



zenon

by COPA-DATA



zenon 10 Highlights

New features for 2021

A man and a woman in business attire are walking on a factory staircase. The man is wearing a dark blue suit and the woman is wearing a black top and pants. They are both looking at a tablet held by the woman. The background shows industrial structures with yellow and blue vertical bars.

**Achieving digital
transformation.**

I can do it!

Digitize the shop floor and integrate business processes with zenon.
Industrial Software that makes your life easier.

Our vision for zenon

There is always an easier way!

THEREFORE, WE STRIVE TO:

- ▶ Making engineering as easy as possible
- ▶ Extend zenon's features and connectivity according to the needs of our customers and core industries' demands
- ▶ Keep zenon up-to-date in terms of technology, security and UX
- ▶ Offer cloud-based Industrial IoT
- ▶ Enable a completely web-based HMI
- ▶ Support of Linux as operating system



Renaming of platform components

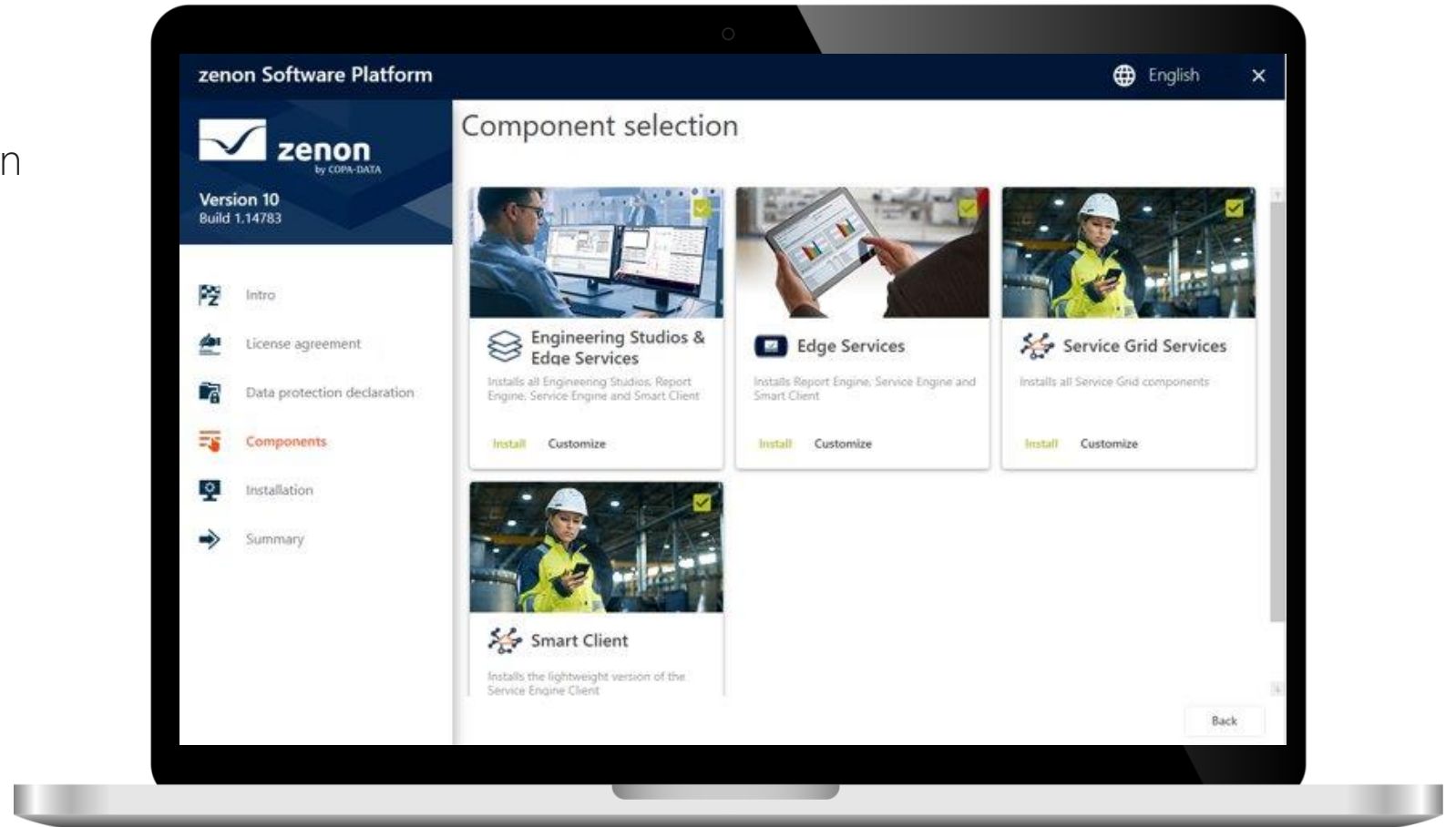
Establishment of the zenon Software Platform in all the products

UNTIL THE END OF 2020	AS OF VERSION 10 (SHORT)
zenon Editor	Engineering Studio
zenon Logic Workbench	Logic Studio
zenon Analyzer	Report Engine
zenon Analyzer Management Studio	Reporting Studio
zAMS	Reporting Studio
zenon Runtime	Service Engine
zenon Logic Runtime	Logic Service
Report Launcher	Report Launcher
Service Grid	Service Grid

Reworked Setup

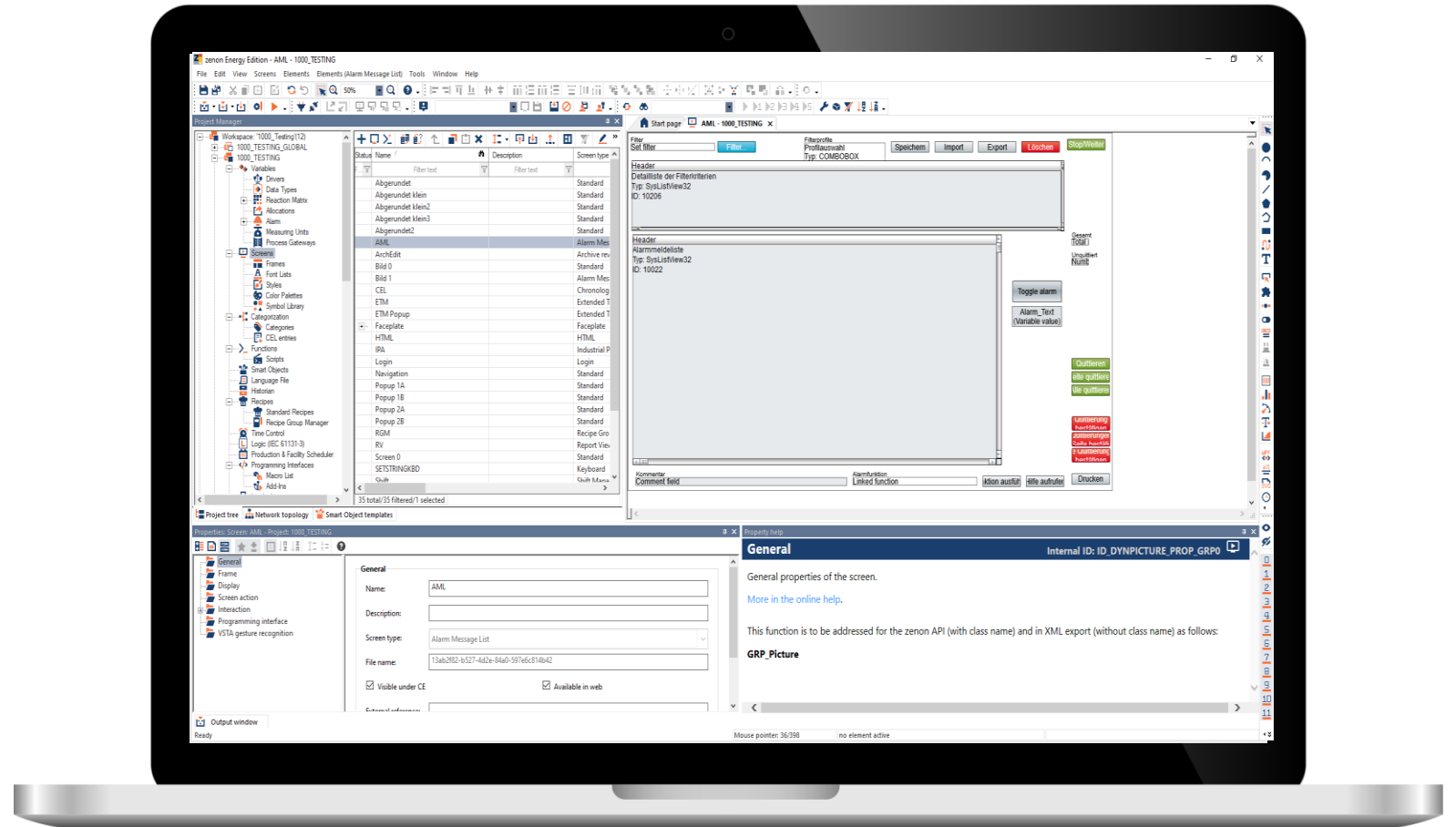
Establishment of the zenon Software Platform in all the products

- ▶ Workload-oriented component selection
- ▶ Clear validation and representation of system requirements
- ▶ Workloads can be fine-tuned to match the required components
- ▶ Clear verification of dependency requirements
- ▶ Components are configured and running after the installation has finished



Modern look for the zenon Engineering Studio

- ▶ Modern, appealing design
- ▶ Visual integration into the zenon Software Platform
- ▶ Strengthening the brand awareness



eSignature

The enhancement you don't want to miss



Description

- ▶ Protect critical parameter or recipe value modifications and start of processes with an authorization workflow (up to three steps).

Technical benefits

- ▶ Fully configurable within the zenon Engineering Studio
- ▶ eSignature definition centrally at variable level
- ▶ Full documentation in Audit Trail (incl. new categories)
- ▶ Full flexibility: custom MDI screens and logging

Comply to data integrity

- ▶ According to ALCOA principle, FDA Part 11 and Annex 11 the data must be attributable and original.

Electronic Signature

Perform

Variable Name: CPP_test[1]
Process description:
Current value: 0
Write set value: 55

Perform Comment:
Username: Password: *****

Cancel Perform

Verify

Verify Comment:
Username: Password: *****

Verify

PERFORM

VERIFY

APPROVE

eSignature

Detailed logging within Audit Trail



Time received	Text	Variable name	Value	User - full name	Comment	Category
04.12.2020 09:30:28	User 'Operator - Operator' logged in			Operator		Variables; Audit Trail
04.12.2020 09:30:33	User 'Supervisor - Supervisor' logged in			Supervisor		Variables; Audit Trail
04.12.2020 09:31:42	Change recipe value: Old: (0) New: (8) Recipe name: Vial small Version: 2 - Signed for execution	CPP_test[1]	8	Supervisor	change required	Audit Trail; eSignature
04.12.2020 09:31:52	Change recipe value: Old: (0) New: (8) Recipe name: Vial small Version: 2 - Signed for verification	CPP_test[1]	8	Quality Assurance	ok	Audit Trail; eSignature
04.12.2020 09:31:52	Change recipe value: Old: (0) New: (8) Recipe name: Vial small Version: 2 - eSignature complete	CPP_test[1]	8	Quality Assurance		Audit Trail; eSignature
04.12.2020 09:30:48	Value change: Old: (0) New: (22) - Signed for execution	CPP_test[1]	22	Supervisor	optimization	Audit Trail; eSignature
04.12.2020 09:31:06	Value change: Old: (0) New: (22) - Signed for verification	CPP_test[1]	22	Quality Assurance	required change	Audit Trail; eSignature
04.12.2020 09:31:06	Value change: Old: (0) New: (22) - eSignature complete	CPP_test[1]	22	Quality Assurance		Audit Trail; eSignature
04.12.2020 09:31:06	Value change: Old: (0) New: (22)	CPP_test[1]	22	Supervisor		Variables; Audit Trail

Connectivity to meet the requirements of the future

Extensive upgrades

zenon as OCPP central
management system:
OCPP Driver

Configure Process Gateways in
Engineering Studio

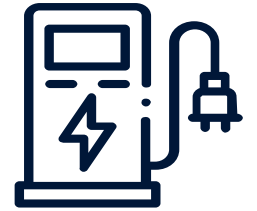


.NET Driver API for IoT
protocols like MQTT and
REST Web Services

Service Engine Egress
Connector to Service Grid

OCPP (Open Charge Point Protocol)

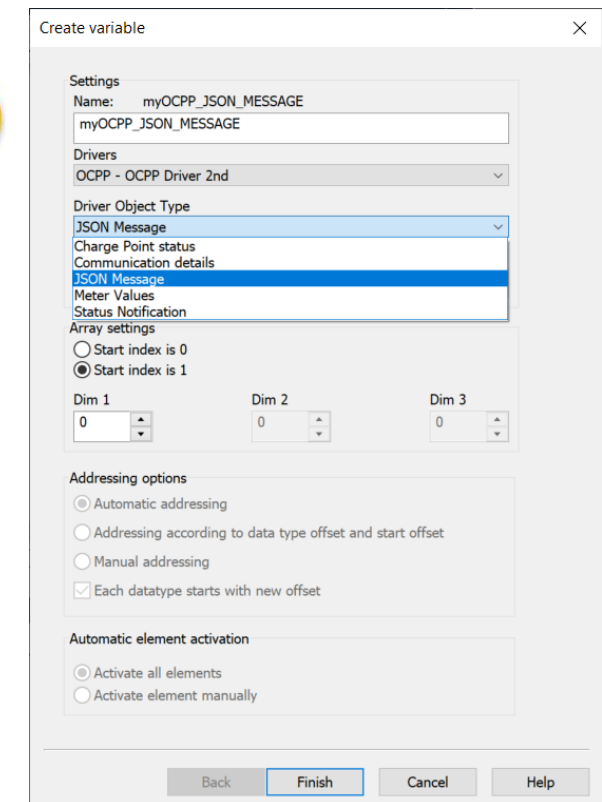
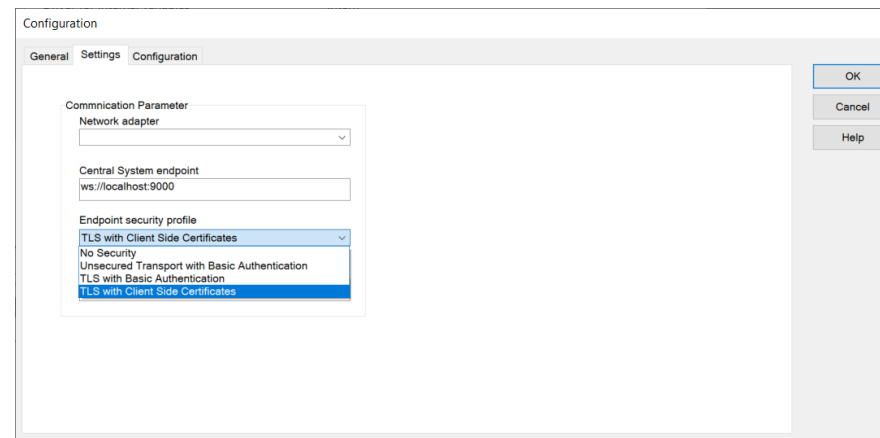
New OCPP Driver in zenon



- ▶ zenon acts as "Charging Station Management System" (CSMS)
 - OCPP 1.6-J standard
 - Web socket communication with JSON OCPP message format.
 - Security Profiles 1, 2 and 3 according to the OCA Whitepaper "Improved security for OCPP 1.6-J - Edition 2.0"
- ▶ Flexible realization of transaction sequences, e. g. "Smart Charging" use case



Online source: <https://www.electrichybridvehicletechnology.com/news/fast-charging-infrastructure-installed-for-airport-fleet-of-all-electric-buses.html>



zenon Process Gateway

Gateway configuration is integrated into zenon Project

DESCRIPTION

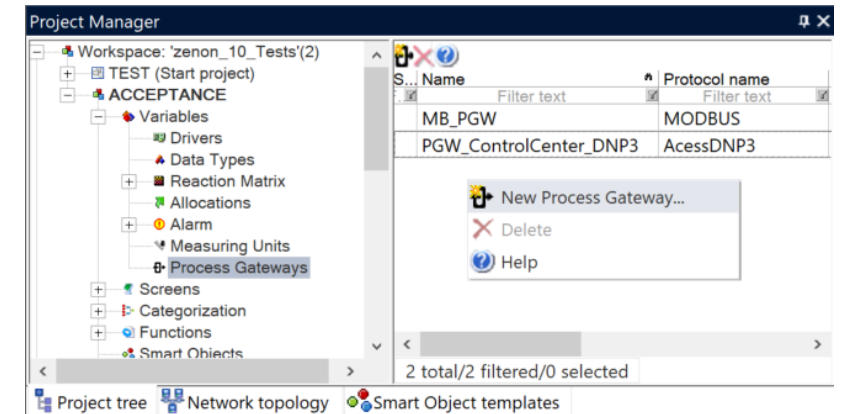
- ▶ Configuration of Process Gateways is integrated in zenon project
 - Status zenon 10: MODBUS and DNP3 Outstation

TECHNICAL BENEFITS

- ▶ Direct access to variables in the project configuration (offline configuration), no need to connect to a zenon Service Engine
- ▶ Configuration of Gateway startup behavior and location (host system)
- ▶ Gateway configuration automatically part of zenon project backup
- ▶ Changes in variable list are automatically aligned in the Gateway configuration

VALUE PROPOSITION

- ▶ Fast and consistent configuration of gateways
- ▶ Centralization in one integrated Engineering environment (no extra tools)
- ▶ Strong contribution to **efficient engineering**



General

Name: MB_PGW

Protocol name: MODBUS GUID: 5d75787d-4f25-4998-b4

Description:

Configuration: Click here -> ...

☒ Start automatically

Startup location: Specific computers

Specific computer... ATSZG-WKS185.copa-data.internal

Equipment Group... <No equipment group linked> ...

External Referenc...

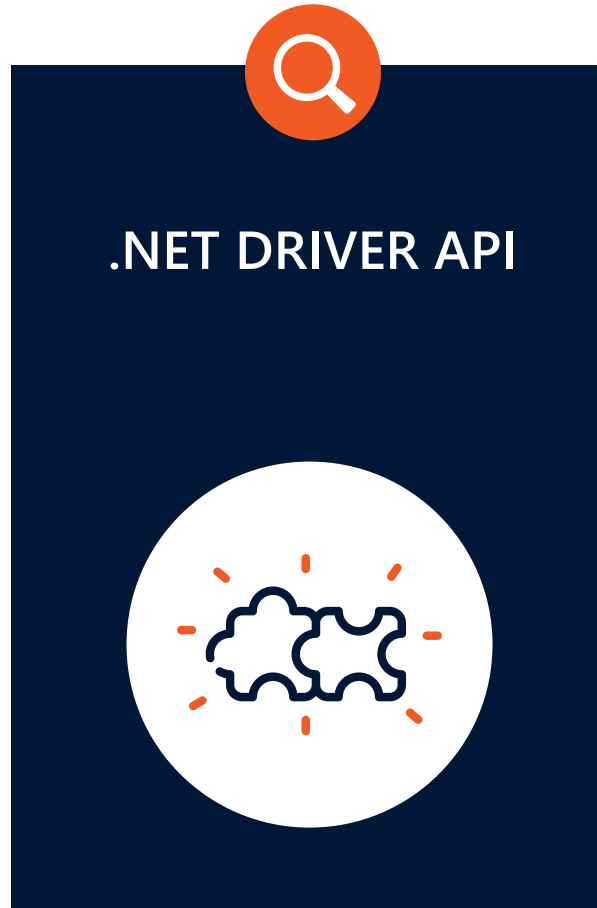
.NET Driver API

Extend the connectivity of zenon with the help of the generic .NET Driver

Extend the connectivity of the
zenon Service Engine

Driver communication
protocols can be implemented
with C#/.NET

Examples and tutorials available
on COPA-DATA's [Github](#)
repository



Exchange data via flexible
communication protocols like

- MQTT
- REST
- AMQP

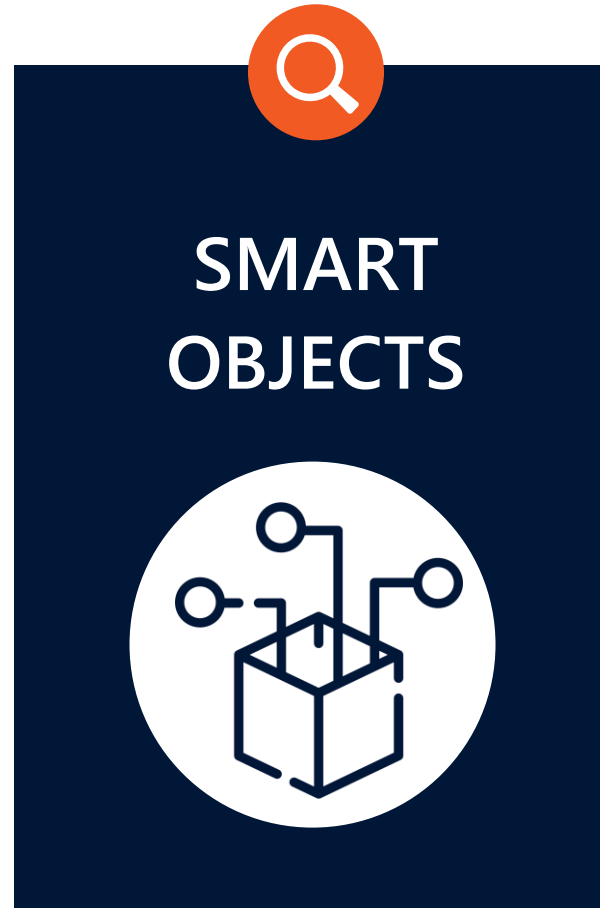
Smart Objects: The journey continues

Object oriented engineering with Smart Objects

Smart Object Templates support definition of standard and user-defined frames.

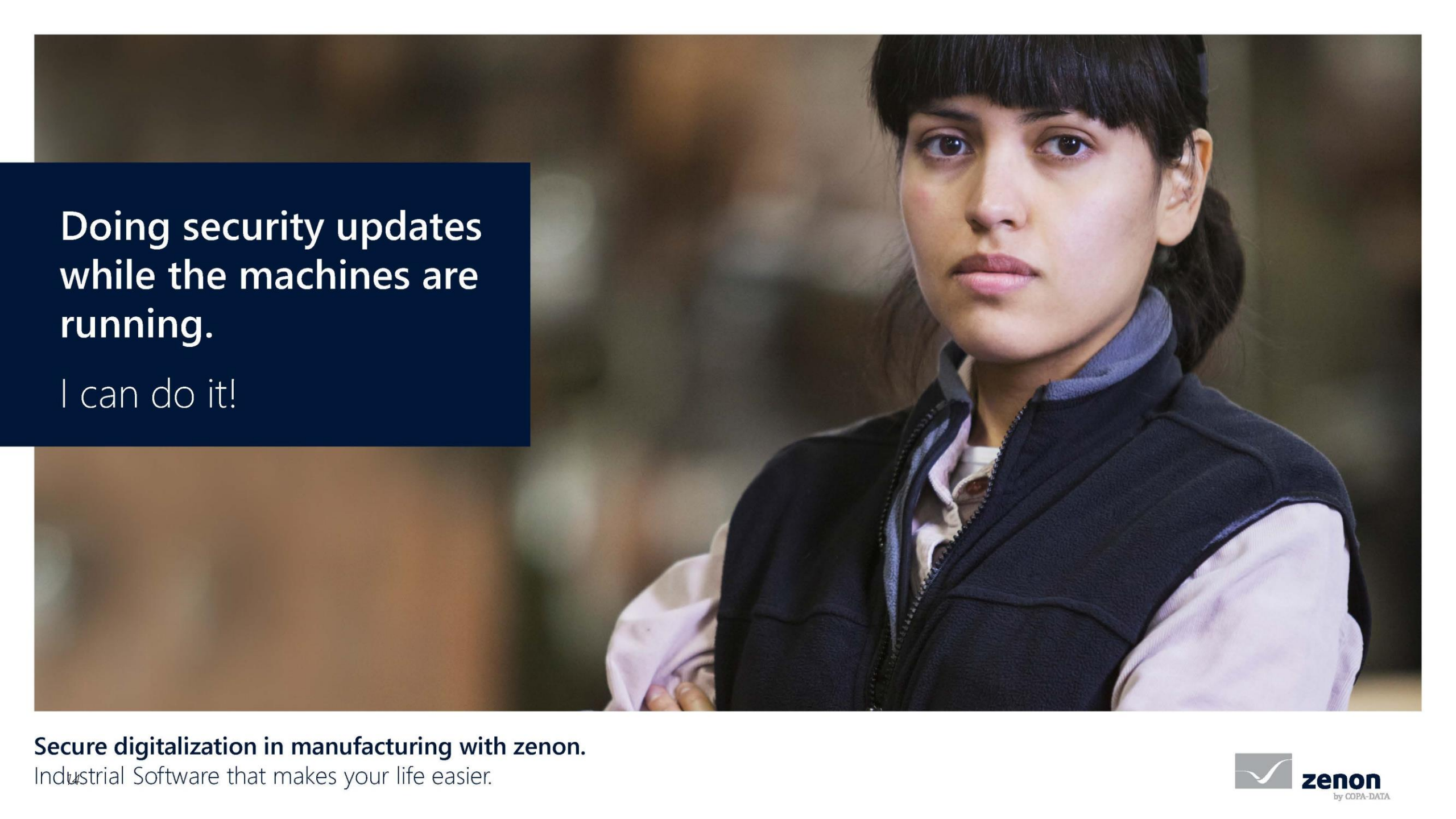
Mapping of variables (project to Smart Object)

Support of Recipe and Recipe Group Manager in Smart Object Templates



API to import/export, modification and instantiation of Smart Object Templates

Export/Import of parts of Smart Object Templates

A woman with dark hair and bangs, wearing a dark vest over a light-colored shirt, stands in a blurred industrial setting. She has a determined expression.

**Doing security updates
while the machines are
running.**

I can do it!

Secure digitalization in manufacturing with zenon.
Industrial Software that makes your life easier.

Service Engine in Docker – Support for previous versions

- ▶ Target Area: Brown field applications
- ▶ Combine new applications with already existing applications on the same hardware.
- ▶ Expand existing applications without invasive modifications, preventing the requirement of revalidation and auditing.
- ▶ General Docker support for previous Versions using matching Docker images, provided for:
 - zenon Runtime 8.10
 - zenon Runtime 8.00
 - zenon Runtime 7.60



HTML5 Web Engine

More functionality usable via web browsers

Improved screen and frame handling

- Create moveable popup dialogs like in the zenon Service Engine

Full support of global projects (overlying standardized fonts, graphics or audio files)



ETM with Gantt Chart and multiple Y-axes

Support of the equipment model screen

- Filter AML and CEL based on equipment models

GIS

Geographic Information System

Support for 800.000+
geographical elements

Static texts for Markers



Incremental XML data import

GIS supports BAIDU
maps and Chinese language

Centralized user administration

Utilize the Identity Service for a central user administration

Identity Service as the
centralized user administration

zenon Service Engine uses
Identity Service for user login

Same user account for every
Service Engine installation



Login with existing user accounts from
Azure Active Directory

- Microsoft Active Directory
- Open LDAP
- RADIUS

Security

State-of-the-art security techniques for Energy protocols

► Encryption and authentication

DNP3 Master Driver and DNP3 Outstation Gateway	<ul style="list-style-type: none">► Support of DNP3 Secure Authentication V2 and V5 according to IEEE StdTM 1815-2010 and IEEE StdTM 1815-2012 and IEC 62351-5► Support of TLS according to IEEE StdTM 1815-2012 and IEC 62351-3
IEC 60870 Master Driver and IEC 60870 Slave Gateway	<ul style="list-style-type: none">► Support of TLS according to IEC 62351-3 and IEC 60870-5-7
IEC 61850 Client (MMS) Driver	<ul style="list-style-type: none">► ACSE-Authentication according to IEC 62351-4► Support of TLS according to IEC TS 62351-4:2007 / compatibility mode according to IEC 62351-4:2018► MMS Secure Association according to IEC TS 62351-4:2007 and compatibility mode according to IEC 62351-4:2018
IEC 61850 Server (MMS), Logic Driver	<ul style="list-style-type: none">► TLS according to IEC 62351-3 and IEC TS 62351-4:2007 and IEC 62351-4:2018 (compatibility mode)► <i>Available with zenon 10 (Q1/2021)</i>
ICCP/TASE.2 IEC 60870-6	<ul style="list-style-type: none">► TLS encryption according to IEC 62351-4 (incl. compatibility mode)► <i>Available with zenon 10 (Q1/2021)</i>



Connectivity to meet the requirements of the future

Extensive upgrades

AccessDNP3_SG:
serial channel
redundancy

AccessDNP3_SG:
optional duplicate
events with and
without timestamp

AccessDNP3_SG:
enhancements for
health and connection
information

AccessAzure: IsIntegrity
flag for eventhub

AccessAzure:
resilient startup
behavior

SNMPNG32: support
for GETBULK when
browsing and during
runtime communication

S7TCPFA:
New S7TCP32 driver
with file-based
addressing

INTEGRA: cyclically
send current PC time
for watchdog
monitoring
(01911AD0F42)

S7TCP32:
add support for PI
(peripheral addressing)
area of a S7-300

zenSnmpTrapSrv:
SNMPNG32: support
for INFORM

Connectivity to meet the requirements of the future

Extensive upgrades

Support of OPC-UA
alarms (as Client)

Language independent
text (AML/CEL) OPC UA
Gateway

TIA driver should merge
variables at import

S7TIA:
support for TIA16

MELSECA:
improved
communication
performance

IEC870:
optionally map NT_870
and OV_870 to INVALID
(O1908C3200E - B117876)

IEC870_10332:
support for private types

BiffiDCM32: support for
new device / datatype
and support for new
commands

Connectivity to meet the requirements of the future

Extensive upgrades

Secure Authentication
according to IEC
60870-5-7 (IEC 62351)

zenon Logic IEC60870-104
Slave should support file
transfer in Control Direction
by means receiving a file
from IEC870-104 Master

IEC61850 Server -
Implement the Setting
Group management
(services, SGCB, ...)

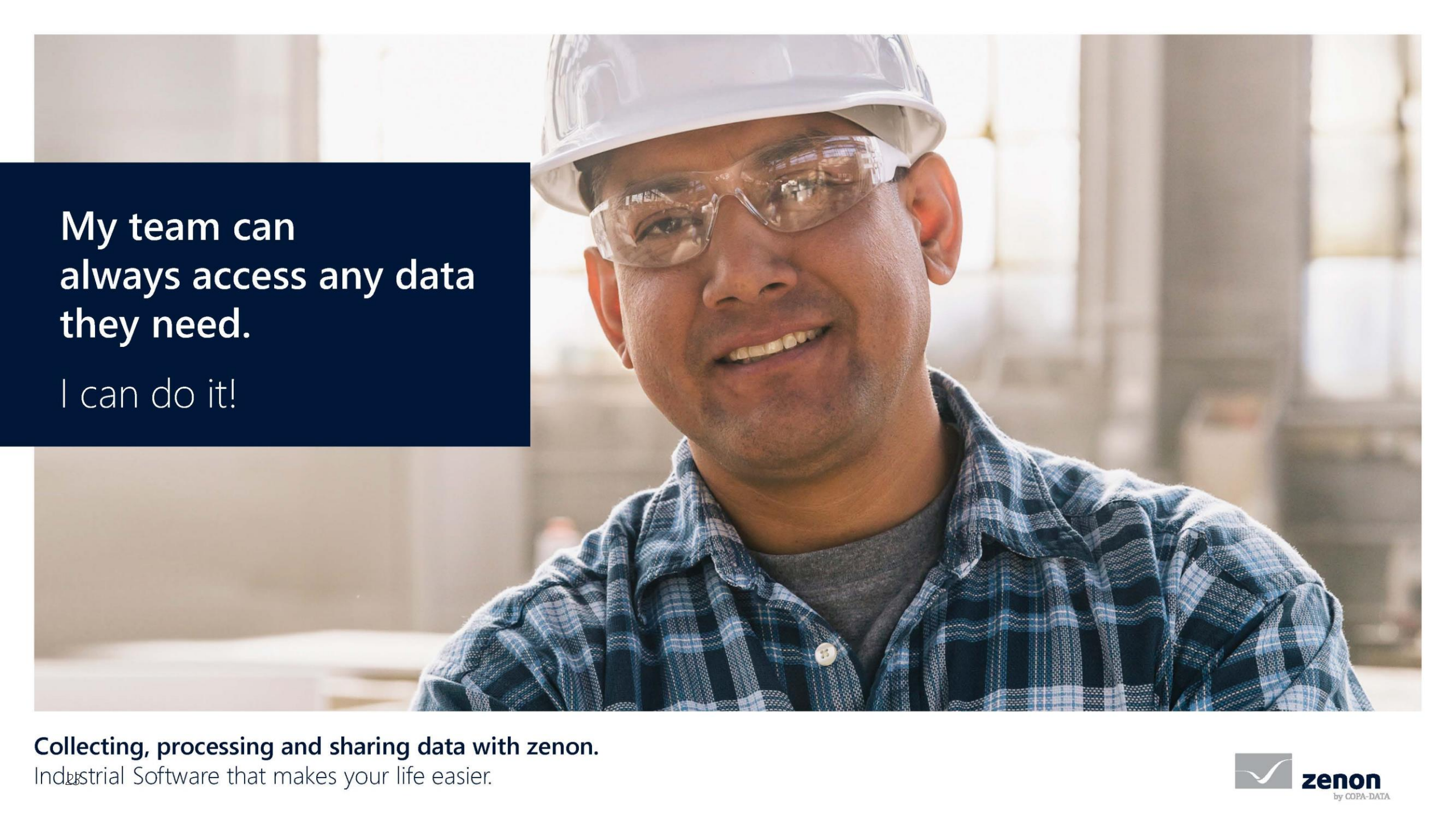
ICCP IEC 60870-6
TASE.2 Security with
IEC 62351

ICCP Process Gateway
select routing /
command routing

EUROMAP63: option
for limiting folder
name and file name to
8.3 length restrictions

Symbol Instance
Method for ODVA
driver

Simotion (and
S7TCP32) driver
enhancement: larger
PDU size



**My team can
always access any data
they need.**

I can do it!

Collecting, processing and sharing data with zenon.
Industrial Software that makes your life easier.

Update to SQL Server 2019

One SQL Server version for the entire platform

Availability of the latest features which include:

- Database Performance
- Accelerated database recovery
- Always encrypted with secure enclaves
- Data discovery and classification
 - Management and programmability
 - UTF 8 support



Extended support lifecycle (2030)

State-of-the-art security

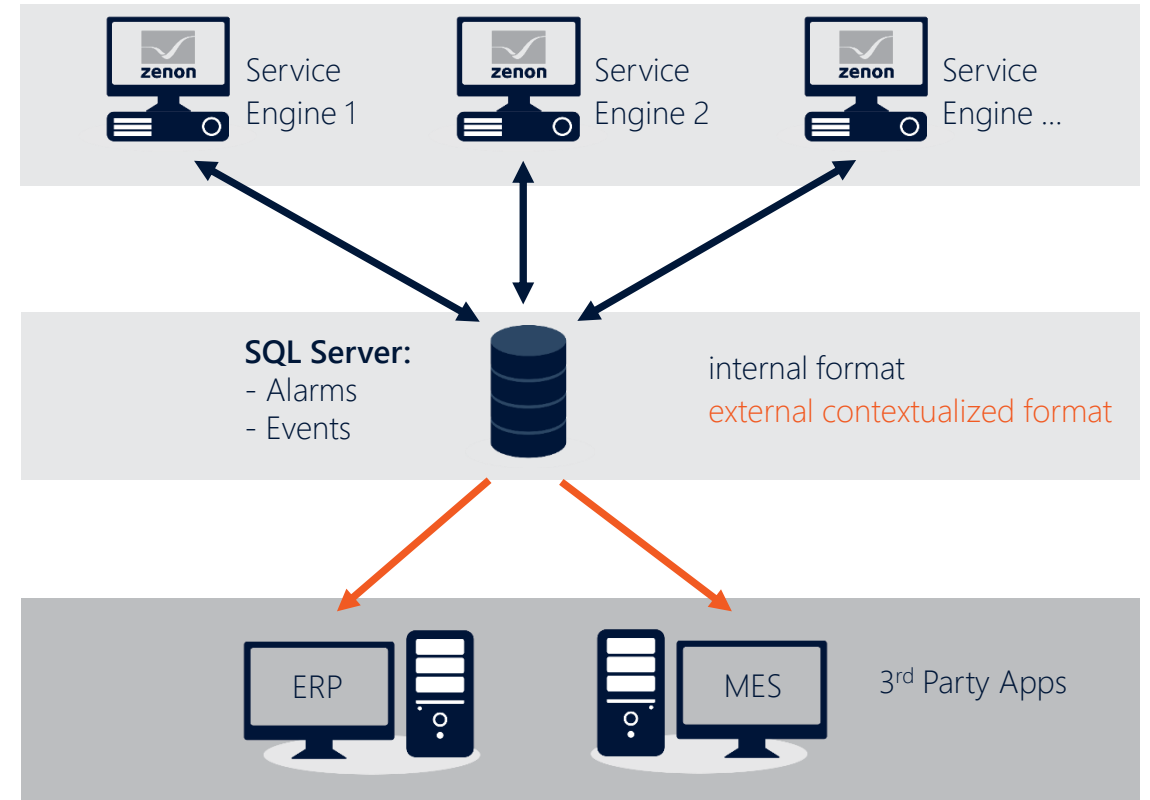
AML/CEL Export/Evacuation to Service Grid and SQL Server

▶ Mission and Benefits

- Store alarm and event data on external databases, e.g., SQL Server
- Central storage for use in zenon
- Central storage for 3rd party applications
- Guarantee data integrity

▶ How it works

- Configure target database
- Immediate storage of alarm and events when they occur
- Redundancy-capable
- Failure proof buffering mechanism



AML/CEL Export/Evacuation to Service Grid and SQL Server

▶ Summary

- Continuous **storage** of alarms/events to external ODBC Database (SQL Server, MySQL, ...) and Data Storage
 - In proprietary zenon format
 - Ability to read back into zenon applications
 - Cannot be accessed by 3rd party applications
- Continuous **export** of alarms/events to external ODBC Database (SQL Server, MySQL, ...)
 - In contextualized export format
 - Cannot be read back into zenon applications
 - Can be accessed by 3rd party applications
 - Export to Data Storage is scheduled with zenon 11

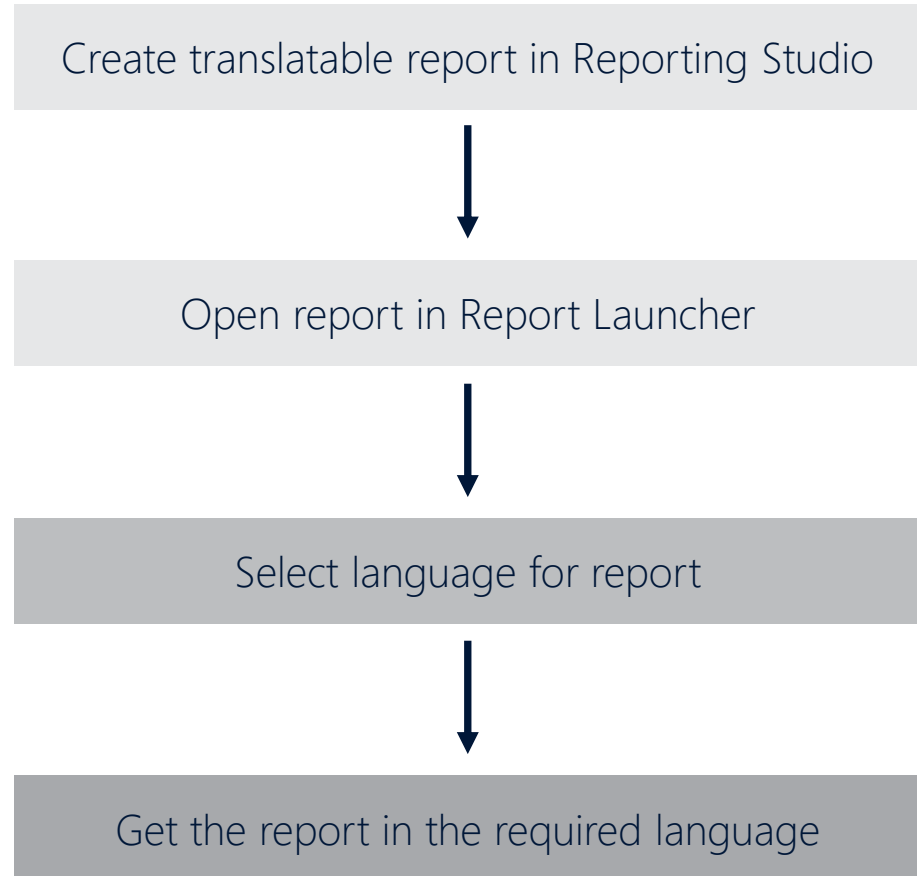
Online Language Switch for Alarm- and Event Reports

▶ Mission and Benefits

- Provide the same report in different languages.
- Select the language of the report in the Report Launcher
- Complete report is translated (filters, process data, table headers, ...)
- Show alarm and event reports in any language, not only the language used in the Service Engine
- Control and supervise production sites all over the world

▶ How it works

- Language table of Engineering Studio is used in the Report Engine
- Every text is translated via the language table



Online Language Switch for alarm- and event reports

1

Home > Translated Reports > Alarm List TRANSLATED sql flat

Language: English
To: 7/8/2020 12:00:00 PM
Alarm/event classes: High, Low, Medium
Alarm causes: Alarm Cause 0, Alarm Cause 1, Alarm Cause 2, AI
From: 7/8/2020 10:00:00 AM
Projects: TRANSLATED_DATA_GENERATOR
Alarm/event groups: Machine alarm, Operator alarm
Equipment groups: Machine 1, Machine 2
View Report

1 of 3 100% Find | Next

Alarm List TRANSLATED

7/8/2020 10:00:00 AM - 7/8/2020 12:00:00 PM
Time range

Machine 1, Machine 2
Equipment groups

TRANSLATED_DATA_GENERATOR
Projects


High, Low,
Alarm/event classes



Project	Variable	Identification	Alarm class	Alarm group	Time received	Time cleared	Time
TRANSLATED_DATA_GENERATOR	Machine 2 - Sensor 2	Sensor 2 of Machine 2	Low	Operator alarm	7/8/2020 11:51:32 AM	7/8/2020 11:51:45 AM	
TRANSLATED_DATA_GENERATOR	Machine 1 - Sensor 2	Sensor 2 of Machine 1	Medium	Operator alarm	7/8/2020 11:51:35 AM	7/8/2020 11:51:46 AM	

Online Language Switch for alarm- and event reports

2

Home > Translated Reports > Alarm List TRANSLATED sql flat

Language: Deutsch 
To: Deutsch
Alarm/event classes: English
Alarm causes: Français

From: 7/8/2020 10:00:00 AM 
Projects: TRANSLATED_DATA_GENERATOR
Alarm/event groups: Machine alarm, Operator alarm
Equipment groups: Machine 1, Machine 2 
[View Report](#)

1 of 3 100% Find | Next

Alarm List TRANSLATED

7/8/2020 10:00:00 AM - 7/8/2020 12:00:00 PM
Time range

Machine 1, Machine 2	TRANSLATED_DATA_GENERATOR	High, Low,
Equipment groups	Projects	Alarm/event classes

Project	Variable	Identification	Alarm class	Alarm group	Time received	Time cleared	Time
TRANSLATED_DATA_GENERATOR	Machine 2 - Sensor 2	Sensor 2 of Machine 2	Low	Operator alarm	7/8/2020 11:51:32 AM	7/8/2020 11:51:45 AM	
TRANSLATED_DATA_GENERATOR	Machine 1 - Sensor 2	Sensor 2 of Machine 1	Medium	Operator alarm	7/8/2020 11:51:35 AM	7/8/2020 11:51:46 AM	

Online Language Switch for alarm- and event reports

3

Home > Translated Reports > Alarm List TRANSLATED sql flat

Language: Deutsch
To: 7/8/2020 12:00:00 PM
Alarm/event classes: Gering, Hoch, Mittel
Alarm causes: Alarmursache 0, Alarmursache 1, Alarmursache 2
From: 7/8/2020 10:00:00 AM
Projects: TRANSLATED_DATA_GENERATOR
Alarm/event groups: Bedieneralarm, Maschinenalarm
Equipment groups: Maschine 1, Maschine 2
View Report

1 of 3 100% Find | Next

Alarm List TRANSLATED

08.07.2020 10:00:00 - 08.07.2020 12:00:00
Zeitbereich

**Maschine 1,
Maschine 2** **TRANSLATED_DATA_GENERATOR** **Gering,
Hoch.**
Anlagengruppen Projekte Alarm-/Ereignisklassen

Projekt ↕	Variable ↕	Kennung ↕	Alarmklasse ↕	Alarmgruppe ↕	Zeit kommt ↕	Zeit geht ↕	Zeit ↕
TRANSLATED_DATA_GENERATOR	Maschine 2 - Meßstelle 2	Meßstelle 2 von Maschine 2	Gering	Bedieneralarm	08.07.2020 11:51:32	08.07.2020 11:51:45	
TRANSLATED_DATA_GENERATOR	Maschine 1 - Meßstelle 2	Meßstelle 2 von Maschine 2	Mittel	Bedieneralarm	08.07.2020 11:51:35	08.07.2020 11:51:46	

Text boxes and lines in reports

General

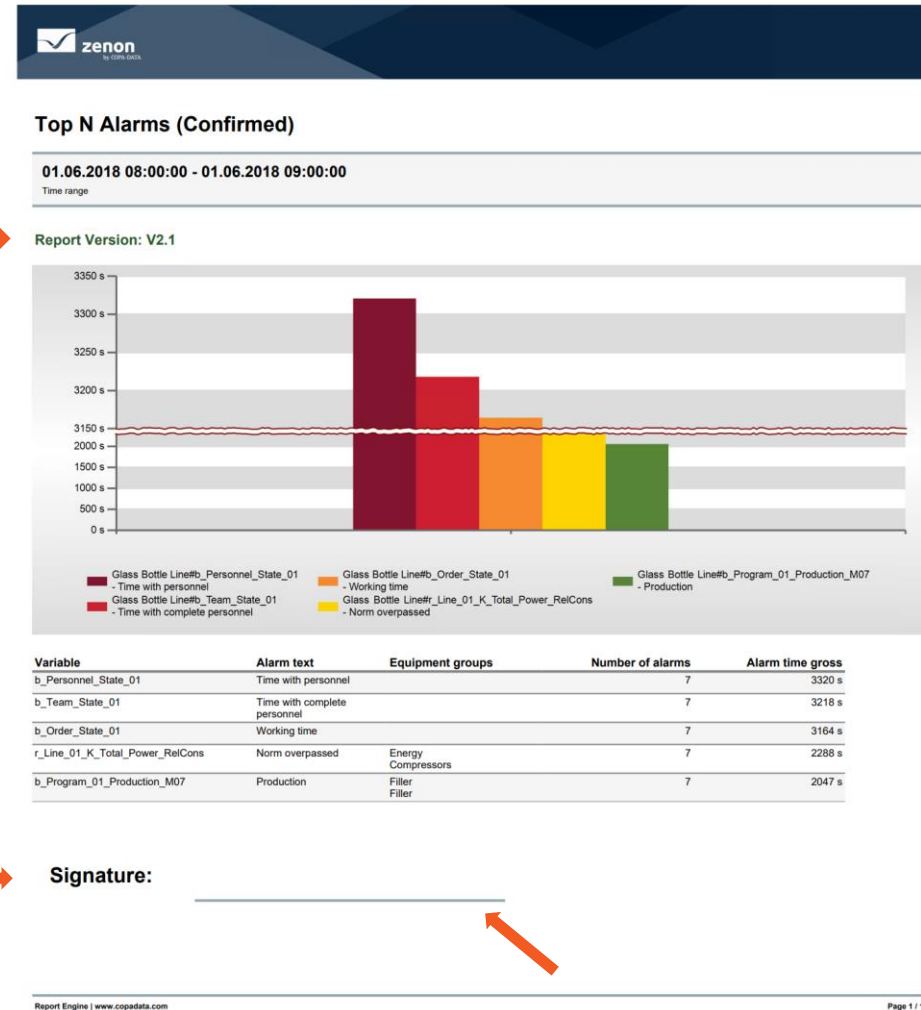
- ▶ Available in every report template

Text box

- ▶ Text source: Language table or static text
- ▶ Styles for
 - Font
 - Border (left, right, top, bottom)
- ▶ Usage: To show version numbers, descriptions, ...

Line

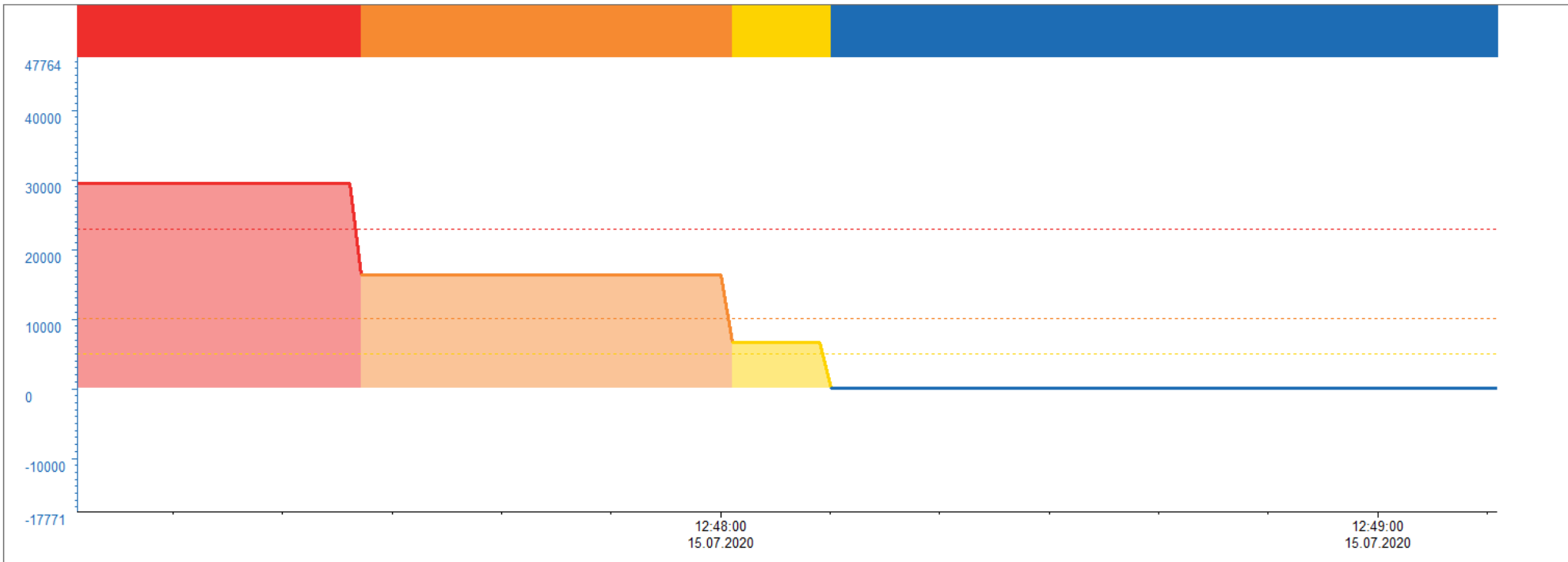
- ▶ Width (0 = straight vertical line)
- ▶ Height (0 = straight horizontal line)
- ▶ Diagonal line: width & height > 0
- ▶ Usage: Separator, line for writing (e. g. name),...



Extended Trend

Display limit information

- ▶ Display limit values as lines to easily see if a value is e.g., fluctuating around a limit
- ▶ Colorize curve parts and areas in the limit color to easily see e.g., how long a value was outside the normal range



Summary

Highlights for 2021



New look & feel for zenon Engineering Studio



Upgrades to the Web Engine



eSignature provides additional security for data logging



Smart Objects enhancements with XML export/import and variable mapping



Translation of reports during runtime



Make your life easier!

With new features for 2021!

