator program, which is free of charge, recurring analyses can be started and executed automatically. The analyses can be controlled either process or event-oriented. The program monitors and executes actions like creation of reports, database extraction or copying measurement files. In case of failures the responsible staff is notified via e-mail.

› For detailed information, please see page 18.

ibaAnalyzer-Reportgenerator

In ibaAnalyzer, the report generator is a powerful tool that allows flexible creation of individual reports. IbaAnalyzer-Reportgenerator offers efficient options for creating templates and presents analysis results in a proper form.

At a glance

› Generates customized quality documentation automatically
› Batch, shift, weekly or monthly reports
› Failure reports with notification
› Issued as printout or file export in different formats
› Can be configured flexibly
› Display of the measurement values as signal graph, diagram or table
› Display of barcodes and images
› Display of values calculated in ibaAnalyzer, text information, comments, etc.

Creating reports individually

Different divisions like production, quality management or controlling have different demands on reports. With ibaAnalyzer-Reportgenerator, reports can be created product or shift-related or across products over a long period of time. Moreover, it is possible to automatically generate failure reports when a certain event occurs and send them as an e-mail. The ibaAnalyzer-Reportgenerator offers numerous elements that allow the user to design customized analysis reports. The measurement data can be displayed as signal trends, tables or diagrams. Product related data can be integrated dynamically as variable or comment.

Reports at the push of a button

Once, the creation has been configured, the reports can be virtually generated at the push of a button. The reports can be printed directly or issued as files in many different file formats, e.g. pdf, rtf, xml, html, jpg, tiff etc.

The reports can be created automatically by means of command-line command or ibaDatCoordinator, sent via e-mail or stored at a defined storage location.

Flexible layout

The enormous flexibility of ibaAnalyzer-Reportgenerator becomes apparent when looking at the various elements and layout options:

The signal trends of selected signals as displayed in ibaAnalyzer, can be applied to the report, including the display of markers, limit values, minima, maxima and average values. The options offered by ibaAnalyzer can be fully exploited.

The measurement values can also be displayed as table. The length of the table is variable, it adapts dynamically to the number of chosen measurement values in the measurement file. If statistical or temporal correlations are to be shown, the measured values can be edited as charts - as there are bar, scatter or pie charts.

Also graphical objects like product images, images of the plant or logos can be positioned freely. Barcodes can also be generated and displayed in the report.
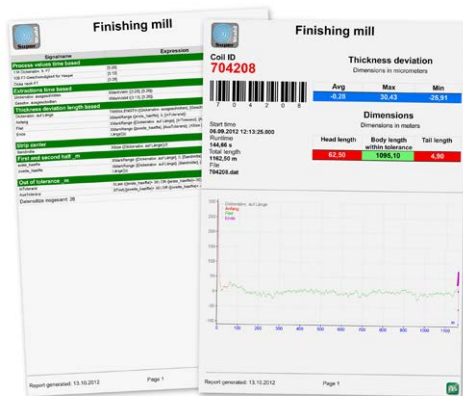
All information in the measurement file can be used in the report: start time, measurement duration, signal names, units, text information like product

ID, batch number, etc. Moreover, also characteristic values which have been calculated in ibaAnalyzer before, can be shown in the report. Text fields that can be freely formatted are available for additional comments. If a plant is being monitored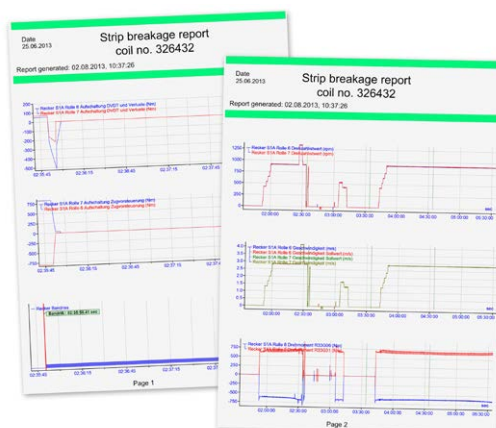 with ibaCapture, images from the video file can also be displayed in the report - either the first image from the video file, an image at a defined time or controlled by a trigger signal.

Application examples

Thickness deviations on the production line
› Thickness deviations of the strip as length based signal graph
› Strip number as bar code and numerical display
› Calculated values like minimum, maximum and average value of the thickness deviations, length of the different strip qualities.

Failure report
› Automatically generated failure report in case of strip breakage
› Representation of further time-correlated signal trends provide information about the cause of the failure

Product related report with display of exceeded limits
› Tables show characteristic values from text channels or values calculated in ibaAnalyzer
› Marking of limit values with colored lines show deviations in the signal trend
› Statistical distribution of the thickness deviation as bar chart and table
› Tabular list of characteristic values per 100 meter segment (minimum, maximum, average value and standard deviation)
› Table length dynamically adapts to strip length
› Values outside the tolerance limit are highlighted in colors

Training program
ibaAnalyzer-Reportgenerator is included as standard in ibaAnalyzer and not subject to extra costs. As the application is quite complex, we recommend to book an iba training.

For information about the training program, please see page 20 and www.iba-ag.com/training.

ibaAnalyzer-DB

With ibaAnalyzer-DB, the database interface for ibaAnalyzer, it is possible to further aggregate the measurement data in terms of length or time and to store the characteristic values (KPIs) calculated in ibaAnalyzer in databases.

At a glance

> Database extraction via ODBC/OLE DB provider
> Integration of basic process data into the production and quality management
> Transparent and comprehensible calculation and extraction of quality data and characteristic values (KPI) from high-resolution raw data into databases
> Using ibaAnalyzer and ibaAnalyzer-Report-generator based on database queries
> Answering process-related questions by database analysis
> Flexible drill-down to raw data

Measured data and quality data

With iba applications such as ibaPDA, ibaQDR or ibaLogic, data from automated production plants and technical processes can be acquired flexibly and stored in a measurement file. Data is generally recorded with a high time resolution in order to provide information as detailed as possible.

Based on this data, the time behavior of the recorded process can be analyzed. This is particularly indispensable for the commissioning and maintenance of a plant. Only if the dynamic behavior is recorded with sufficient resolution can it be analyzed to determine the reason for the shown behavior.
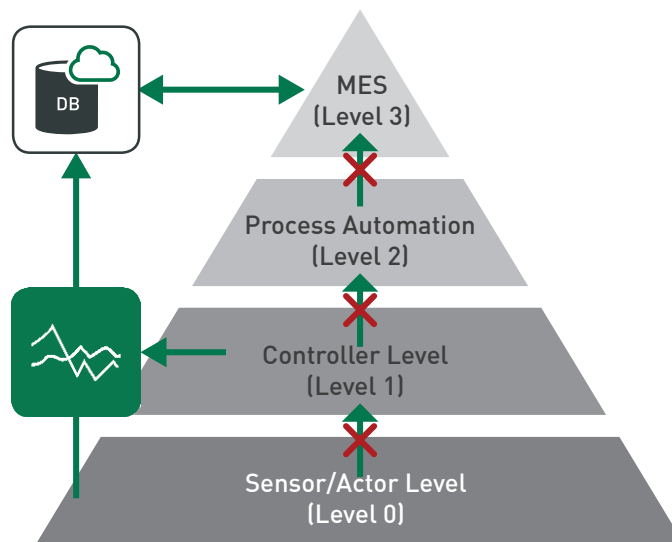
In contrast, different requirements apply to production and quality data: First, a significantly lower time resolution is required and second, the measured data must be assigned to the product rather than to the time of measurement requiring a conversion of the recorded data from time to material length. In addition, it is sometimes necessary to restrict the calculation of the characteristics to certain parts of the product (e.g. hiding the head and tail end of a coil).

Calculation of quality data

With the iba system, production and quality data can be generated directly from data recorded with high resolution taking into account the above-mentioned requirements. For this purpose, high-resolution data must first be prepared appropriately with ibaAnalyzer, then aggregated with ibaAnalyzer-DB and afterwards loaded into a database.

Before data is loaded into the database, it can be fully „pre"-processed with the well-known analysis functions of ibaAnalyzer. In this process, existing analysis specifications can be used to extract a variety of data into the database, such as, for example:

> measured signals
> derived and calculated signals (virtual signals)
> statistic values, such as maxima, minima, averages, standard deviations
> characteristics calculated related to the product, such as violations of limits, product blocking note, customer IDs, length calculations (e.g. undercoating length, prime piece length), etc.
> text information

Layer model of communication in automated manufacturing

All values available in an analysis file (pdo file) can also be written into the database. Thus, characteristic values required for later analysis can be calculated from the raw data with ibaAnalyzer-DB already before data is loaded into the database. On the basis of these values, the database can be searched and the evaluation can be focused accordingly. This is how the iba system allows the extraction of quality data from high-resolution production data. The classic layer model of communication in production automation (see figure above) is consciously broken through in order to be able to offer the following advantages:

› versatile connectivity
› fast data acquisition
› data pre-processing right after generation
› calculation of KPIs direct at the source
› source of KPI data is known and traceable
› drill down to raw data possible
› flexibility in case of changes - if different or more data have to be extracted into the database, only the configuration but not the communication interfaces between the individual levels need to be adapted.

Standard interface for databases

ibaAnalyzer-DB uses the standard interfaces OLE DB and ODBC for communication with the databases. Based on this concept, ibaAnalyzer can work with many different databases, such as, for example:

› Microsoft SQL Server
› Oracle
› IBM DB2 UDB
› MySQL
› PostgreSQL
› Microsoft Access
› Automatic table creation

The database in use can be located on the same system as ibaAnalyzer-DB or on a server in the network. The connection between ibaAnalyzer-DB and the database has to be configured once; the tables will then be created automatically by ibaAnalyzer-DB at the click of a button. The information concerning the measurement file is stored in the file table, the channel table contains information concerning the signals, e.g. channel name and unit.

ibaAnalyzer-DB supports two possible table structures in order to store the measuring values:
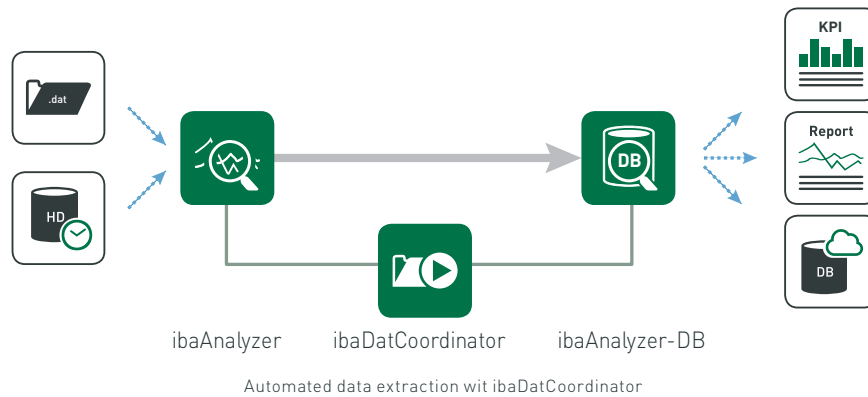
Standard format

In this structure, all single values of the series of measurement will be stored in one single table.

Multi-Column format (MC format)

This multi-column structure is optimized for the extraction of a large amount of measurement series with the same resolution. Additional values, such as minima, maxima, standard deviations as well as time- and length-based values will be stored in separate tables.

Loading data into database – scalable extraction

The user can define any number of archiving profiles for extraction in order to reduce the data volume to a small but informative amount. Each measured signal can be individually assigned to an archiving profile. Besides the aggregated mean values for a data segment (length or time), also the values of maximum, minimum and standard deviation within the

KPI

Report

DB

ibaAnalyzer ibaDatCoordinator ibaAnalyzer-DB

Automated data extraction wit ibaDatCoordinator

summarized segment can be stored additionally in the database.

The different requirements on the extraction speed can be met by several solutions:

› Standard extraction of datasets and storage in the database as single values
   This extraction type is well-suited for slower processes or small amounts of data. Data is subsequently also available to external tools (SQL) in the database tables.
› Fast extraction of datasets through storage as BLOBs (Binary Large OBjects)
   This extraction type is ideal for fast processes or large amounts of data. The duration of this extraction type is only a fraction of that of the single-value extraction.
   In order to read out data from the database and display it,

ibaAnalyzer-DB is required. If data is to be read out with other tools, routines must be programmed for reading out the BLOBs. The BLOB format is an open format.

Automated data extraction

Although ibaAnalyzer-DB uses completed measurement files as a source, analysis and extraction can be automated in a very process-oriented way. Using the post-processing function in ibaPDA or ibaLogic, the analysis can be started immediately after a measurement file has been created. Additional utilities, such as ibaDatCoordinator or batch files, are available for more sophisticated solutions. These utilities realize another decoupling of file creation and database extraction, which is inevitable when high availability is required. All settings for the database interface are saved in the analysis file.
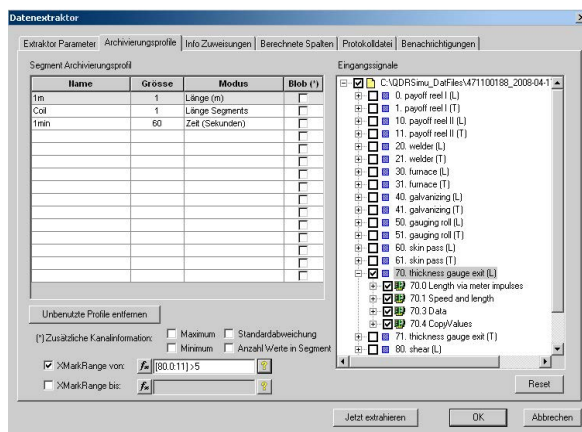
Topology – from local to plant-wide analyses

When using ibaAnalyzer-DB with a local database, e.g. quality data of a plant can be analyzed, traced and managed clearly. MSSQL Express or MS Access databases are often used for such systems.

Moreover, in distributed and networked systems, e.g. several ibaPDA systems can write their data from different plant components into the same database with ibaAnalyzer-DB. Thus, the datasets of a product collected during the various stages of production can be compared and assessed in relation to each other. In this case, database server based on e.g. Oracle, MSSQL Server, IBM DB2 UDB, MySQL or PostgreSQL are used.

In addition, the use of existing database systems would be another option. In particular, linking data from iba-DB extractions to existing systems such as MES, ERP, DataWarehouse, etc. offers an excellent analysis and reporting platform. Moreover, an automated data extraction can also be used as data source for higher-level systems, e.g. for quality approval.

Thanks to the open database architecture, ibaAnalyzer-DB offers a highly efficient and cost-effective option for displaying the data flow from the sensor or the automation system into the database of higher-level systems.
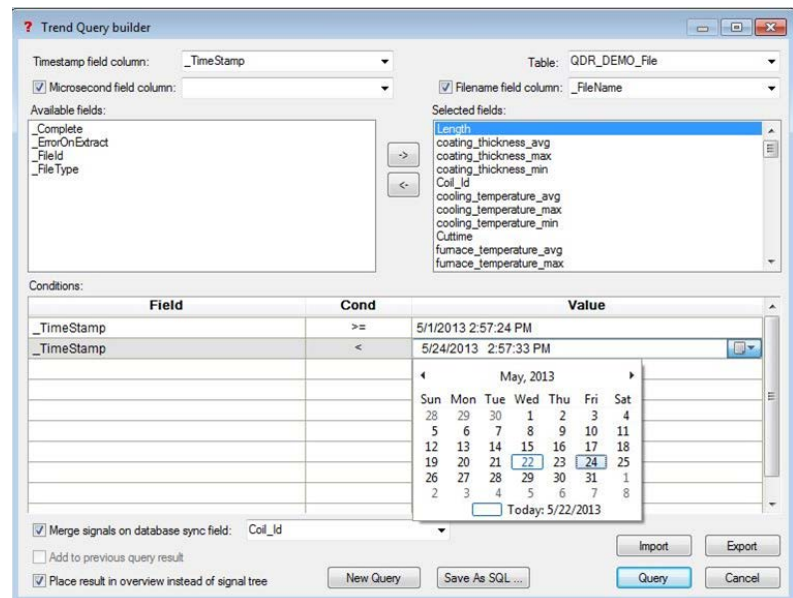

Definition of archiving profiles

Database query

The standard query wizard of ibaAnalyzer-DB assists the user during database query or in searching for specific data using different criteria. Queries can be saved for later use and managed with ibaAnalyzer.

More sophisticated queries can be defined directly in SQL statements, whereas saved queries from the Query Builder serve as templates.

A separate dialog is available for trend queries. Here, any time series (DB tables or views) can be used. One column each for date and time is a prerequisite for the query results to be displayed properly.

Database analysis

The read data can be viewed and analyzed in used way with ibaAnalyzer-DB. It is particularly interesting to note that analyses can also be carried out directly on the basis of the prepared characteristic values of the database. Thus, long-term analyses, analyses of working days or shifts but also trend analyses are possible.
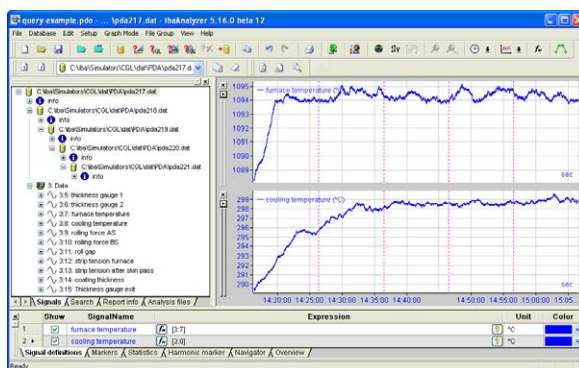

Trend queries

For navigation in trend queries, ibaAnalyzer offers an overview option for long-term recordings. As the reference to the raw data (iba measurement file) is also stored in the database, a drill down from the overview to high-resolution raw data is possible.

Of course, all analyses and data available in ibaAnalyzer can also be used for reporting. So, the report generator integrated in ibaAnalyzer can be confi-

gured and operated with the database-based analysis just as with the analysis based on the measurement files only.

Using the iba applications ibaDatCoordinator and ibaAnalyzer-Reportgenerator in combination with ibaAnalyzer-DB, a very efficient, flexible and always transparent information and reporting system can be implemented from measurement files.

Long-term analysis in ibaAnalyzer

Trend overview

ibaAnalyzer-InSpectra

ibaAnalyzer-InSpectra can now be added to utilize the powerful ibaInSpectra library offline. Analysis configurations can first be designed and tested offline within ibaAnalyzer and transfer to ibaPDA for real-time vibration monitoring. It can also be used to verify existing ibaInSpectra installations to help tune the online calculations.

At a glance

› Configure ibaInSpectra profile offline without interfering ibaPDA data collection
› Fine-tune your vibration and orbit monitoring configuration offline
› Validate alarm threshold definitions
› Correlate process and machine behavior
› Perform narrow-band analysis using the expert module
› Analyze shaft motion using the orbit module

From online monitoring to offline analysis

The ibaInSpectra plug-in in ibaPDA offers various options of online monitoring of vibrations and shaft motions. ibaAnalyzer is a powerful analysis tool to analyze recorded data and to recognize root causes of faults. With the new ibaAnalyzer-InSpectra a gap is bridged between ibaPDA and ibaAnalyzer and a consistent tool chain from online monitoring to offline detail 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 motion.

Configuration tool for ibaInSpectra

ibaAnalyzer-InSpectra allows you to configure calculation rules offline in the form of profiles and to test them with recorded data. Profiles can be transfered between ibaInSpectra and ibaAnalyzer-InSpectra by using the export and import functions in ibaInSpectra.

The function of ibaInSpectra is described in detail in the brochure „Acquisition, recording and online visualization of measured data".

Validation and offline analysis

The powerful ibaInSpectra library can now be used offline within ibaAnalyzer. Machine characteristic values can be computed and validated.

Results can be compiled in a report using the built-in report generator feature or extracted to a database for long-term studying.

By integrating the ibaInSpectra library in ibaAnalyzer, you can easily correlate process values and machine characteristic values to gain an overall picture of the process and machine states.

Configuration area

Result area

Display area

Replay area

ibaAnalyzer-InCycle

ibaAnalyzer-Cycle offers the functions of ibaInCycle for monitoring cyclic processes offline. Analysis configurations can first be designed and tested offline within ibaAnalyzer and transferred to ibaPDA for real-time monitoring. It can also be used to verify existing ibaInCycle installations to help tune the online calculations.

At a glance

› Configure ibaInCycle profiles offline based on recorded data
› Fine-tune the cycle monitoring offline
› Validate warnings and alarms
› Detailed analysis of process and machine behavior while taking into account all process parameters
› Analyze cycles using the expert module

From online monitoring to offline analysis

The ibaInCycle plug-in in ibaPDA offers various possibilities for online monitoring of rotating or cyclically recurring processes. ibaAnalyzer is a powerful analysis tool to analyze recorded data and to recognize root causes of faults. With ibaAnalyzer-InCycle a gap is bridged between ibaPDA and ibaAnalyzer and a consistent tool chain from online monitoring to offline detail analysis is offered.

Configuration tool for ibaInCycle

ibaAnalyzer-InCycle allows you to configure calculation rules offline in form of profiles and test them with recorded data. These profiles can be transferred to ibaInCycle via import and export and used there.

Validation and offline analysis

With ibaAnalyzer-InCycle, the calculations of ibaInCycle can be carried out offline. Characteristic values that triggered an alarm can be validated and the problem can be analyzed offline.

By integrating ibaInCycle in ibaAnalyzer, you can easily correlate process values and machine characteristic values to gain an overall picture of the process and machine states.

Licensing

The InCycle expert view is available in ibaAnalyzer without additional license. With the ibaAnalyzer-InCycle+ license, the results of the InCycle calculations will be available in ibaAnalyzer as signals, can be exported to databases and used for further processing in reports or with ibaDatCoordinator.

Configuration area

Display area

Result area

Replay area

ibaAnalyzer-Maps

With ibaAnalyer-Maps it is possible to display geographic positions and movement based on GPS coordinates. Therefore, ibaAnalyzer can be used to not only know when something happened but also where. Simply record longitude and latitude signals and start tracking your assets.

The world at a glance

ibaAnalyzer is tailored to analyze high-resolution measurement data stemming from industrial processes. For moving vehicles and machines it is common to also track the GPS positions. With ibaAnalyzer-Maps these position signals can be used to display the corresponding route on various map types. This enables you to know where the measurements were collected and find correlations between location and process behavior.

Flexible and easy to use

The ibaAnalyzer-Maps add-on comes as a freely dockable view which can be easily integrated in your existing analyses. For every map you can select individual map-types, the shown area, as well as route color and thickness.

Any number of assets can be displayed on each map. The map section can be dynamically adapted to the asset position with the coupling to the movable ibaAnalyzer markers. The integrated playback function also enables an analysis of the time trend.

At a glance

› Display configurable routes on different map types
› Analysis of geographic positions together with high-resolution measurement data
› Two-way coupling of marker positions
› Use maps in ibaAnalyzer-Reportgenerator
› Integrated playback function

Configuration of position and labeling data for any number of vehicles or ships

Display of routes of vehicles/ships or moving machines on different maps

Playback area

ibaDatCoordinator

ibaDatCoordinator is a powerful tool for processing and managing measurement files automatically. Typical fields of application are automatic extraction of product-related characteristic values in databases as well as creating reports. In synergy with ibaAnalyzer, various processing procedures can be done fully automatic and employees can be relieved of routine tasks.

ibaDatCoordinator is the central component for the automatic processing of measurement data and thus decisive for the use of the iba system in production systems. Measurement data files generated with ibaPDA, ibaQDR or ibaLogic as well as measurement data from ibaHD-Server can be processed.

With the integrated tools, data management and other tasks can be set up individually, such as transferring measurement data to central locations, extraction into databases, calculation of characteristic values or the creation of complete analyses, etc.

Generating individual reports

The actual analysis is done by ibaAnalyzer, which is started in the background using the predefined analysis file. ibaDatCoordinator is continuously monitoring a directory where the recording system stores the files. As soon as a measurement file is completed, the corresponding task is started.

With ibaAnalyzer-Reportgenerator, you can generate automatically individual job-, shift- or product reports for production,

At a glance

› Powerful tool for data management automation
› Automated processing of measurement data recorded with the iba system - both measurement files and data from ibaHD-Server
› Automatic extract to databases or files
› Automatic generation of quality and fault reports
› Automatic search for signal properties and text signals
› Automatic notification when a limit is exceeded
› Integrated status monitoring
› Script function as open interface for free post-processing of data files

quality management or controlling in different formats. If requested, the reports can be sent immediately via e-mail.

The creation and transmission of reports can also be subject to a condition, for example, limit violations of certain signals or the successful completion of a task.

Cyclic tasks

For recurring tasks, a cycle can be chosen. Within this cycle, the tasks are executed automatically, e.g. the creation of daily reports. Especially when analyses are required regularly and with high clock rates, as often required in production processes, results can be achieved quickly and reliably with ibaDatCoordinator.

Cyclic tasks can also be used to select data ranges from the ibaHD server and process them like measurement files.
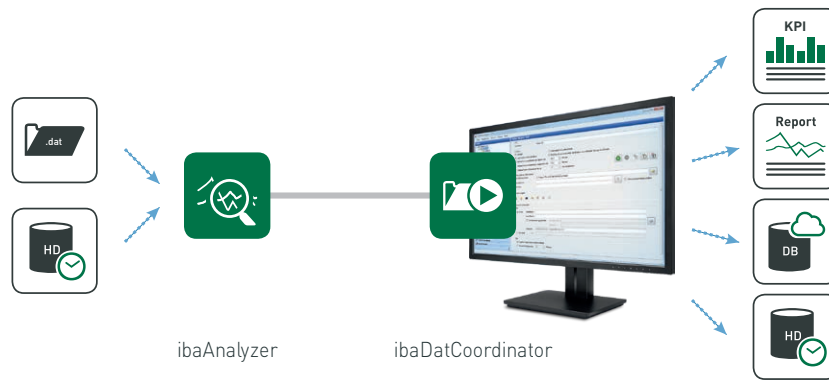
Integrated monitoring of tasks

ibaDatCoordinator monitors the status of each task. Notifications about success or failure of the tasks can be configured to ensure that users are always informed. Furthermore, ibaDatCoordinator is able to monitor the signals in accordance with defined limit values. If the limits are exceeded, various actions can be started, such as sending a message to the responsible persons.

The monitoring of ibaDatcoordinator by higher-level systems can be realized either via SNMP

ibaAnalyzer   ibaDatCoordinator

or OPC UA with the integrated servers for both protocols or by sending watchdog telegrams.

User-friendly design
ibaDatCoordinator is character-ized by a user-friendly operation. The data files are processed by means of the so-called "jobs". Each job is made up of one or mo-re tasks. With just a few mousec-licks, you can generate and edit new jobs and the related tasks.

Customized installation
ibaDatCoordinator can be used as a stand-alone program or installed as client and server. The client-server principle allows distributed, decentralized servers in the network to be config-ured from a central location.

The different tasks:

› **Copy task**
By means of a copy task, you can copy data files on a file server or move them. For reducing the load of the ibaPDA server, the data files can be deleted as soon as they have been copied success-fully (clean-up strategy).

› **Report task**
The report task allows you to create reports automati-cally. The report can either be sent to a printer or ge-nerated as a file in different file types. The following file types can be generated: pdf, htm, mhtml, txt, xls, rtf, tif,

emf, jpg, bmp, xml. A report can also be sent as e-mail.

› **Extract task**
An extract task can extract data from a data file towards a database or another data for-mat. This way, also third party systems have got access to the measured data. Also data from an ibaHD-Server can be ex-tracted to a measurement file.

› **Script task**
The script task can be used to run a self-created script. The scripts supported by ibaDatCoordinator are all scripts that run under the stan-dard Windows command shell, e.g. batch files (*.bat), Visual Basic scripts (*.vbs) or Java scripts (*.js). This task offers an open interface for a free processing of measured data.

› **Condition task**
A condition task can be used to control the execution of the following tasks. A condition can be defined directly from the signals available in the meas-urement file or from a value calculated by ibaAnalyzer. This way, "outliers" can be subse-quently found or measured data of specific product groups can be combined. The data files can then be copied in a separate sub-directory or a report based on this data can be generated.

› **Pause task**
The pause task allows the delayed execution of an update task.

› **Update data task**
An update data task can add information fields to a meas-urement file or rename the measurement file using data available in a database. This can be a measured value deli-vered by another system, e.g. weight.
A special license is necessary for the update data task.

› **Splitter task**
With the splitter task, a meas-urement file can be split into several measurement files with shorter time ranges, containing the same signals.

› **ibaHD import**
With the ibaHD import task, measurement files can be imported into an HD store of an ibaHD-Server.

› **S7 writer**
With the S7 writer task it is possible to extract or calcu-late data from a measurement file and write this data in data blocks (DB) within an S7 PLC. A special license is neces-sary for the S7 writer task.

› **Offline event task**
With the offline event task events can be written to ibaHD-Server event stores and compu-ted values (KPIs) can be stored as numeric or text fields of the events. Similar to the Report and Extract tasks, pre-defined analysis files (pdo files) can be used to configure the compu-tations done by ibaAnalyzer.

Order information

ibaAnalyzer

Order no.	Name	Description
33.010000	ibaAnalyzer-V7	Offline analysis package for iba measurement files
33.010001	ibaAnalyzer-V7-DB*	Offline analysis and data generation for SQL or ODBC databases
33.010004	ibaAnalyzer-V7-DB-Multiuser*	Multiuser license for 5 users
33.010002	ibaAnalyzer-V7-File-Extract*	Offline data extraction from an original dat file into a new file (new format)
33.010007	ibaAnalyzer-Maps	Display of GPS positions and routes
33.010410	ibaAnalyzer-InSpectra*	Offline vibration analysis (add-on for ibaAnalyzer)
33.010411	ibaAnalyzer-InCycle+*	Offline analysis of cyclic processes: trend and output of InCycle results in ibaAnalyzer
33.010445	ibaAnalyzer-E-Dat*	Offline analysis for external data formats
34.000100	ibaLicenseService-V2	If more than one license is used per dongle (free of charge)

ibaDatCoordinator

Order no.	Name	Description
34.010550	ibaDatCoordinator	Tool for data management automation
34.010552	ibaDatCoordinator-Update Data Task	Plugin for input function, subsequent entries in measurement files
34.010556	ibaDatCoordinator S7 Writer	Plugin for extracting data from a measurement file and writing it to data blocks (DB) of an S7-SPS

* Licensing of products marked with an asterisk (*) can be done by a local dongle; or by ibaLicense-Service-V2 if more than one license is used or several users need the licenses.

Training

Order no.	Name	Description
61.100000	Measurement, data evaluation and automatic reporting with iba	3-day compact course
61.000100	Evaluating iba measured data	2-day basic course
61.000200	Measuring and analyzing with the iba measuring system	2-day basic course
61.000700	Monitoring and analysis of vibration data with ibaInSpectra	2-day basic course
61.000120	Automated generation of reports and quality documentation with ibaAnalyzer-Reportgenerator	2-day advanced course

The entire training program is available under www.iba-ag.com/training

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