Desigo CC Version 4.2 Specification Texts
Basic Documentation
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1 System description

1.1 Management level requirements

General
All information comes together at the management level. The management level is the graphical, interactive interface for the operator to the automation station and the integrated plants and plant parts. System operation must be based on a simplified approach. The operator can display, query, process, save, or print any plant information via the peripheral units at the management level. The plants are displayed in synoptic images and the values and states are presented and displayed dynamically. Special programs are used for higher control, optimization functions, maintenance and energy management.

Specified products: Siemens / Desigo CC or similar

System Openness
The control system supports standard protocols used in building technology, including BACnet, OPC DA (Data Access), Modbus, KNX, M-Bus and S7 and S7 Plus.

Specified product: Siemens / Desigo CC or similar

Multi-discipline
The system must be able to handle natively different disciplines in a building: Building Automation, Fire, Industrial PLC’s, Access Control, Intrusion, Video… The disciplines must allow distribution across independent servers if required. Scope of access for controlling and monitoring discipline data must allow customization per user in every client station.

Each management station of the system must be able to be assigned one or more disciplines, allowing customizable single or multiple discipline access mode.

Specified product: Siemens / Desigo CC or similar

Exchange of data to external system via web service
The exchange of data (values, events, and trend data) between other building systems, corporate applications, or other supplemental services, must be supported via web services.

Specified product: Siemens / Desigo CC or similar

Data exchange via various subsystems
If several subsystems are used, various data exchanges between automation stations and the field network (outside temperature, demand and coordination signals, etc.) must be supported.

Specified products: Siemens / Desigo CC or similar

Automate recurring tasks
The building automation and control system must take care of recurring tasks to lower the operator's workload.

This includes, for example, cyclical report generation triggering, plant release at various conditions, or automatic adjustment of setpoints or alarm limits.

Specified products: Siemens / Desigo CC or similar

Reactions
The system must allow automatically executable actions to be programmed at the management station when set conditions are verified.
Conditions can be time-based, event-based, on change of values or on a combination of some or all. When conditions are met, the system shall execute a pre-configured list of commands.

Specified product: Siemens / Desigo CC or similar

**Scripting**

The system must provide a Script Editor to create scripts based on a known scripting language. The script engine must allow the manual execution of scripts manually by the operator, or automatic execution triggered by the system based configurable conditions. Among others the scripts must support:

- Commanding of objects
- Reading attributes of object
- Subscription to value changes
- Read/Write text files
- Loading of external DLL’s
- Mathematical / logical operations

Specified product: Siemens / Desigo CC or similar

**Drafted for use by fire detection and security systems (UL certified)**

The management station must have passed Underwriters Laboratories (UL) performance and environmental tests. The management station must offer all relevant functions to connect comfort and fire detection systems:

- Display and handle events
- Graphically monitor and control the fire detection system
- Highlight the highest priority events.
- Direct navigation to the element triggering an event.
- Quickly go to user-defined instructions and graphically display event locations.
- Save and query activity data from the fire detection system.
- Distribute fire monitoring and control capabilities.
- Provide operating instruction checklists for operators during stressful situations for handling fire events.
- Send automatic remote messages of impacted device per e-mail.
- Display and plan automatic history reports.

Specified product: Siemens / Desigo CC or similar

**System-wide self-monitoring**

The system must be capable of monitoring running applications, printers, and all connected subsystems. The system must report an event in case of an exceptional state.

Specified product: Siemens / Desigo CC or similar

**System analysis**

Detailed analysis on system and user activities must be available in chronological order.

Specified product: Siemens / Desigo CC or similar

**Scada Platform**

The management station must be based on a SCADA platform that is compatible with the BACnet B-AWS profile. It must permit integration of any building installation including HVAC and lighting.

Specified product: Siemens / Desigo CC or similar
1.2 Operating system for building automation and control system

All data servers, operator stations, etc., for the BAC system must be compatible with the most current, generally available Windows 64-bit operating system.

As a result, the current version of Windows (at least 6 months after release by Microsoft) as well as a minimum of the last Version is supported. Modifications to the customer network must be possible. The BAC system must therefore be installable on any common PC or on tested embedded/industrial hardware and offer a multitasking environments where a user can run multiple applications simultaneously.

Specified product: Siemens / Desigo CC or similar

Ecosystem

The system must provide the means to develop proprietary drivers, not supported by the system natively for communication with 3rd party subsystems and devices, or exchange of data with external applications.

The system must also provide possibilities to extend the functionality by adding new libraries containing scripts, graphic symbols, graphic templates or object models to support subsystem integration or optimize automated tasks.

Specified product: Siemens / Desigo CC or similar

Long term storage

The system must be able to store and archive data for a period of more than 10 years, allowing as an option segregation of stored data in different groups that can be tuned individually with different recording frequencies. Remounting of offline archived data must also be allowed.

Specified product: Siemens / Desigo CC or similar

Validated and critical environments

The system must allow compliance to regional certifications for validated environments, such as GMP Annex 11, US FDA 21 CFR Part 11 or similar. A special technical document verifying the compliance of the system in critical environments must be present.

Specified product: Siemens / Desigo CC or similar

Migration

The system must allow a smooth migration of an existing management station. Via its embedded software utilities, it must be able to accumulate existing graphic pages and Trend Objects or datasets, from a legacy management station to the new software.

Specified product: Siemens / Desigo CC or similar

Distributed architecture

The platform must allow a distributed architecture across different systems to enable scalability (up to 500,000 objects) and separation by discipline and / or location.

The distributed architecture must provide a single system image to the end user. The functionality that is available in a single system must be also available in a distributed architecture.

Specified product: Siemens / Desigo CC or similar

Integration of BACnet Elevators/Escalators

The system must natively support the integration of BACnet Elevator and Escalator objects with models and graphic libraries to perform the following actions:
System description

1. Product lifecycle

1.3 Software updates and upgrades

The system must offer the possibility of software upgrades to the latest available version, in order to benefit from new features and from enhanced protection against possible cybersecurity threats.

This can be achieved by enabling a subscription to a software upgrade service which must offer:

- Permanent protection against cybersecurity threats
- Availability of the latest software features (system and limits upgrade)
• Compatibility with the latest version of supported operating systems
• Support of the latest versions of the integrated subsystems
Specified product: Siemens / Desigo System or similar

1.4 System continuity
Products used must have a label for a global standard that ensures inaction with products from various manufacturers. Products with these labels can also be combined if manufactured at intervals of more than 10 years.
Specified product: Siemens / Desigo System or similar

1.5 Hardware requirements

Embedded Hardware
Special purpose embedded hardware is required for small and / or mid-sized sites. The hardware and software environment must fulfill the following definition:
• Type: Embedded
• Processor: Intel Celeron N2930, Intel Atom E3827, Intel Celeron 4CJ1900
• Memory: 8GB
• Hard disk: 100GB SSD
• Network Card: Gigabit speed
• Graphics Card: Onboard graphics adapter with integrated processor
• Minimum Software environment:
  • Win10 IOT Enterprise 2016 LTSB
  • Microsoft SQL Server 2014 – Express Edition
• Network Requirements:
  • Local network
  • Single subnet
  • 100 Mbps up/down
  • Support Wake on LAN
  • Defined range
  • 1 server
  • Max number of objects = 10,000
Specified product: SIMATIC Nanobox IPC227E or similar

Standard Hardware for small or medium plants
(ca. 500-2000 data points)
One client/server system for mid-sized sites with a high data transfer rate is required. The hardware environment must fulfill the following definitions:
• Processor: Core i7 or equivalent >= 3.2 GHz
• Cores: 4 per running system
• Memory: 16GB
• Hard Disc: 1 * 1024GB SSD
• Network card: Gigabit speed
• Graphics card: Mid-range graphics card
Network requirements:
• Local network
• 1000 Mbps up/down
• Latency less than 10 ms
• For the integration of XNET Fire Safety Systems, the server hardware needs to have a PCI slot for the NCC-2F card
• Defined range
1 server
Max number of objects = 50,000 (Total: 500,000 in a distributed architecture)
Specified product: Siemens / Desigo CC or similar

**Standard Hardware for large plants**
(ca. 2000-35,000 data points)
One client/server system is required for large sites. The hardware environment must fulfill the following definitions:
- Type: Server 19” rack
- Processor: Core i7 or equivalent >= 3.2 GHz
- Cores: 4 per running system
- Memory: 32GB
- Hard Disc: 1 * 1024GB SSD
- Network card: Gigabit speed
- Graphics card: Mid-range graphics card

**Network requirements**
- Backbone Gigabit
- 1000 Mbps up/down
- Latency less than 10 ms
- For the integration of XNET Fire Safety Systems, the server hardware needs to have a PCI slot for the NCC-2F card
- IPV6 supported (NOTE: IPV6 for BACnet networks not supported)
- Standard secure mechanisms for DMZ, such as port forwarding, tunneling and redirection, PAT, NAT supported
- Hosting of the server in DMZ
- Defined range
- 1 server
Max number of objects = 150,000 (Total: 500,000 in a distributed architecture)
Specified product: Siemens / Desigo CC or similar

1.6 **Software Requirements**
The software must be compatible with the following Microsoft operating systems and editions:
- Microsoft Windows 7 64-bit (Professional and Enterprise)
- Microsoft Windows 10 64-bit (Professional and Enterprise)
- Microsoft Windows Server 2012 R2 64-bit
- Microsoft Windows Server 2016 64-bit
- Microsoft Windows Server 2019 64-bit

The software must be compatible with the following Microsoft SQL products:
- Microsoft SQL Server 2014 R2 Express
- Microsoft® SQL Server 2012 (Express, Standard and Enterprise)
- Microsoft® SQL Server 2014 (Express, Standard and Enterprise)
- Microsoft® SQL Server 2016 (Express, Standard and Enterprise)
- Microsoft® SQL Server 2017 (Express, Standard and Enterprise)

The software must be compatible with the following Microsoft Office products:
- Microsoft Office 365 (Standard, Small Business, Professional, Enterprise)
- Microsoft Office 2016 (Standard, Small Business, Professional, Enterprise)
- Microsoft Office 2013 (Standard, Small Business, Professional, Enterprise)
- Microsoft Office 2010 (Standard, Small Business, Professional, Enterprise)
- Microsoft Office 2007 (Standard, Small Business, Professional, Enterprise)
The software must be compatible with the following virtualization software packages:

**VMware**
- Virtualization platform: VSphere 6.0, 6.5 and 6.7
- High Availability & Fault-tolerant software:
  - ESXi 6.0 managed by VCenter Server Appliance v6.0.0
  - ESXi 6.5 managed by VCenter Server Appliance v6.5.0

**Microsoft HyperV 2016**
- Virtualization platform: Microsoft HyperV 2016
- High Availability software: Microsoft HyperV Server 2012, 2016, and 2019 (Replica configuration is only supported with dongle-based licenses)
- Specified product: Siemens / Desigo CC or similar
2 User profiles

2.1 Individual views

Individual, specific or user defined views must be adjustable for the plant overview. The views must cover various electrical and mechanical installations or follow geographic or organizational criteria and permit a customized, hierarchy view, that depicts the management station, control systems, plant geographic layout as well as relationship of the mechanical facilities.

Specified product: Siemens / Desigo CC or similar

User Privileges

The building automation and control system must allow users to define, change, or delete predefined reactions as per their user privileges.

Specified products: Siemens / Desigo CC or similar

Simplified Operator Interface

The building automation and control system must allow operators to efficiently maneuver the controlled equipment. The navigation within system applications and components is achieved by thumbnail icons and via grouping of functionalities. A simplified operator interface must be assigned to system users that require a simplified approach. The interface can be applied to more than one user. The following functionalities must be by default available for the system Operator:

- Managing of System Events (alarm management)
- Operate the installation via graphic application
- Navigate via thumbnails
- Time Scheduler
- Trend Viewer
- Log Viewer
- Report Application
- Document Viewer
- Notification

The operating interface must be documented by a workflow driven documentation that helps the operator to use the management station. The document shall be provided in PDF or online help format.

Specified products: Siemens / Desigo CC or similar.

2.2 Multilingual

The user interface must support a minimum of 3 languages at the same time.

Specified product: Siemens / Desigo CC or similar
3 Graphics

3.1 Operating interface to CAD system
The user interface must allow users access to various system diagrams and floor plans using graphical depictions, menu selections, and data point assignments. The graphics software must also permit the import of CAD symbols (DWG, DXF format) or scanned images for use in the system.
Specified product: Siemens / Desigo CC or similar

3.2 Operating messages
Operating message must be able to be displayed and evaluated on the management level. Graphics must be able to display data point states that are overwritten by a local priority switch. This on data points that were developed to supplying by local override.
Specified product: Siemens / Desigo CC or similar

3.3 Full graphics mode
A fully graphics-based management level with ergonomic and freely scalable images must be available. The system must be developed to operating, monitor, optimize, and log all connected automation stations in real time.
Specified product: Siemens / Desigo CC or similar

3.4 Graphics generation
Operators must be able to add, delete, and edit system graphics and state texts for digital data points from the standard user interface without external or special tools.
Specified product: Siemens / Desigo CC or similar

3.5 Navigation
A hierarchy tree can support as an option navigation to the various graphic images. Graphic displays must include the ability to dynamically zoom and switch among various layers with different information.
Specified product: Siemens / Desigo CC or similar

3.6 In graphics commanding
The system must offer graphic objects which can be used to command or control the system. At a minimum, sliders, buttons, text boxes, dropdown lists and radio buttons must be included
Specified product: Siemens / Desigo CC or similar

3.6.1 Visualize the quality state in the plant graphics
A violation of energy efficiency limit values for measured values of primary plants (e.g. centralized air handling, energy generation) must also be displayed in the plant graphic directly on the application components or function.
The parameters for monitoring, evaluating and forming the quality state can be set directly in the plant graphic based on read and write access rights. As an alternative: Make possible the simple navigation to an appropriate user program.
Specified products: Siemens / Desigo CC or similar
3.7 Graphic symbols and standards

Plant graphics must meet the ergonomic needs of the operator. The displayed graphic symbols must correspond to the generally valid standard for HVAC symbols (DIN EN 62424 (VDE0810-24)) and ASHRAE guidelines. The symbols must be supported as two- and three-dimensional graphics.

The ability is required to create colored floor displays and system diagrams for each mechanical facility including AHU, chilled water plants, hot water boiler systems, and room operator units. Associated print outs of standardized plant images must be added to the bid.

Specified product: Siemens / Desigo CC or similar

3.8 Object-oriented graphics

The building automation and control system must offer dynamic, high-resolution graphics. The graphics must be object-oriented. Each symbol must be able to display several states in the same, consistent format. At the same time, several views must be able to be open concurrently, and all views must be updated dynamically.

Specified products: Siemens / Desigo CC or similar

3.9 Continuous update and display

Measured values, setpoints, user settings, and alarms must be displayed immediately and continuously. State changes must be indicated via symbol, e.g. using animation or changing the color, in general, however, graphic presentation, or text.

Specified products: Siemens / Desigo CC or similar
4 Energy management

Energy and Power Management (EPMS) must be part of the Building Management System (BMS) software. More specifically:

- Operational and engineering data from EPMS must be in the same database as those of the BMS.
- The following functions must use the same workflow, not requiring separate training or additional login:
  - Trending
  - Custom Graphics generation
  - Alarms management
  - Logs
  - User management with various authorization levels
  - Scripting
  - Help

4.1 Integration of meters

The EPMS must be capable to integrate any meter or breaker that has a known Modbus registry map.

The EPMS must allow the bulk import (integration) of many devices as well as import of individual devices.

The end user or engineer must be able to select for each meter or circuit breaker, which data points should be polled, displayed, achieved. Searching/filtering of the data point list must be available in order help the process above to be more efficient.

For each data point there must be the option to have a high or low limit that will create an alarm if exceeded.

The EPMS must allow the organization of integrated devices in Hierarchical structure with areas and sectors where the devices belong.

4.2 Dashboards

The EMPS must have Dashboards that can show real-time data together with processed historical data. For example, real-time power demand and daily energy consumption of the last week on the same page.

Each device and each area are must have its own dashboard and premade graphics showing basic characteristics and harmonics (if available from the device).

4.3 Virtual devices and calculations

The engineer/user must be able to create virtual objects and assign to them outputs of a calculation of existing datapoints. (For example, add power demand of device A and device B, and assign the output on a virtual point to get the total power demand of those devices.)

4.4 Libraries and templates

The EPMS must use libraries to allow the easy transfer of data from one project to another. (For example, object models of custom-made meters or custom-engineered graphics.

The EPMS must have premade object models and graphics for 7KT/7KM PAC measuring devices and 3WL/VL/3VA circuit breakers as well as dedicated graphics symbols for other commonly used electrical components such as batteries, switches and UPSs.
4.5 Advanced meter management

The system must be able to detect energy meter rollover and react to it showing the real figure of the accumulated energy consumed. It must also support the exchange of energy meters and consider the latest reading of the replaced meter so that the energy values for the new meter continue adding up on it.

Specified product: Siemens / Desigo CC or similar

4.6 Energy and Power reports

The EPMS must have reporting capabilities in order to process the acquired data. The reporting engine must allow the scheduling of the report generation and emailing it as an attachment.

The following report templates must be available:

Load Duration
- Showing in Y axis the power and in X axis the time this power has been exceeded.
- Also showing the 50 highest reading in separate graph against the time of the day they occurred.

Top10
- Showing details about the top 10 energy consumers in the system.

Total Energy
- Showing the total energy consumption for selected points and period in Pie or Bar chart and compare across periods.

Standard
- Showing the readings in table format for the selected points from various devices.

Power Peak
- Showing the peak value per interval for a selected period against a predefined limit.

Load Variance
- Showing for the selected meter and time-period the power demand variation for all time intervals included in the period (overlay) as well as a separate graph the min, max and average values.

Energy Analysis
- Showing the Power demand for one whole year per month.

Cost Center
- Showing total energy and cost per cost center and medium with user definable cost per unit values.

Absolute Energy
- Showing the total energy consumption and its individual contributors in the stacked Bar or Area chart.

The system must be able to provide energy and power reports to visualize in addition:
- Load profiles
- Maximum power
- Energy consumption
- Comparison of consumptions
- Analysis of the data must be done at the local workstation and not in a cloud-based solution.

Specified product: Siemens / Desigo CC or similar
4.7 Hierarchical reporting and Filtering

The system must allow the creation of a hierarchical structure for report generation. Every element belonging in the selected node must be included in the relevant report.

The system must allow every meter to be assigned into a category (e.g. electricity) and the report generation must allow filtering based on these categories.

Specified product: Siemens / Desigo CC or similar

4.8 Power Quality meters

The system must allow the integration of power quality meters with the IEC61850 protocol.

In case a device generates a fault based on the waveform capture, the system must be able to download the file from the device for further analysis and storage.
5 Scheduler programs

5.1 Management via central scheduler programs
Operate all scheduler programs online from the management level to achieve consistent, transparent operation of all integrated systems and subsystems.
Specified products: Siemens / Desigo CC or similar

5.2 Scheduler programs
The system must offer the ability to operate schedulers on automation stations as well as support management station-based time scheduling.
Each currently used plant image must offer user-friendly scheduler operation.
Specified product: Siemens / Desigo CC or similar

5.3 Scheduling and override
Providing calendar type formats to simplify time and data planning and override building operation is required. Time definitions must be located on the PC workstation and building controller to ensure scheduling even if the PC is offline.
Providing override access through menus, graphical mouse, of function keys.
Providing the following operations at a minimum:
- Comprehensive support of all BACnet objects for scheduler, calendar, and commands.
- Daily and weekly schedules
- Ability to compile multiple data points into a logical command group to simplify scheduling (e.g. Building 1 Lighting)
- Planning predefined reports.
- Ability to plan at least 10 years in advance.
- Provide filters for schedulers by name, time, frequency, and schedule.
- Provide sorting schedulers by name and schedule type.
Specified product: Siemens / Desigo CC or similar

5.4 Customized scheduler program
The user can customize the schedule defining the operating mode for each plant.
Switching times are defined via weekly schedule. Overriding recurring weekly schedules via local or global exceptions as well as operation via any operator unit must be possible.
Specified products: Siemens / Desigo CC or similar

5.5 Customized calendar
Local or global calendar exceptions must be able to override the plant-specific weekly scheduler program. Equal calendars must be assigned priority over each other. Calendar operation must be possible via all operator units.
Specified products: Siemens / Desigo CC or similar

5.6 Create calendar online
Calendar programs must be able to be remotely created online to provide service personnel a high level of flexibility.
Specified products: Siemens / Desigo CC or similar
5.7 Create scheduler online
Scheduler programs must be able to be remotely created online to provide service personnel a high level of flexibility.
Specified products: Siemens / Desigo CC or similar

5.8 Create offline trend online
Trend log objects, both offline or online, must be able to be remotely created in order to provide service personnel a high level of flexibility. This action must be performed directly from the management system, without accessing directly the automation layer.
Specified products: Siemens / Desigo CC or similar

5.9 Multiple, concurrent users
Multiple users must be able to work concurrently on various workspaces on the building automation and control system for efficient and comprehensive work. Plants must simultaneously be analyzed and e.g. monitored or operated via a remote station.
Specified products: Siemens / Desigo CC or similar
6  Security

6.1 Access protection

Different persons maintain and operate the plant. For this reason, passwords must be assigned to authorized persons to guarantee transparency for tracking or authorization purposes. A minimum of four different rights must be assignable.

- Administrator.
- Program and graphics creation.
- Operation to change or adjust setpoints.
- Guest.

Specified products: Siemens / Desigo CC or similar

6.2 Windows authentication

The building automation and control system password management must meet the customer's IT guidelines. In other words, the customer's corporate standard also applies to the BAC system. Therefore, password management and the associated properties must comply with standard Windows log on and "track" the operator on each workstation.

Specified product: Siemens / Desigo CC or similar

6.3 Operating functions

Central setpoint shift

The setpoints in the rooms must be adjustable and can be shifted for effective and clear room operation for the rooms as a whole and individually via the building automation and control system.

Specified product: Siemens / Desigo System or similar

6.4 Alarm function

The automation station contains an image of the physical data points. Each data point must be alarmable. Parameterization via operator units must be possible. The alarms either do not require acknowledgement, i.e. they come and go without acknowledgement, or must be acknowledged or reset and acknowledged.

Specified product: Siemens / Desigo System or similar

6.5 Alarm message

Alarms from the automation station must be displayed on the operator units within 1 second. Alarms must be acknowledged or acknowledged and reset dependent on access rights. Delay times (e.g. feedback supervision, triggering of differential pressure monitor, filter) must be changeable via operator units.

Specified product: Siemens / Desigo System or similar

6.6 Alarm suppression

During commissioning, plant servicing or automation station startup, it must be possible to suppress alarms and events from single objects or from entire plants. The suppression must include corresponding undesired reactions.

The management system shall provide a clear indication in case of an active alarm suppression and it shall easily be possible to list the suppressed objects.

Specified product: Siemens / Desigo System or similar
6.7 **System safety**
High availability is expected from the building automation and control system. This results in greater data availability, greatly reducing any down times.
Specified product: Siemens / Desigo System or similar

6.8 **Alarm generation**
The system must be able to generate alarms based on events that are reaching the management station directly from the field level. The system must also provide a functionality for creating management station alarms that are configurable and satisfy the needs of event management, even for devices that are not supporting alarming natively.
Specified product: Siemens / Desigo System or similar

6.9 **Message handling**
The building management system must support alarms generated at the automation level (substations).
Specified product: Siemens / Desigo CC or similar

6.10 **Notification of alarms**

6.10.1 **Media independent formats**
Current alarms may need to be routed independent of media at certain times to a central service (Email, SMS, pagers, and mobile apps).
The number of data points that can be configured for remote messaging of alarm conditions as well as the number of remote devices that may receive system messages may not be limited. The system must support the sending of encrypted e-mails.
Specified product: Siemens / Desigo CC or similar

6.10.2 **Multi-level alarm escalation**
It shall be possible that unacknowledged notifications can be forwarded to additional devices of the same person and/or different groups of people to ensure that notifications are received on time to react properly.
Specified product: Siemens / Desigo CC or similar

6.10.3 **Exclude recipients**
The system must be able to exclude recipients, for example, when they are on vacation, so that when excluded, they do not receive any notifications.
Specified product: Siemens / Desigo CC or similar

6.10.4 **Import recipients from Active Directory**
It shall be possible that recipients can be imported/exported from/into CSV or XML formatted files. A regular automatic import of Active Directory import into the recipient DB shall be supported too. This helps to reduce the maintenance effort for recipients, when mobile numbers or email addresses change.
Specified product: Siemens / Desigo CC or similar
6.10.5 Message optimization
In the situation of event related alarm bursts, the system shall avoid generating notification bursts to allow users to keep the overview in exceptional situations.
Specified product: Siemens / Desigo CC or similar

6.10.6 Graphical easy buttons to trigger notifications
The system shall allow to send out notifications manually, using graphical buttons for triggering. These graphical buttons shall be part of normal graphic pages (for example, campus, building and ground floor graphics).
Specified product: Siemens / Desigo CC or similar

6.11 Acknowledgment
Operator units for acknowledgement
All alarms (alarms and faults, errors) must be acknowledgeable after issue of individual rights from all connected workstations. For tracking reason, a time stamp and assignment (based on user account) is required.
This includes:
- Local acknowledgement (control cabinet, automation station)
- Management level
- Remote operating equipment
Specified products: Siemens / Desigo CC or similar

6.12 Alarm management strategy
The software must permit configuration of alarm management strategy for each data point. The editor provides a way to edit data points directly, online via the building management system.
The software for the user interface is also able to make batch changes to data point definitions and attributes to one or more data points selected by the user.
Specified product: Siemens / Desigo CC or similar

6.13 Colored display of Alarms and Events
Incoming alarms must be colored for quick and easy interpretation. Both order and state, as well as alarm priority must be recognizable. The alarm window must be displayed as per operator needs. Alarm window displays must be added to the bid.
Specified products: Siemens / Desigo CC or similar

6.14 Alarm message content
The message texts must contain all information necessary to allocate and resolve the error. This includes at least the following attributes:
- Clear text.
- Control cabinet name
- Plant name
- Priority
- Timestamp
- Time.
- Status (acknowledged, unacknowledged).
Instructions on how to resolve the problem must be available in the background.
6.15 Event texts

For each system object it shall be possible to configure texts with object specific information and instructions that must be displayed in case of an alarm. Different texts for to off-normal and back to normal transitions shall be supported.
Specified products: Siemens / Desigo CC or similar

6.16 Filter alarms

The building automation and control system must offer alarm filtering. Filtering must be possible by alarm lists or priorities. Alarms are displayed in popup windows.
Step-by-step instructions on handling each alarm help the building automation and control system operator to find a solution.
Specified products: Siemens / Desigo CC or similar

6.17 Event management

Event routing and sorting
Event messages can be displayed on each workstation in a table application and must include the following information: name, value, event time and date, state, priority, acknowledge information, and alarm counter. The system must also be able to send out an audio message appropriate for the event category.
Specified product: Siemens / Desigo CC or similar

Event message
Event messages can be displayed on each workstation in a table application and must include the following information on each event: name, value, event time and date, state, priority, acknowledge information, and alarm counter. Each event must also be able to send out an audio message appropriate for the event category.
Specified product: Siemens / Desigo CC or similar

Event acknowledgement
The user can acknowledge each event directly from the list, suppress the acoustic notification and print or delete it. The interface must also have an option to deleted active, acknowledged events until it is reset to the normal state.
The user must be able to navigate to information associated with a data point, start an associated graphic or trended graphic diagram, or run a report for a data point selected directly from the event list.
Specified product: Siemens / Desigo CC or similar

6.17.1 Event routing and sorting
Event messages can be displayed on each workstation in a table application and must include the following information: Name, value, event time and date, state, priority, acknowledge information, and alarm counter. The system must also be able to send out an acoustic message appropriate to the event category.
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Specified product: Siemens / Desigo CC or similar
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The user must be able to navigate to information associated with a data point, start an associated graphic or trended graphic diagram, or run a report for a data point selected directly from the event list.
Specified product: Siemens / Desigo CC or similar

6.18 Event treatment
The system must provide multiple alarm-handling options. These are to be configured in alignment the standard operating procedures.

Fast Treatment
The user must be able to acknowledge each event directly from the event list, suppress the acoustic notification, print or delete it. The interface must also have an option to deleted active, acknowledged events until it is reset to the normal state.
The user must also be able to navigate to information associated with a data point, start an associated graphic or trended graphic diagram, or run a report for a data point selected directly from the event list.

6.19 Investigative Treatment
From the event list, operators shall have the ability to quickly focus on the source of the event, and all information (live and recorded video streams, recent history, schedules, and so on.) related to the event source.

6.20 Assisted Treatment with Operating Procedures
The system shall have the ability to program operating procedures consisting of a sequence of steps or actions, which the operator must perform. For each step of a procedure, the system shall provide instructions and operating tools. With appropriate permissions, a user shall have the ability to create, view, edit, or delete operating procedures.
Each operating procedure shall be composed of steps - some of which may be mandatory - for the user to complete (for example, view the graphic of the object in alarm, view live and recorded video streams, or complete an event handling form) while some others shall have the ability to be configured to be executed automatically by the system (for example, send emails to recipients or print on paper the information of the event).
Specified product: Siemens / Desigo CC or similar
7 Reports

7.1 Report generation
Must generation spontaneous or predefined reports to provide important plant data at any time. The reports must be printable and exportable as a PDF file. The data must be able to be edited in other programs (Microsoft Excel or Microsoft Access) for further analysis.
Specified product: Siemens / Desigo CC or similar

7.2 Standard report templates
Template to generate detailed reports at little effort. At least three different report templates must be available.
- Reports to record alarm and fault states
- Reports to record logbook entries
- Reports to record plant and control cabinet states.
- List of all current data points in an override state
- List of all disabled data points
- List of alarm strategy definitions
- Overall data point report
- Data point trend data listing
- Initial value report
- User activity report
- Event history report
Specified product: Siemens / Desigo CC or similar

7.3 Customized report templates
The system must permit generated, specific reports as well as individual report templates that may include graphics and trend views.
Specified product: Siemens / Desigo CC or similar
8 Remote operation

8.1 User requirements on operation

The web-based user interface offers the same functionality as those on other workstations including operation and configuration. All user functions be available on clients via browser, installed client console, or Windows desktop App.

User must be able to remotely operate and engineer plants regardless of location. Of course, this openness cannot place the plant security at risk. The client must run on a browser as a full trust client application.

Specified product: Siemens / Desigo CC or similar

8.2 Dedicated Desktop Installed client

User must be able to remotely operate and engineer plants regardless of location. Of course, this openness cannot place the plant security at risk. The client must operate as a fully installed software installation, locked with a desktop and prevents in this manner software from being minimized or hidden by other applications.

Specified product: Siemens / Desigo CC or similar

8.3 Windows Desktop APP

User must be able to remotely operate and engineer plants regardless of location. Of course, this openness cannot place the plant security at risk. An App must be loadable by the server PC on the client that operates like an installed application and is automatically updated as soon as new apps are available on the server.

Specified product: Siemens / Desigo CC or similar

8.4 HTML5.0 Client

An HTML5 client must be available to access the management system supporting operator workflows for event management, system management, graphics, and commanding. The HTML5 Client must run on different devices, operating systems and browsers supporting keyboard and mouse operation as well as touch operation.

Specified product: Siemens / Desigo CC or similar

8.5 Mobile App

An App, optimized for smart phones and tablets, must be available for the management. The App shall contain tools to see and command events as well as a System Browser to read and command all objects based on the security privileges of the operator as defined at the management station. The App shall be available for both Apple and Android operating systems.

Specified product: Siemens / Desigo CC or similar
9 Trend data

9.1 Simultaneous, multiple trends
Multiple trend views must be possible simultaneously to provide a comprehensive plant overview. Standard plants from medium to higher complexity (as in this project) require a simultaneous display of up to 10 trend curves on the current page view to assess the plants. Multiple trend curves must thus be recorded at the same time.
Specified products: Siemens / Desigo CC or similar

9.2 Freely assign trend data
For greatest possible flexibility, operators must be able to assign and thus record max. 4 additional data points individually for each plant.
The assignment must be carried out from the management station.
Specified products: Siemens / Desigo CC or similar

9.3 Decentralized data storage
None of the trend data may be lost during communications failure to achieve gap-free trend documentation. For this reason, all trend data must be created and saved to the automation station. After communications are restored, all values saved on the management station must be updated automatically.
Specified products: Siemens / Desigo CC or similar

9.4 Record history data, trend
Vital data points and setpoints must be saved for each building services plant. The polling time is oriented to the signal type, i.e. analog values are recorded cyclically while digital or multistate values are recorded by event.
Specified products: Siemens / Desigo CC or similar

9.5 Intermediate storage of history data
Trend data are collected in the automation station and transferred to the management level after a specific time has expired or specific number of data has been recorded. Trend data may not be lost if the management station is unavailable temporarily.
Specified products: Siemens / Desigo CC or similar

9.6 Trend comparison
The system must offer a time adjusted trend view to run analysis of changed conditions at various times.
Specified product: Siemens / Desigo CC or similar
10 Communication

10.1 Interfaces

The building automation and control system must be extendible to ensure long-term operation and provide all standard interfaces commonly available on today's market.

Specified product: Siemens / Desigo System or similar

10.2 Fire detection system, BACnet-based

BACnet-based fire detection systems supporting BACnet BIBB AE-LS-B as well as objects LifeSafetyPoint and LifeSafetyZone as per the PICS (Protocol Implementation Conformance Statement) document must be able to be integrated for best deployment of a building automation and control system. The following functions must be supported:

- Alarms and events from the fire detection system must be identified clearly and unambiguously.
- Signaling device states must be displayed as per the BACnet standard.
- Instruction texts must be able to be added to detectors and zones.
- Situational and floor plans as well as dynamic symbols must be used for visualization.
- A technical hierarchy, e.g. building, building part, zone, detector, must be provided to the operator for ease of operation.

Specified product: Siemens / Desigo System or similar

10.3 Integrate third-party devices via OPC

The OPC Foundation must test and certify the system, which must be able to integrate and edit OPC data, and yet supply real time OPC data as an OPC server. System processing must include alarming, trend, scheduler, reporting, and be able to communicate with other devices.

The system must support the OPC specification:

- OPC data access (DA)

Specified product: Siemens / Desigo CC or similar

10.4 Integrate via IEC 61850

A native integration with an electrical power network via IEC 61850 protocol must be supported.

Specified product: Siemens / Desigo CC or similar

10.5 Integrate via Modbus

The management station must support communication to Modbus TCP/IP devices and sub systems directly from the management station.

Specified product: Siemens / Desigo CC or similar

10.6 KNX

The management station must support native communication to KNX devices, via KNX/IP protocol through KNX IP Routers, or KNX IP interfaces and gateways.

Specified product: Siemens / Desigo CC or similar
10.7 M-Bus
The management station must support native communication to meter bus devices, via M-Bus/IP protocol though M-Bus Gateway, or M-Bus Master to Ethernet converter or converters.
Specified product: Siemens / Desigo CC or similar

10.8 Standard BACnet / AMEV

10.8.1 DIN EN ISO 16484-5 / AMEV
AMEV (Management station) AMEV Profile MBE-A and MBE-B
The management station must meet AMEV profiles MBE-A and MBE-B as per AMEV guideline “BACnet 2011” V1.1.
Specified products: Siemens / Desigo CC or similar

10.8.2 B-AWS (management station)
The required management stations match the BACnet profile B-AWS (advanced management station) as per BTL Listing and ANSI / ASHRE 135 guidelines. They must also support BACnet data points and BACnet personal safety security zone functionality. The BACnet protocol revision must be at least 1.15.
Specified product: Siemens / Desigo CC or similar

10.9 ONVIF video standard
The management system must be capable of video operations fully integrated into the same user interface with the following capabilities:
- Live video, Recording and Video Search and Replay
- Live video, Recording and Video Search and Replay
- Video display of multiple cameras

Status and Commands
TZ and predefined PTZ Positions
- Remote Control of Video Monitors
- Video Events and Video Event Treatment including video tagging with alarm information
- Diagnostic information of Video Devices
- Video as Operating Procedure step
Specified product: Siemens / Desigo CC or similar

10.10 Building automation and control system – Industrial Devices

Integration of Simatic systems
A native integration of Simatic (S7 300/400/1200/1500) and S7 PLUS must be supported.
Specified product: Siemens / Desigo CC or similar
10.11 Northbound Interfaces

Expose information via OPC
The system must be able to supply real time data from the management layer, as an OPC server, and to integrate with third-party applications when necessary. The system must support the OPC specification:
• OPC data access (DA)
Specified product: Siemens / Desigo CC or similar

Expose information via BACnet/IP
The system must be able to supply real time data from the management layer, as a BACnet/IP server, and to integrate with third-party applications when necessary. Specified product: Siemens / Desigo CC or similar