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zenon Analyzer manual

Release Notes zenon Analyzer 3.10

v.3.10
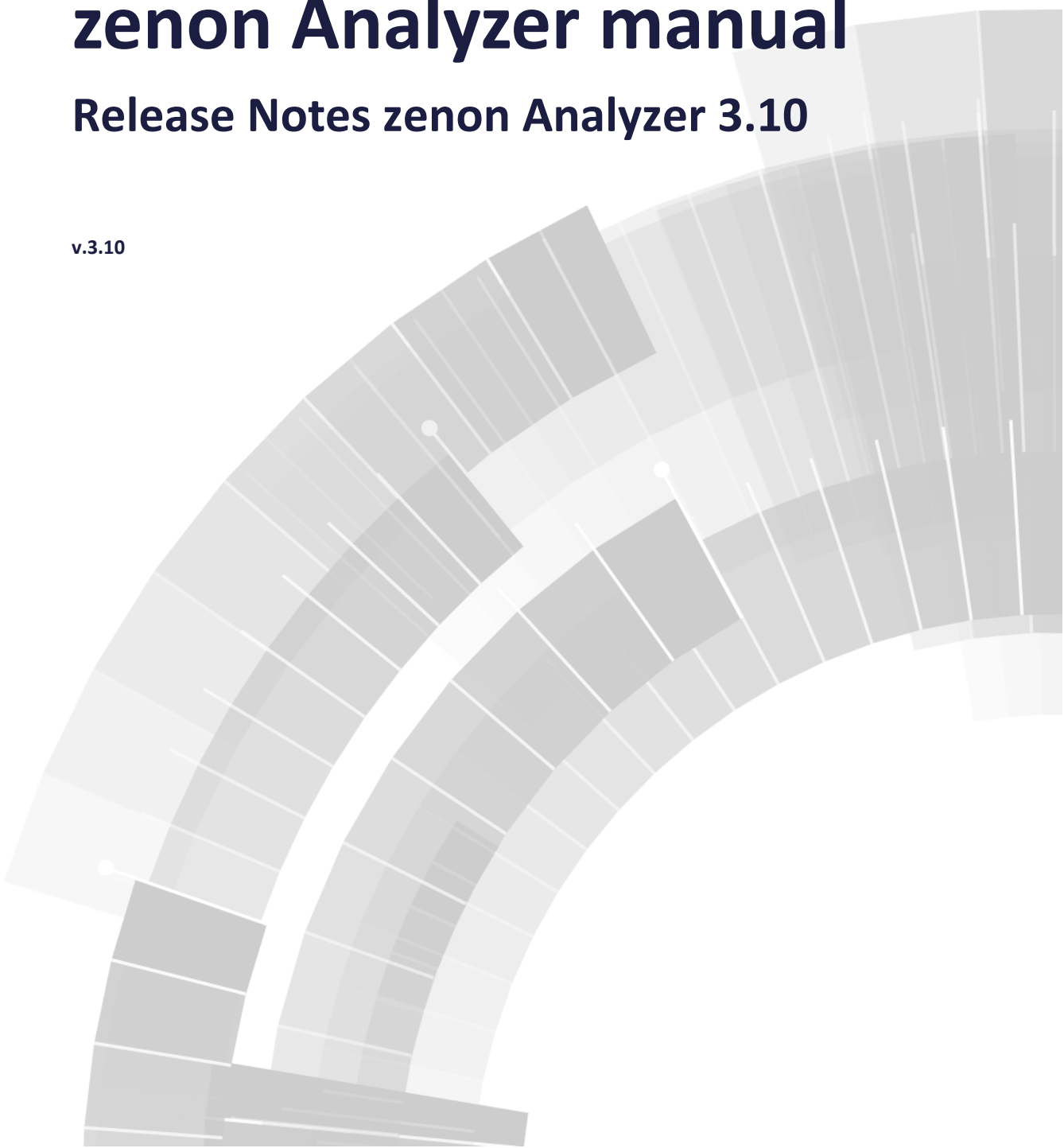
Contents

1. Welcome to zenon Analyzer help

PROJECT SUPPORT

You can receive support for any real project you may have from our Support Team, who you can contact via email at support@copadata.com (mailto:support@copadata.com).

LICENSES AND MODULES

If you find that you need other modules or licenses, our staff will be happy to help you. Email sales@copadata.com (mailto:sales@copadata.com).

2. Release Notes zenon Analyzer 3.10

New features and changes in version 3.10:

3. Requirements

The following prerequisites are applicable for work with the zenon Analyzer:

ANALYZER SERVER HARDWARE AND SOFTWARE

HARDWARE

Analyzer Server:

Parameter	Recommended	Minimum
CPU	Quad-Core Server CPU (maximum 24 cores/4 sockets)	Quad-core
RAM	Up to 128 GB	12 GB
Free memory	200 GB	10 GB

Engineering computer:

Parameter	Recommended	Minimum
CPU	Dual Core	Pentium IV
RAM	4 GB	1 GB
Free memory	200GB	2 GB
Monitor (pixels)	1920 x 1080	1024 x 768

SOFTWARE

Analyzer Server:

A 64-bit operating system is required for the database server. The following are supported:

- ▶ Windows Server 2012 R2
- ▶ Windows Server 2012
- ▶ Windows Server 2016
- ▶ Windows 8.1 64-Bit
- ▶ Windows 8.1 Pro 64-Bit
- ▶ Windows 8.1 Enterprise 64-Bit
- ▶ Windows 8 64-Bit
- ▶ Windows 8 Pro 64-Bit
- ▶ Windows 8 Enterprise 64-Bit
- ▶ Windows 10 Home 64-Bit
- ▶ Windows 10 Professional 64-Bit
- ▶ Windows 10 Enterprise 64-Bit

Note: An installed IIS service is required for the installation of the server.

Engineering computer:

The following are supported for ZAMS, the manual data editor, metadata editor and migration tool:

- ▶ Windows Server 2012 R2
- ▶ Windows Server 2012

- ▶ Windows Server 2016

- ▶ Windows 8.1 32-Bit and 64-Bit

- ▶ Windows 8.1 Enterprise   32-Bit and 64-Bit

- ▶ Windows 8 32-Bit and 64-Bit

- ▶ Windows 8 Pro   32-Bit and 64-Bit

- ▶ Windows 8 Enterprise   32-Bit and 64-Bit

- ▶ Windows 10 Home 32-Bit and 64-Bit

- ▶ Windows 10 Professional 32-Bit and 64-Bit

- ▶ Windows 10 Enterprise 32-Bit and 64-Bit

Web browser:

- ▶ Internet Explorer 11 (normal view only)

- ▶ Internet Explorer 10 (normal view only)

- ▶ Chrome

- ▶ Firefox

   Note: Zoom in the report is only possible with Chrome.

Recommended HMI/SCADA system:

- ▶ zenon 7.60.

.NET Framework 4.6.1:

- ▶ .NET Framework 4.6.1 has to be already run capable on the target computer in order to end the installation successfully.

CONNECTORS

The following is applicable for the SCADA Runtime connector:

- ▶ Timeout: is independent of the report timeout.
   Default: 5 minutes (can be configured)

- ▶ Variables: Only variables that are listed in metadata are requested

- ▶ String variable: maximum of 4000 characters

The performance of a connector depends on the:

- ▶ Performance of the Analyzer server

- ▶ Performance of the Runtime server

- ▶ Load of the Runtime servers (connector runs with low priority)

▶ Network performance and network load

PROJECTS AND FILTERS

Reports can generally be created throughout several projects.

> ⚠ **Attention**
>
> *Only archive data with variables from its own project can be evaluated.*
>
> *This means: For example, in an integration project, if a variable from a subproject is archived in an archive, then zenon Analyzer cannot access this variable.*

SCHEDULES

▶ **Calendar days in months** are limited to `1 - 28` (corresponds to February in non-leap years)

▶ The "`Month end`" event is not available

ANALYZER EXPORT WIZARD

The   Analyzer Export Wizard works, depending on the version, with different zenon Analyzer versions and different zenon versions. For details, read the **Analyzer wizard compatibility** chapter.

> 💡 **Information**
>
> *Do not use zenon color palettes for dynamic limit values for zenon projects whose data is to be exported for zenon Analyzer. Limit values cannot be dynamically amended in zenon Analyzer. Information from color palettes can therefore not be evaluated. This can lead to illegible graphics.*

4. Analyzer Server

zenon Analyzer of versions 2.XX and 3.XX can be operated at the same time. components that can only be installed once per computer, such as Connector Container or the Licensing Service, work throughout all versions.

5. Analyzer Wizards

The Analyzer Export Wizard has been amended to version 3.10.

The following wizards are available for the following versions of zenon:

Wizard \ zenon version	7.60	7.50	7.20	7.11	7.10	7.00
Meaning and Waterfall Chart Wizard	X	X	X	X	X	––
Sankey Wizard	X	X	X	X	X	––
Export Wizard for Analyzer 3.10	X	X	X	––	––	––
Export Wizard for Analyzer 3.00	X	X	X	X	––	––
Export Wizard for Analyzer 2.20	X	X	X	X	X	––
Export Wizard for Analyzer 2.10	X	X	X	X	X	X
Export Wizard for Analyzer 2.00	––	––	––	––	X	X

Key:

▸ X: available

▸ ––: Not available

5.1 Export of data from the shift calendar possible (F 23720)

The Analyzer Export Wizard takes data that was provided by the **SQL export shift calendar** function into account from version 3.10. The wizard automatically searches all activated projects for these functions and reads information in relation to linked equipment groups.

6. Connectors

6.1 Connector enhanced (F 24006)

The connector (container, plug-in, client) has been enhanced:

▸ Alarm causes can also be issued by the connector.
The zenon project must be at least version 7.60 for this.

- ▸ Alarms can obtained after being filtered according to alarm causes.

- ▸ The context list of a project can be obtained.
  The zenon project must be at least version 7.60 for this. An empty list is shown otherwise.

6.2   Timeout

Before each call of a connector function, the set timeout is read from **zenAnalyzer.INI**. This can now be amended there if required. Changes are applied immediately. No restarts of processes, services or computers are necessary.

7. Database

8. Reports and Report templates (F 23096, F 24006)

With zenon Analyzer - depending on the licensing - pre-configured report templates are supplied for the creation of reports with ZAMS. Report templates are configured in ZAMS. You can find details on the input elements at the respective report template and in the Elements in the report area   chapter.

Note for developers of reports: These reports use stored procedures and user-defined function blocks, that are described in the documentation for developers.

> 💡 **Information**
>
> *Handling with time interval for archive aggregation and display in the report:*
>
> - ▸ Interval less or equal to 60 minutes:
>   The correct time interval in UTC is noted for aggregation.
>
> - ▸ Interval greater than 60 minutes:
>   The correct time interval in the server's local time is noted for aggregation.
>
> - ▸ Local time is always used for the display. If the user and server are in
>   different time zones, there may be differences.

LICENSE REPORT TEMPLATES

Report templates must be licensed in order to be able to use them. Different license packages are available. You can find details on licenses for report themes and report templates form the price list or contact your COPA-DATA contact partner.

SUPPLIED REPORT TEMPLATES

The following report templates are available:

ALARM AND EVENT ANALYSIS

Report templates for the evaluation of alarms and events.

▸ Alarm List: Creates a list of alarms in table form for a time range.

▸ Top N Alarms: Gets a defined number (N) of alarms that occur most frequently in a time range or have been active for the longest.

▸ Alarm Aggregation: Creates graphical and tabular representations of aggregated alarm data.

▸ Event list: Creates a list of events in table form for a time range.

▸ Top N Events: Gets a defined number (N) of events that occur most frequently in a time range.

CUSTOM FORMULA ANALYSIS

Report templates for custom formulas.

▸ Custom Formula Trend: Trend display of user-defined formulas for a time range.

▸ Custom Formula Aggregated Trend: Trend display of aggregated user-defined formulas for a time range.

▸ Custom Formula Aggregation: Trend display of aggregated, user-defined formulas for a time range.

HISTORIAN ANALYSIS

Report templates for the evaluation and direct or aggregated display of archive data.

▸ Historian Trend: Gets archive data for a time range and displays this without aggregation in a trend

▸ Historian Aggregated Trend: Gets archive data for a time range, aggregates this in intervals in the time range and displays it as a trend.

▸ Historian Aggregation: Gets archive data for a time range, aggregates this and displays each of the aggregation results separately

EFFICIENCY CLASS ANALYSIS

Report templates for efficiency analyses based on efficiency class models in conjunction with archives, equipment or user-defined formulas.

- **Archive based efficiency report**: Carries out an efficincy analysis based on archive data for a certain time period.

- **Equipment group based efficiency report**: Carries out an efficiency analysis based on equipment groups for a time period.

- **Formula based efficiency report**: Carries out a formula-based efficiency analysis for a certain time period.

ENERGY DATA MANAGEMENT

Report templates from the themes **Historian analysis**, **efficiency class analysis**, **Extended Historian analysis** and **ISO 50001** for the analysis of energy data management systems.

Historian Analysis:

- Historian Trend

- Historian Aggregated Trend with online variable selection

- Historian Aggregation

Efficiency Class Analysis

- **Archive based efficiency report**: Carries out an efficincy analysis based on archive data for a certain time period.

- **Equipment group based efficiency report**: Carries out an efficiency analysis based on equipment groups for a time period.

Extended Historian Analysis:

- Historian Aggregation with Equipment Group and Variable Selection

- Historian Aggregated Trend per Equipment Group

- Historian Aggregated Trend with Equipment Group and Variable Selection

- Distribution per Variable

- Cost Distribution per Equipment Model

ISO 50001:

- Load Duration Curve with Variable Selection

- Load Duration Curves for Equipment Groups

EXTENDED HISTORIAN ANALYSIS

Report templates for archive aggregation or archive distribution, taking into account prices, norm values and production counters.

▶ Historian Trend with Equipment Group and Variable Selection: Creates a trend analysis without aggregation for a time period with a trend for each variable.

▶ Historian Trend per Equipment Group: Creates a trend analysis without aggregation for a time period with a trend for each equipment group.

▶ Historian Aggregated Trend with Equipment Group and Variable Selection: Creates an aggregated trend analysis for a time period with a trend for each variable.

▶ Historian Aggregated Trend per Equipment Group: Creates an aggregated trend analysis for a time period with a trend for each equipment model.

▶ Historian Trend with Equipment Group and Variable Selection: Calculates, for each variable, aggregated archive data for a time period with the aggregation functions sum, average, minimum and maximum.

▶ Historian Aggregation per Equipment Group: Calculates, for each equipment group, aggregated archive data for a time period with the aggregation functions sum, average, minimum and maximum.

▶ Relative Historian Aggregated Trend with Equipment Group and Variable Selection: Creates a relative aggregated trend analysis for a time period with a trend for each variable.

▶ Relative Historian Aggregated Trend with Equipment Group and Variable Selection to Standard: Creates a relative aggregated trend analysis for a time period for a variable with a comparison with standard values.

▶ Relative Historian Aggregation with Equipment Group and Variable Selection: Calculates the aggregated cost distributions for a time period that is based on variables.

▶ Relative Historian Aggregation per Equipment Group: Calculates aggregated distribution data for equipment groups for a time period.

▶ Cost Aggregation with Equipment Group and Variable Selection: Calculates the aggregated cost distributions for a time period that is based on variables.

▶ Cost Aggregation per Equipment Group Calculates the aggregated cost distributions for a time period that is based on equipment models.

ISO 50001

Report templates for **ISO 50001**:

▶ Load Duration Curve with variable selection: Creates a load duration curve that is based on variable selection.

▶ Load Duration Curve for Equipment Groups: Creates a load duration curve that is based on variable selection per equipment group.

- ▶ Carpet Plot: Gets and aggregates data for a carpet plot.

- ▶ Sankey Diagram: Reads the Sankey definitions, gets data and aggregates it, integrates dynamic loss detection if required and displays the result as a diagram or table.

Plus all report templates from the **efficiency class analysis**, **Extended Historian analysis** and **custom formula analysis** themes**.**

PRODUCTION ANALYSIS LINE BASED

Report templates for Production Analysis Line Based.

- ▶ Gantt Chart: Analyzes lots, shifts and variables - specified through meanings, from AML, CEL or archive - and displays the results as a Gantt chart and as a table.

- ▶ Gantt chart with area assignment: Analyzes lots, shifts and variables and displays the result as a Gantt chart and in table form. Variables are specified through meanings from AML, CEL or archive. Numerical values are assigned from classes derived from **REMA**-**STATENAMES**.

PRODUCTION ANALYSIS MACHINE BASED

Report templates for the analysis of loss times and productivity, based on standards.

- ▶ Losses Analysis: Analyzes archive data and calculate aggregated loss times for a time period, based on an equipment group and a waterfall model.

- ▶ Productivity Indicators Analysis: Analyzes archive data and calculates aggregated productivity indicators for a time period, based on an equipment group.

- ▶ Comprehensive Productivity Analysis: Combines the **Losses Analysis** and **Produktivity indicators Analysis** report templates.

- ▶ Losses Lot History: Analyzes archive data and calculates aggregated loss times for each lot, based on an equipment group.

- ▶ Productivity Indicators Lot History: Analyzes archive data and calculates aggregated production indicators for each lot in a time period, based on an equipment group.

- ▶ Comprehensive Productivity Lot History: Combines the **Losses Lot History** and **Productivity Indicators Lot History** templates.

OEE ANALYSIS

Report templates available that calculate and display OEE indicators.

- ▶ OEE Indicator: Calculates the OEE performance figures for a selected equipment model in a time period and displays the performance figures in graphic form

- ▶ OEE Indicator Lot History: Calculates the OEE indicators for a selected equipment model for each lot in a period of time and displays the performance figures in graphic form and table form

NOTE ON REPORTS AND ACTIONS WITH SP/UDF

When an SP or UDF of ZAMS is overwritten in the database, it is not present for the duration of this process. This can lead to errors when executing existing reports, if these access the SP or UDF at precisely the moment between deletion and recreation.

Recommendation: Do not execute any reports whilst actions are being carried out with ZAMS that relate to these reports. Most of all if ZAMS:

- ▶ is deploying reports

- ▶ is updating the connector functions in the database

- ▶ is creating the SQL connector

8.1 Compatibility (F 23096)

In version 3.10, report templates (`zams_rep` files) that have been created with the versions 2.00 to 3.00 can be created. These are converted and saved as version 3.10 files. Process during conversion:

- ▶ The previous report template is converted to a suitable version 3.10 report template.
  If the previous report template was a comparison report, two time filters are created. Otherwise a time filter is created.

- ▶ All settings of the previous report template are transferred to the new report template. If there is no preset from the previous report for a new setting, the default value is used.

- ▶ The report elements are applied and added to the design area.

- ▶ The settings for the parameter output area correspond to the default in the automatically-created layout.

The report templates from earlier versions are mapped to their successors in version 3.10.

COMPARISON REPORTS

Comparison reports are no longer supplied. zenon Analyzer 3.10 allows the user free configuration of reports with several data sets and time filters.

CONVERSION

Notes on conversion:

- ▶ **OEE indicators** and **OEE indicator lot archive:**
  During conversion, archive IDs are only transferred if the project can be read from the legacy report and can be found in the metadata using the ID. Different project IDs in the legacy report is an error.

SUPERSEDED REPORT TEMPLATES

Some report templates are no longer offered in version 3.10, because they can be individually configured in version 3.10.

Comparative report templates are mapped and amended to other report templates during conversion. In doing so, these report templates primarily get two time filters.

HISTORIAN AGGREGATED TREND WITH ONLINE VARIABLE SELECTION

The **Historian Aggregated Trend with online variable selection** report template is no longer supplied from version 3.10. The **Historian Aggregated Trend** has replaced it. Existing reports with the report template that no longer exists are converted to reports with active dataset pivoting when updating to version 3.10.

In doing so, please note:

- ▶ Conversion to a cycle of one second is no longer supported.
  Reports in which this is activated can no longer be upgraded.

- ▶ All included variables must have the same aggregation in the archive.
  Reports whereby variables with different aggregations are included in the archive cannot be upgraded.

- ▶ The main data set is set to pivoted for the upgraded report. The projects, archives and variables are read from the metadata and the filter settings are assigned corresponding values. The creation and execution of the Stored Procedures for the filter settings can take some time.

- ▶ The pivot columns are read when upgrading. An attempt is made, according to the connector set, to get data via the Stored Procedure of the main data set. If no data can be obtained, no pivot columns are detected. Upgrading can take some time.

PRODUCTION ANALYSIS MACHINE BASED

In zenon Analyzer 3.00, selection from four prescribed filters was possible. Now, a free number of 0 to 10 user-defined data filters can be used. In order for a data packet to be included in the calculation, there must be a value from the value list present for each data filter.

8.2   Tables and diagrams (F 23096)

Depending on the report template, different tables and different diagram types can be used in a report.

Table types:

- ▶ **Efficiency class model table**

- ▶ **Flat table**

- ▶ **Grouped table**
- ▶ **Indicator table**
- ▶ **Classification table for current value**
- ▶ **Pivoted table**

Diagram types:

- ▶ **Efficiency class diagram**
- ▶ **Pie chart**
- ▶ **Line chart**
- ▶ **Gauge**
- ▶ **Trend chart**
- ▶ **Aggregation chart**

9. Report Launcher

10. ZAMS

10.1 Authentication with user data removed (F 25572)

Microsoft SQL Server 2016 only allows login for Windows users with the integrated Windows authentication. zenon Analyzer only supports Windows users. The possibility to enter alternative login data has therefore been removed from all login dialogs.

This concerns:

- ▶ **ZAMS**
- ▶ **Manual Data Editor**
- ▶ **Metadata Editor**
- ▶ **Server Migration Tool**

10.2 Direct input of values (F 23096)

Values for report parameters can now be pre-configured in ZAMS. These are then used in Report Launcher directly and can no longer be configured there.

10.3 ZAMS user interface (F 23096)

The user interface of ZAMS has been amended.

USER INTERFACE

The user interface of the ZAMS consists of:

- ▶ **Menus, Ribbons and tool bars**: Elements that allow access to actions.
- ▶ **Main window**: Contains start page and report pages.
- ▶ **Properties window**: Contains control elements for the configuration of reports.
- ▶ **Output window**: Shows errors, warnings, messages and status messages.
- ▶ **Status line**: Shows notices in relation to connections, reports and actions.

Reports are now configured in an amended user interface. You can find details in the corresponding documentation for ZAMS, report creation and in the upgrade information of the basics.

RIBBONS

Actions and commands are now selected using a menu and several Ribbons.

OPERATING CONCEPT

Operation has been amended. The area to configure reports now consists of:

- ▶ Area for report settings: Configuration from top to bottom.
- ▶ Area for graphic preview: Arrangement of the report elements as they are displayed in the report.
- ▶ Properties area: Properties for settings and elements of the other areas

Preparation is carried out using the corresponding symbols in the ribbon.

10.4   Oracle third-party database connector (10634)

Third-party data archives for Oracle linked servers can be queried and incorporated using the **OPENQUERY** mechanism

10.5   Pivoting (F 23096)

Main data sets can now be pivoted.

10.6   Language table (F 23096)

The language table provides texts for reports in different languages on the basis of key words. This allows system texts to be translated to several languages and your own key words can be added and translated. The texts from the language table are added to the **RDL** when a report is presented.

The language tables provides system texts in eight languages:

- ▶ Chinese
- ▶ German
- ▶ English
- ▶ French
- ▶ Italian
- ▶ Russian
- ▶ Spanish
- ▶ Czech

Users can do the following by means of the language table:

- ▶ Change system texts
  (with the exception of names and descriptions of themes and templates)
- ▶ Add and delete some texts
- ▶ Reset the language table to the standard of the system texts
- ▶ Export changes to an XML file

10.7   Validation (F 23096)

The validity of reports is now checked for required content and dependencies each time a configuration is changed. A report can only be provided when it is valid and has no validation errors, otherwise the buttons for provision are deactivated.

Validation errors are shown in the design area, in the report configuration area and dialogs by means of red borders, text information and entries in the output window.