

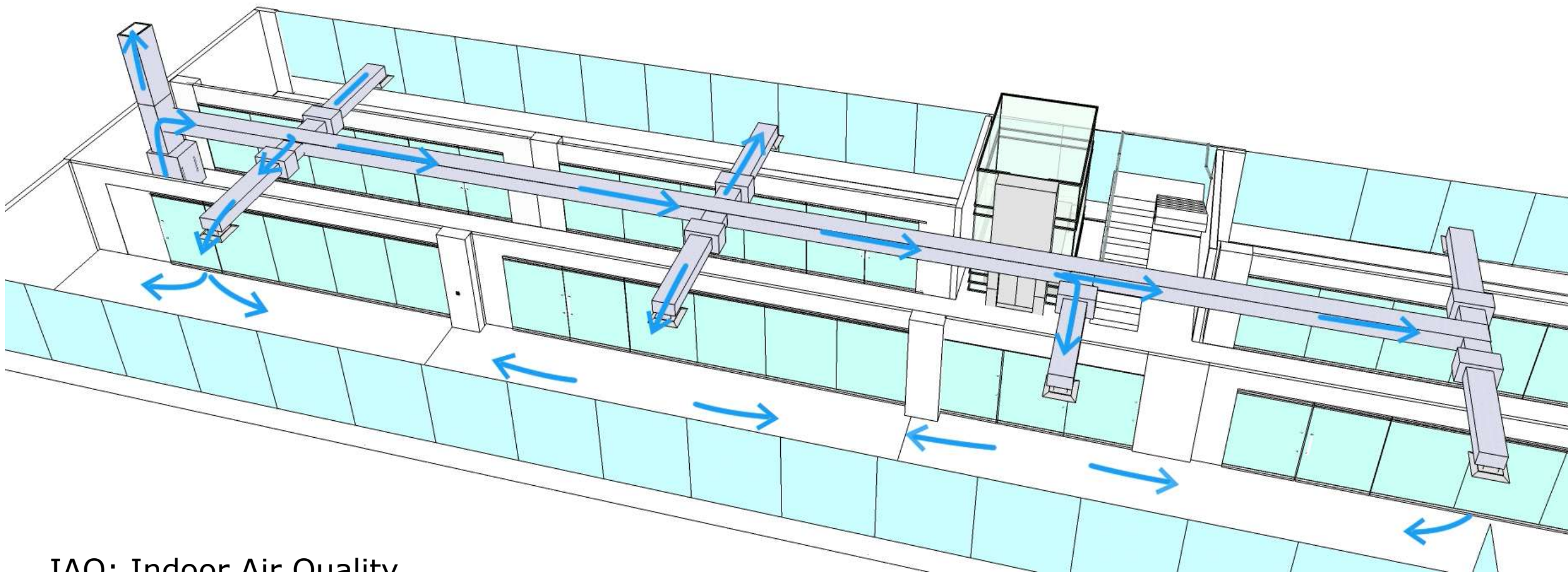


Buildings under Control  
**Symposium**

Kraków  
7.04.2016

Sterownik wentylacji LIOB-AIR

# Wyzwanie: sterowanie jakością powietrza i temperaturą



IAQ: Indoor Air Quality

## Ale ...należy spełnić następujące warunki

- ① Uzyskać najniższe możliwe zużycie energii
- ① Zapewnić komfortowe warunki środowiska pracy
- ① Zapewnić nadciśnienie w budynku (0.01 in.wc.)

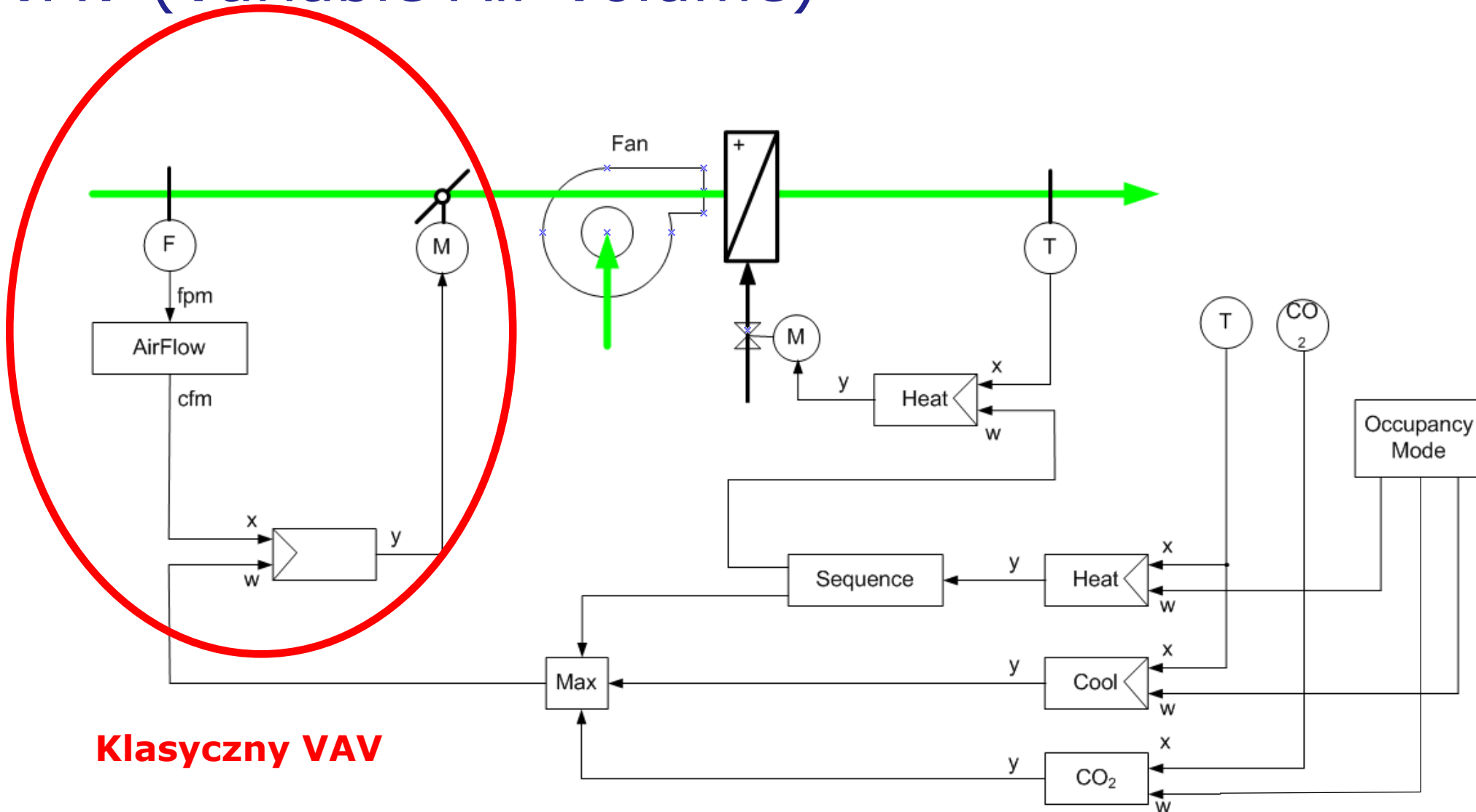
=> **Demand Controlled Ventilation (DCV)**

**Wentylacja sterowana zapotrzebowaniem**

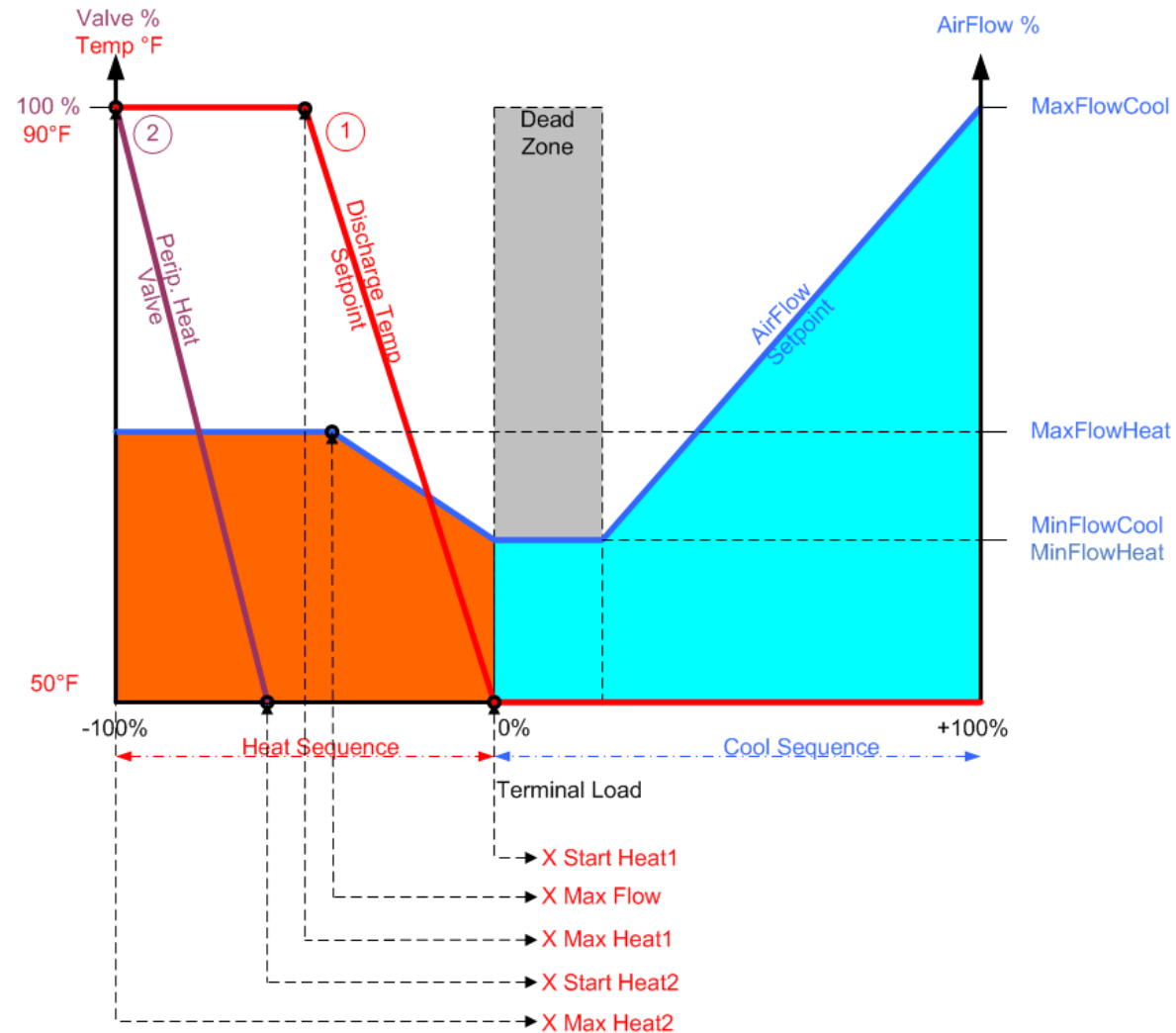
**Jak identyfikować zapotrzebowanie ?**

**Przez pomiar stężenia CO<sub>2</sub>**

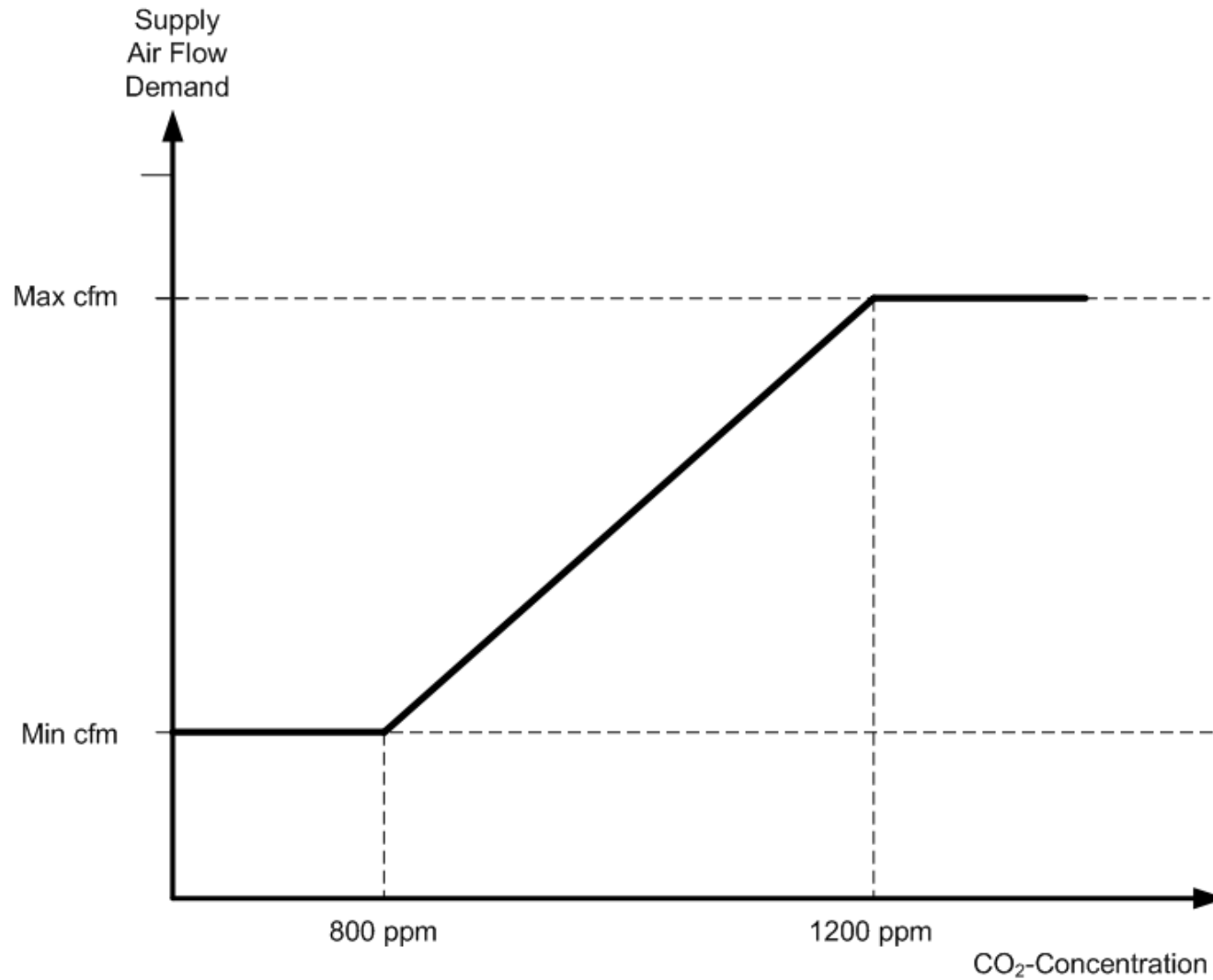
# Schemat sterowania zaawansowanego układu VAV (Variable Air Volume)



# Sekwencja sterowania temperaturą



# Algrytm sterowania CO<sub>2</sub>

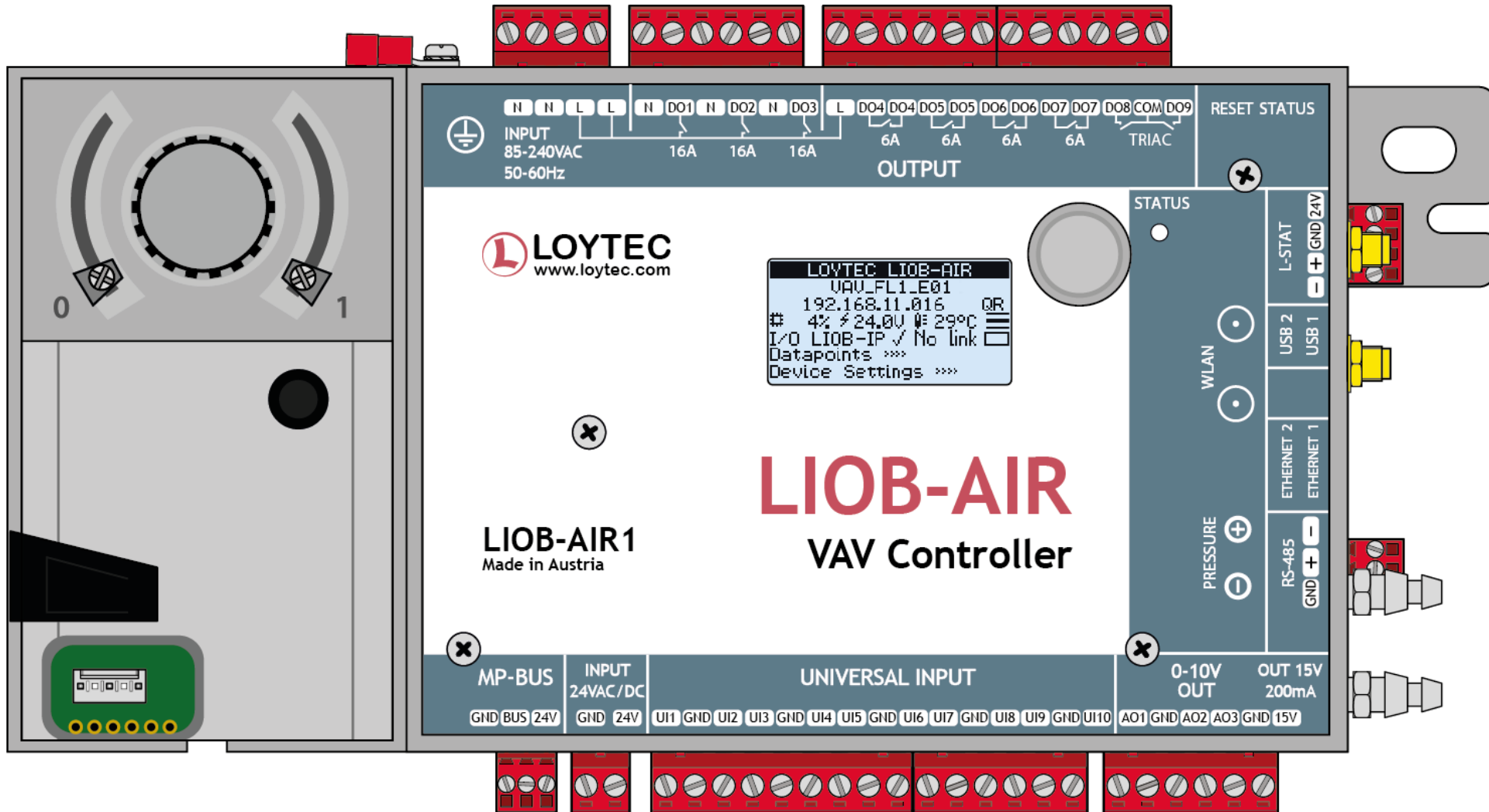


A horizontal silhouette of a city skyline with various building shapes, rendered in shades of blue and grey, spanning the width of the slide.

# Hardware Installation

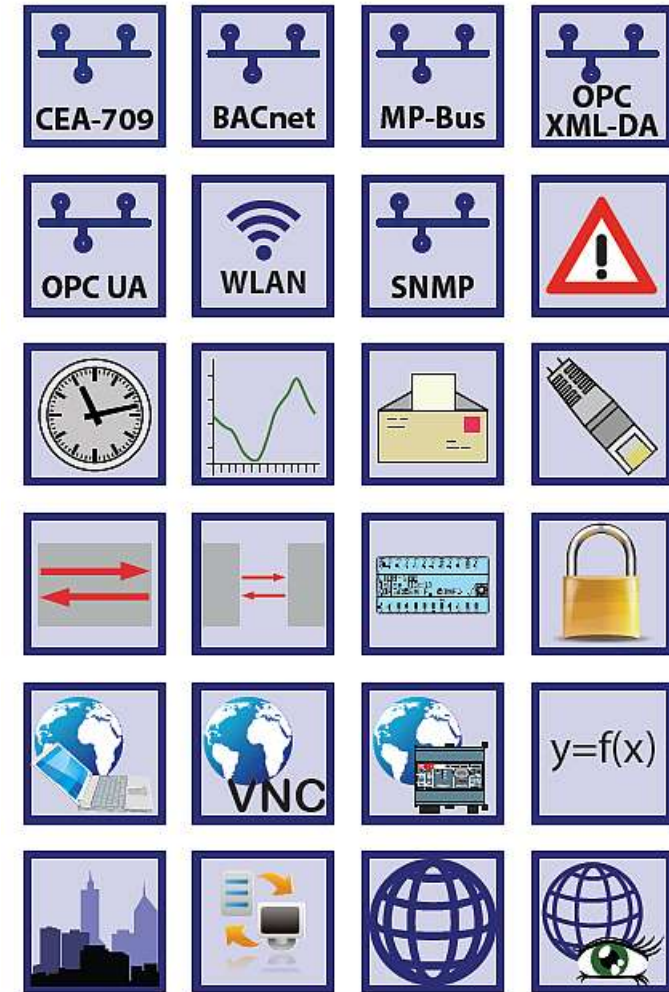
## LIOB-AIR

# Hardware LIOB-AIRx





# Hardware LIOB-AIRx i funkcje

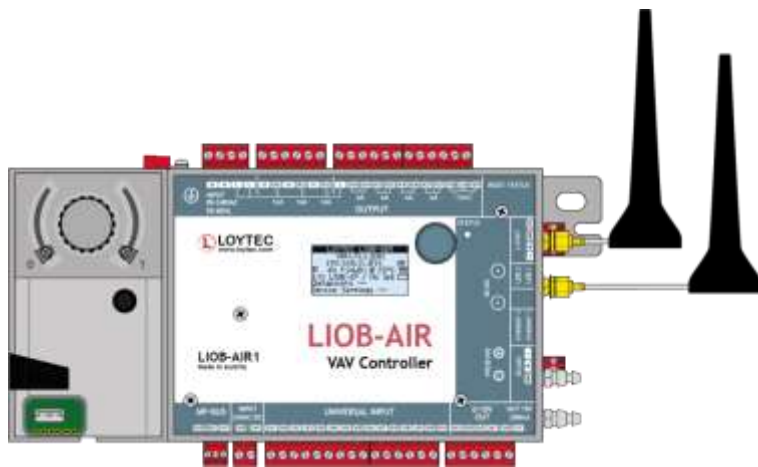


# Funkcje technologiczne LIOB-AIR

- ① Sterowanie przepływem powietrza
- ① Konfiguracja i kalibracja pomiaru przepływu
- ① Sterowanie temperaturą powietrza zgodnie z sekwencją
- ① Sterowanie zależne od obecności
- ① Operacje grupowe
- ① Sterowanie nagrzewnicą elektryczną 3 stopniową
- ① Sterowanie nagrzewnicą wodną
- ① Sterowanie wentylatorem

# Modele sprzętowe

LIOB-AIR1



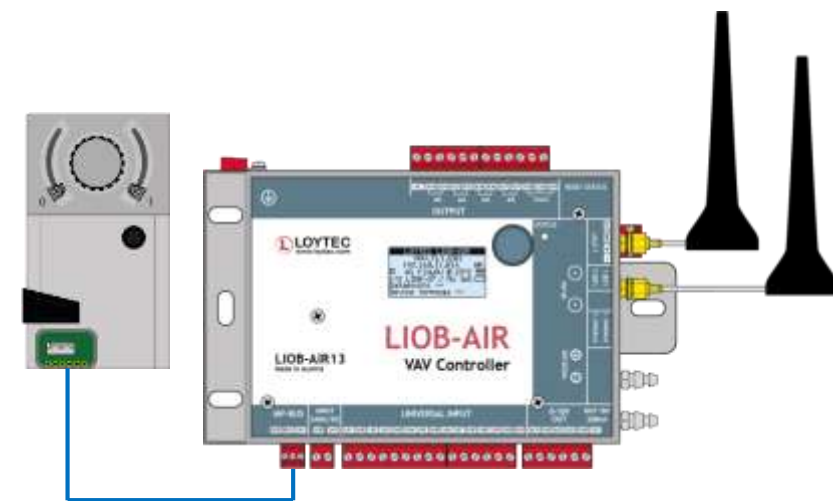
- 🕒 WLAN
- 🕒 MS/TP
- 🕒 16A relays

LIOB-AIR2



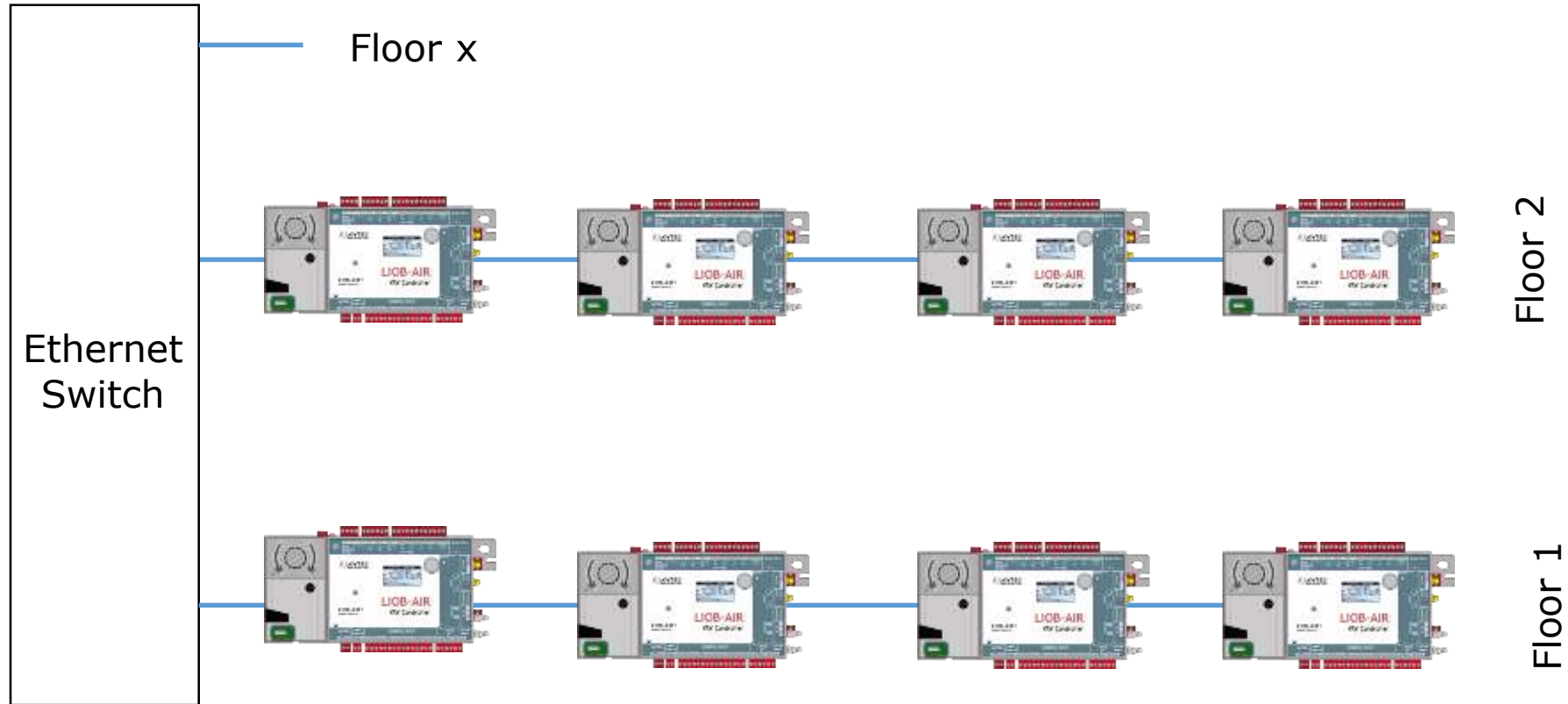
- 🕒 LIOB-AIR1 but
- 🕒 No WLAN
- 🕒 No MS/TP
- 🕒 No 16A relays

LIOB-AIR13

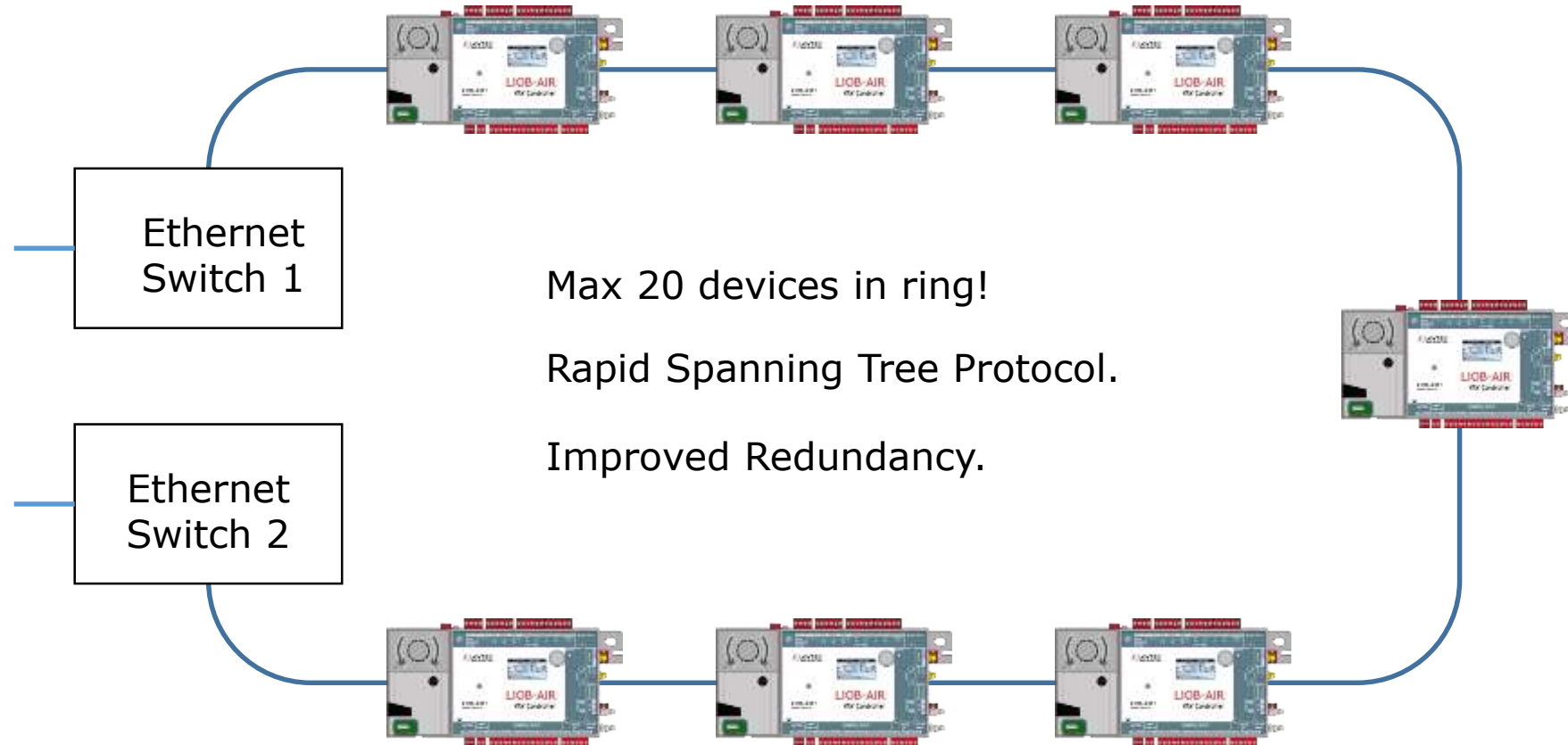


- ❌ LIOB-AIR2 but
- ❌ With WLAN
- ❌ External actuator mounting

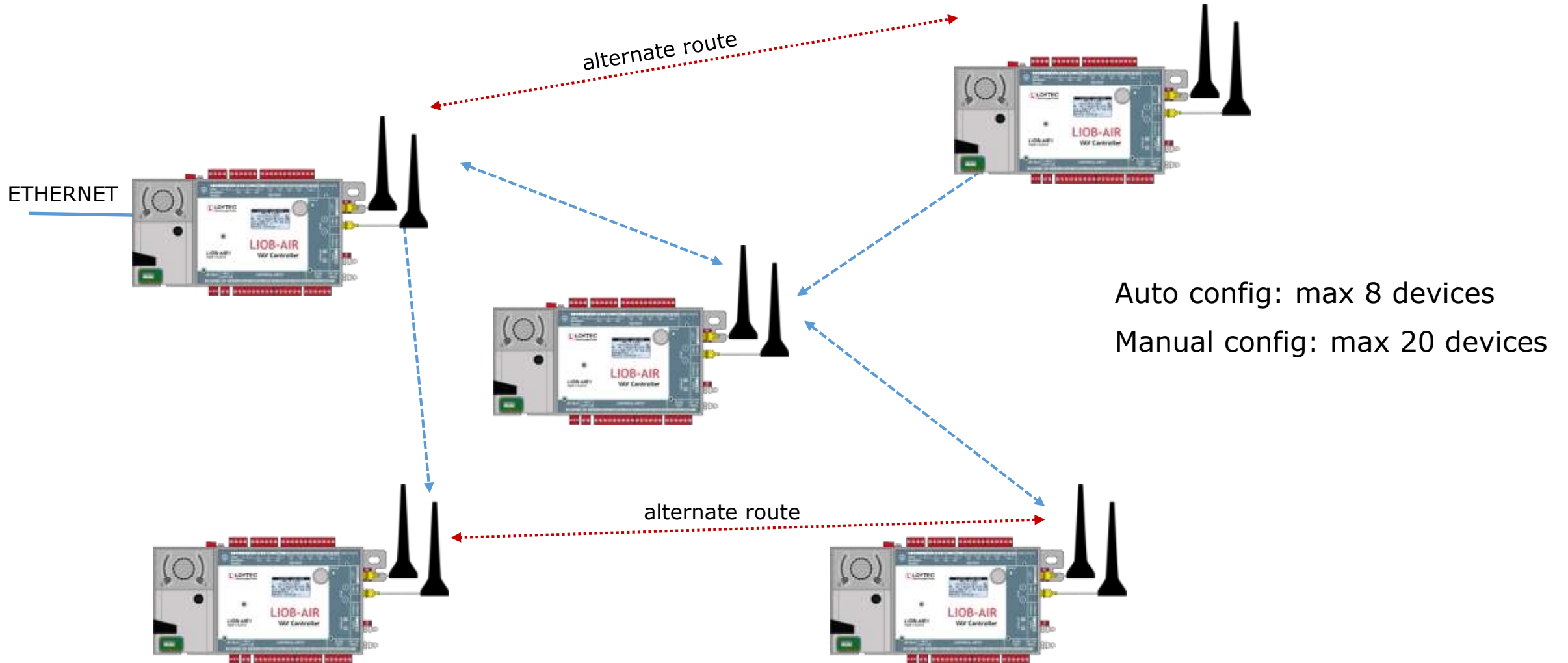
# Ethernet Bus Communication



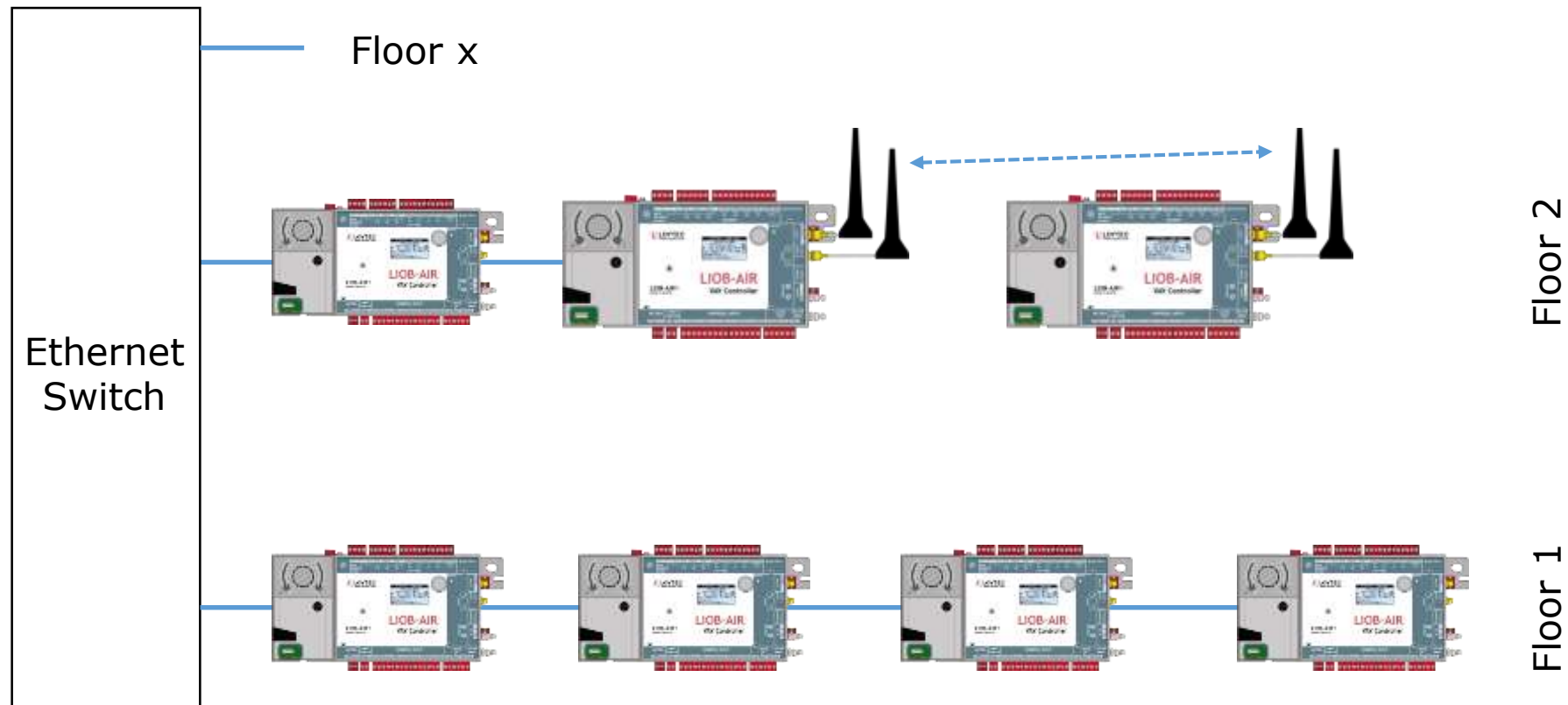
# Ethernet Ring Communication



# WLAN Mesh Communication



# Mixed Ethernet/WLAN Communication



Max 20 devices on bus!

A horizontal silhouette of a city skyline with various building shapes, rendered in shades of blue and grey, spanning the width of the slide.

# Interfejsy użytkownika

## LIOB-AIR



# Użytkowanie codzienne



# Narzędzie do kalibracji i konfiguracji

Level1 Area West VAV1 Test		Status Overview			2015-08-27	
Welcome: Calibrator					VAV-Version: 5.3	
Pressure 0.062 inWC	Air Flow 206 cfm 29 %	Damper 0 %	Damper Feedb. 0 %	Series Fan On	ExtFlowSetp. is not available !	
Space Temp. 66 °F	Temp.Setpt.ext Offs: 0 °F Abs: 0 °F	Discharge Temp 53.7 °F	Reheat 0 %	PeriphHeat is not available !		
HVAC Mode AUTO	Eff. Occupancy Unoccupied	Occup. Sensor Unoccupied	Occup. Override Inactive	CO <sub>2</sub> - Concentr. 827 ppm	rel.Humidity is not available !	Window Contact is not available !
Device L10B-AIR1 L10B-AIR VAV Test System Level1 Area West VAV1 Test	Air Supply Zone AHU01	VAV Group Room111 A Master Supply Air	Pressurize is not available !	Depressurize is not available !	Energy E: 380 kWh C: 151 kWh H: 112 kWh	
<b>Home</b>	VAV Trends	VAV Scheme	Weather Data			

LOYTEC

buildings under control



# Total Building View

<b>VAV 04 West Supply</b> AirFlow: 164.1 m <sup>3</sup> /h AirFlowSetpoint: 156.3 m <sup>3</sup> /h Control Output: 6.7 % AirFlowSetpointExt: 25 % Master O4WestS	<b>VAV 04 West Exhaust</b> AirFlow: 0.3 m <sup>3</sup> /h AirFlowSetpoint: 0.0 m <sup>3</sup> /h Control Output: 0.0 % AirFlowSetpointExt: 0 % Master O4WestE	<b>VAV 04 East Supply</b> AirFlow: 165.4 m <sup>3</sup> /h AirFlowSetpoint: 171.3 m <sup>3</sup> /h Control Output: 19.4 % AirFlowSetpointExt: 40 % Master O4East	<b>VAV 04 East Exhaust</b> AirFlow: 179.7 m <sup>3</sup> /h AirFlowSetpoint: 164.8 m <sup>3</sup> /h Control Output: 26.1 % Slave O4East
<b>VAV 03 West Supply</b> AirFlow: 242.6 m <sup>3</sup> /h AirFlowSetpoint: 257.5 m <sup>3</sup> /h Control Output: 42.5 % AirFlowSetpointExt: 50 % Master O3West	<b>VAV 03 West Exhaust</b> AirFlow: 251.3 m <sup>3</sup> /h AirFlowSetpoint: 236.7 m <sup>3</sup> /h Control Output: 41.9 % Slave O3West	<b>VAV 03 East Supply</b> AirFlow: 273.6 m <sup>3</sup> /h AirFlowSetpoint: 272.9 m <sup>3</sup> /h Control Output: 38.6 % AirFlowSetpointExt: 50 % Master O3East	<b>VAV 03 East Exhaust</b> AirFlow: 257.6 m <sup>3</sup> /h AirFlowSetpoint: 273.6 m <sup>3</sup> /h Control Output: 74.4 % Slave O3East
<b>VAV 02 West Supply</b> AirFlow: 257.6 m <sup>3</sup> /h AirFlowSetpoint: 258.6 m <sup>3</sup> /h Control Output: 35.8 % AirFlowSetpointExt: 50 % Master O2West	<b>VAV 02 West Exhaust</b> AirFlow: 246.4 m <sup>3</sup> /h AirFlowSetpoint: 258.6 m <sup>3</sup> /h Control Output: 41.7 % Slave O2West	<b>VAV 02 East Supply</b> AirFlow: 259.6 m <sup>3</sup> /h AirFlowSetpoint: 272.9 m <sup>3</sup> /h Control Output: 42.2 % AirFlowSetpointExt: 50 % Master O2East	<b>VAV 02 East Exhaust</b> AirFlow: 278.5 m <sup>3</sup> /h AirFlowSetpoint: 260.4 m <sup>3</sup> /h Control Output: 52.8 % Slave O2East
<b>VAV 01 West Supply</b> AirFlow: 503.4 m <sup>3</sup> /h AirFlowSetpoint: 508.0 m <sup>3</sup> /h Control Output: 89.2 % AirFlowSetpointExt: 100 % Master O1West	<b>VAV 01 West Exhaust</b> AirFlow: 493.4 m <sup>3</sup> /h AirFlowSetpoint: 507.5 m <sup>3</sup> /h Control Output: 93.6 % Slave O1West	<b>VAV 01 East Supply</b> AirFlow: 483.1 m <sup>3</sup> /h AirFlowSetpoint: 494.0 m <sup>3</sup> /h Control Output: 96.4 % AirFlowSetpointExt: 100 % Master O1East	<b>VAV 01 East Exhaust</b> AirFlow: 488.6 m <sup>3</sup> /h AirFlowSetpoint: 486.5 m <sup>3</sup> /h Control Output: 56.4 % Slave O1East
<b>VAV E0 West Supply</b> AirFlow: 800.1 m <sup>3</sup> /h AirFlowSetpoint: 789.0 m <sup>3</sup> /h Control Output: 40.6 % AirFlowSetpointExt: 40 % Master E0Production	<b>VAV E0 West Exhaust</b> AirFlow: 790.1 m <sup>3</sup> /h AirFlowSetpoint: 770.8 m <sup>3</sup> /h Control Output: 45.6 % Slave E0Production	<b>VAV E0 East Supply</b> AirFlow: 66.1 m <sup>3</sup> /h AirFlowSetpoint: 0.0 m <sup>3</sup> /h Control Output: 0.0 % AirFlowSetpointExt: 0 % Master E0Foyer	<b>VAV E0 East Exhaust</b> AirFlow: 160.8 m <sup>3</sup> /h AirFlowSetpoint: 0.0 m <sup>3</sup> /h Control Output: 0.0 % AirFlowSetpointExt: 0 % Master E0Foyer 

# Floorplan View



# Mass Engineering with Parameter Views

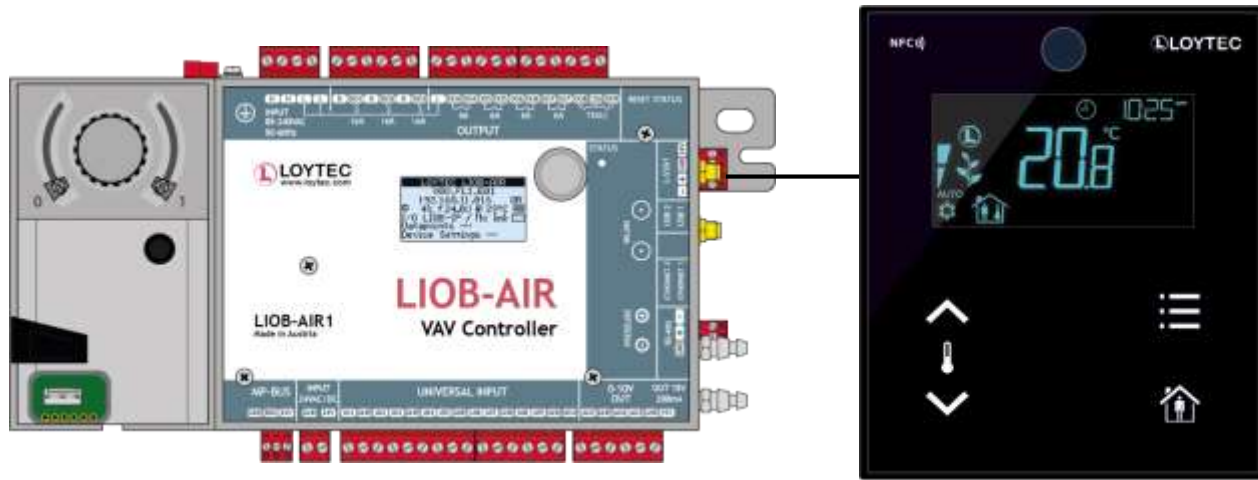
	Group	Parameter	idRoom	idSegment	DuctArea	DuctDiameter	MaxFlowCooling	MaxFlowHeating	MaxFlowUnitHeating	MinFlowCooling	MinFlowHeating	MinFlowUnitHeating	NominalFlowBox	PilotFactor
▶ 01	BG37_VAV_E0_East_Exhaust:Datapoints		E0Foyer	6022	0.03 m <sup>2</sup>	0.25 m	504 m <sup>3</sup> /h	504 m <sup>3</sup> /h	504 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	900 m <sup>3</sup> /h	2.215 units
02	BG37_VAV_E0_East_Supply:Datapoints		E0Foyer	6021	0.03 m <sup>2</sup>	0.25 m	504 m <sup>3</sup> /h	504 m <sup>3</sup> /h	504 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	900 m <sup>3</sup> /h	2.215 units
03	BG37_VAV_E0_West_Exhaust:Datapoints		E0Production	6012	0.0779 m <sup>2</sup>	0.25 m	2756 m <sup>3</sup> /h	2756 m <sup>3</sup> /h	2756 m <sup>3</sup> /h	300 m <sup>3</sup> /h	300 m <sup>3</sup> /h	300 m <sup>3</sup> /h	3680 m <sup>3</sup> /h	4.81 units
04	BG37_VAV_E0_West_Supply:Datapoints		E0Production	6011	0.0779 m <sup>2</sup>	0.25 m	2256 m <sup>3</sup> /h	2256 m <sup>3</sup> /h	2256 m <sup>3</sup> /h	300 m <sup>3</sup> /h	300 m <sup>3</sup> /h	300 m <sup>3</sup> /h	3680 m <sup>3</sup> /h	4.81 units
05	BG37_VAV_O1_East_Exhaust:Datapoints		O1East	6122	0.03 m <sup>2</sup>	0.25 m	494 m <sup>3</sup> /h	494 m <sup>3</sup> /h	494 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	1400 m <sup>3</sup> /h	2.215 units
06	BG37_VAV_O1_East_Supply:Datapoints		O1East	6121	0.03 m <sup>2</sup>	0.25 m	494 m <sup>3</sup> /h	494 m <sup>3</sup> /h	494 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	1400 m <sup>3</sup> /h	2.215 units
07	BG37_VAV_O1_West_Exhaust:Datapoints		O1West	6112	0.03 m <sup>2</sup>	0.25 m	508 m <sup>3</sup> /h	508 m <sup>3</sup> /h	508 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	1400 m <sup>3</sup> /h	2.215 units
08	BG37_VAV_O1_West_Supply:Datapoints		O1West	6111	0.03 m <sup>2</sup>	0.25 m	508 m <sup>3</sup> /h	508 m <sup>3</sup> /h	508 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	1400 m <sup>3</sup> /h	2.215 units
09	BG37_VAV_O2_East_Exhaust:Datapoints		O2East	6222	0.0201 m <sup>2</sup>	0.25 m	561 m <sup>3</sup> /h	561 m <sup>3</sup> /h	561 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	900 m <sup>3</sup> /h	2.215 units
10	BG37_VAV_O2_East_Supply:Datapoints		O2East	6221	0.0201 m <sup>2</sup>	0.25 m	561 m <sup>3</sup> /h	561 m <sup>3</sup> /h	561 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	900 m <sup>3</sup> /h	2.215 units
11	BG37_VAV_O2_West_Exhaust:Datapoints		O2West	6212	0.0201 m <sup>2</sup>	0.25 m	523 m <sup>3</sup> /h	523 m <sup>3</sup> /h	523 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	900 m <sup>3</sup> /h	2.215 units
12	BG37_VAV_O2_West_Supply:Datapoints		O2West	6211	0.0201 m <sup>2</sup>	0.25 m	523 m <sup>3</sup> /h	523 m <sup>3</sup> /h	523 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	900 m <sup>3</sup> /h	2.215 units
13	BG37_VAV_O3_East_Exhaust:Datapoints		O3East	6322	0.0201 m <sup>2</sup>	0.25 m	561 m <sup>3</sup> /h	561 m <sup>3</sup> /h	561 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	900 m <sup>3</sup> /h	2.215 units
14	BG37_VAV_O3_East_Supply:Datapoints		O3East	6321	0.0201 m <sup>2</sup>	0.25 m	561 m <sup>3</sup> /h	561 m <sup>3</sup> /h	561 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	900 m <sup>3</sup> /h	2.215 units
15	BG37_VAV_O3_West_Exhaust:Datapoints		O3West	6312	0.0201 m <sup>2</sup>	0.25 m	520 m <sup>3</sup> /h	520 m <sup>3</sup> /h	520 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	900 m <sup>3</sup> /h	2.215 units
16	BG37_VAV_O3_West_Supply:Datapoints		O3West	6311	0.0201 m <sup>2</sup>	0.25 m	520 m <sup>3</sup> /h	520 m <sup>3</sup> /h	520 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	900 m <sup>3</sup> /h	2.215 units
17	BG37_VAV_O4_East_Exhaust:Datapoints		O4East	6422	0.0201 m <sup>2</sup>	0.25 m	385 m <sup>3</sup> /h	385 m <sup>3</sup> /h	385 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	900 m <sup>3</sup> /h	2.215 units
18	BG37_VAV_O4_East_Supply:Datapoints		O4East	6421	0.0201 m <sup>2</sup>	0.25 m	385 m <sup>3</sup> /h	385 m <sup>3</sup> /h	385 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	900 m <sup>3</sup> /h	2.215 units
19	BG37_VAV_O4_West_Exhaust:Datapoints		O4West	6412	0.0201 m <sup>2</sup>	0.25 m	523 m <sup>3</sup> /h	523 m <sup>3</sup> /h	523 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	900 m <sup>3</sup> /h	2.215 units
20	BG37_VAV_O4_West_Supply:Datapoints		O4West	6411	0.0779 m <sup>2</sup>	0.25 m	523 m <sup>3</sup> /h	523 m <sup>3</sup> /h	523 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	3680 m <sup>3</sup> /h	4.81 units
21	BG37_VAV_U1_West_Exhaust:Datapoints		U1Basement	6912	0.0779 m <sup>2</sup>	0.25 m	2228 m <sup>3</sup> /h	2228 m <sup>3</sup> /h	2228 m <sup>3</sup> /h	300 m <sup>3</sup> /h	300 m <sup>3</sup> /h	300 m <sup>3</sup> /h	3680 m <sup>3</sup> /h	4.81 units
22	BG37_VAV_U1_West_Supply:Datapoints		U1Basement	6911	0.0779 m <sup>2</sup>	0.25 m	2228 m <sup>3</sup> /h	2228 m <sup>3</sup> /h	2228 m <sup>3</sup> /h	300 m <sup>3</sup> /h	300 m <sup>3</sup> /h	300 m <sup>3</sup> /h	3680 m <sup>3</sup> /h	4.81 units

A horizontal silhouette of a city skyline with various building shapes, rendered in shades of blue and grey, spanning the width of the slide.

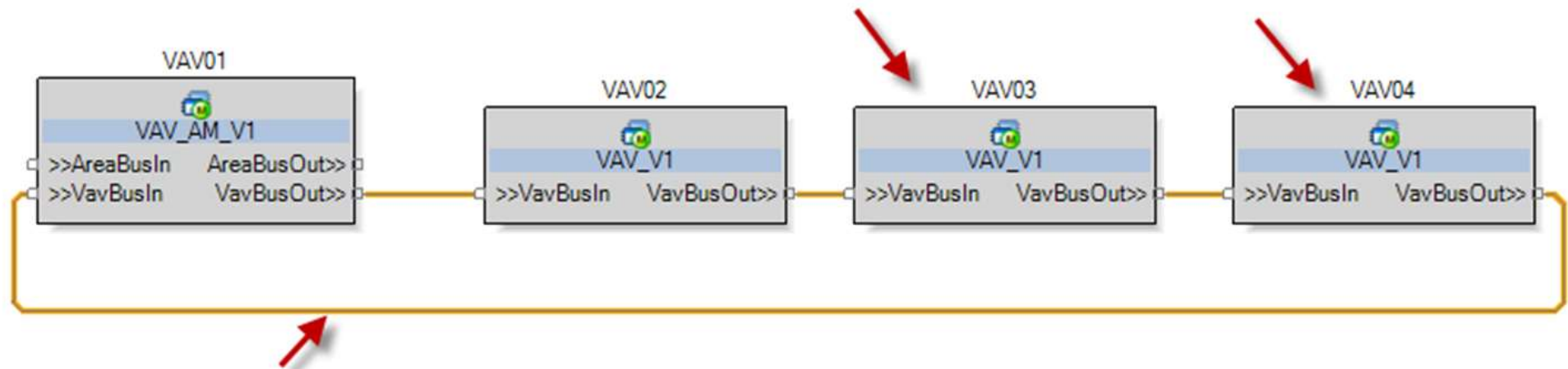
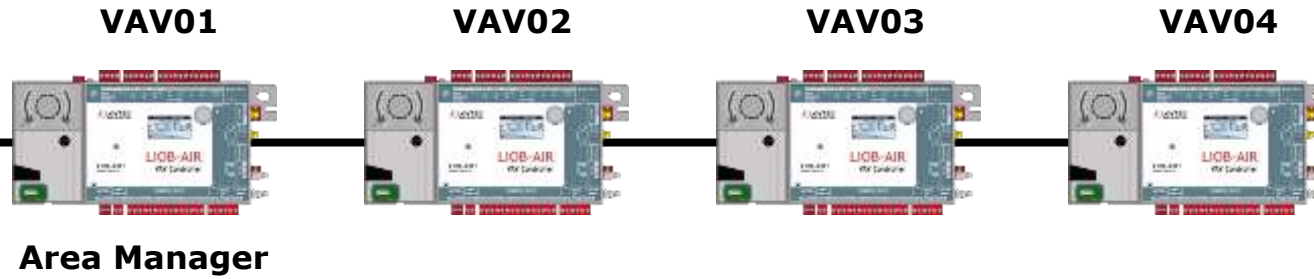
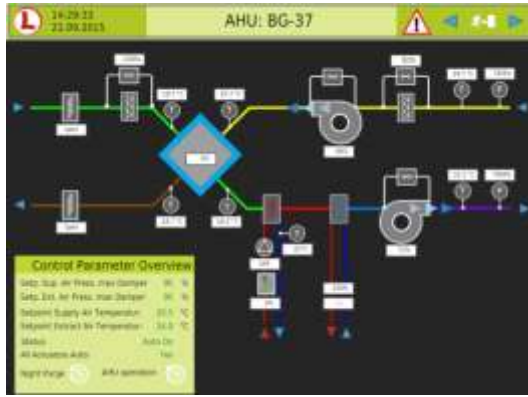
# Organizacja projektu

## L-STUDIO-AIR

# Scenariusz dla pojedynczego urządzenia

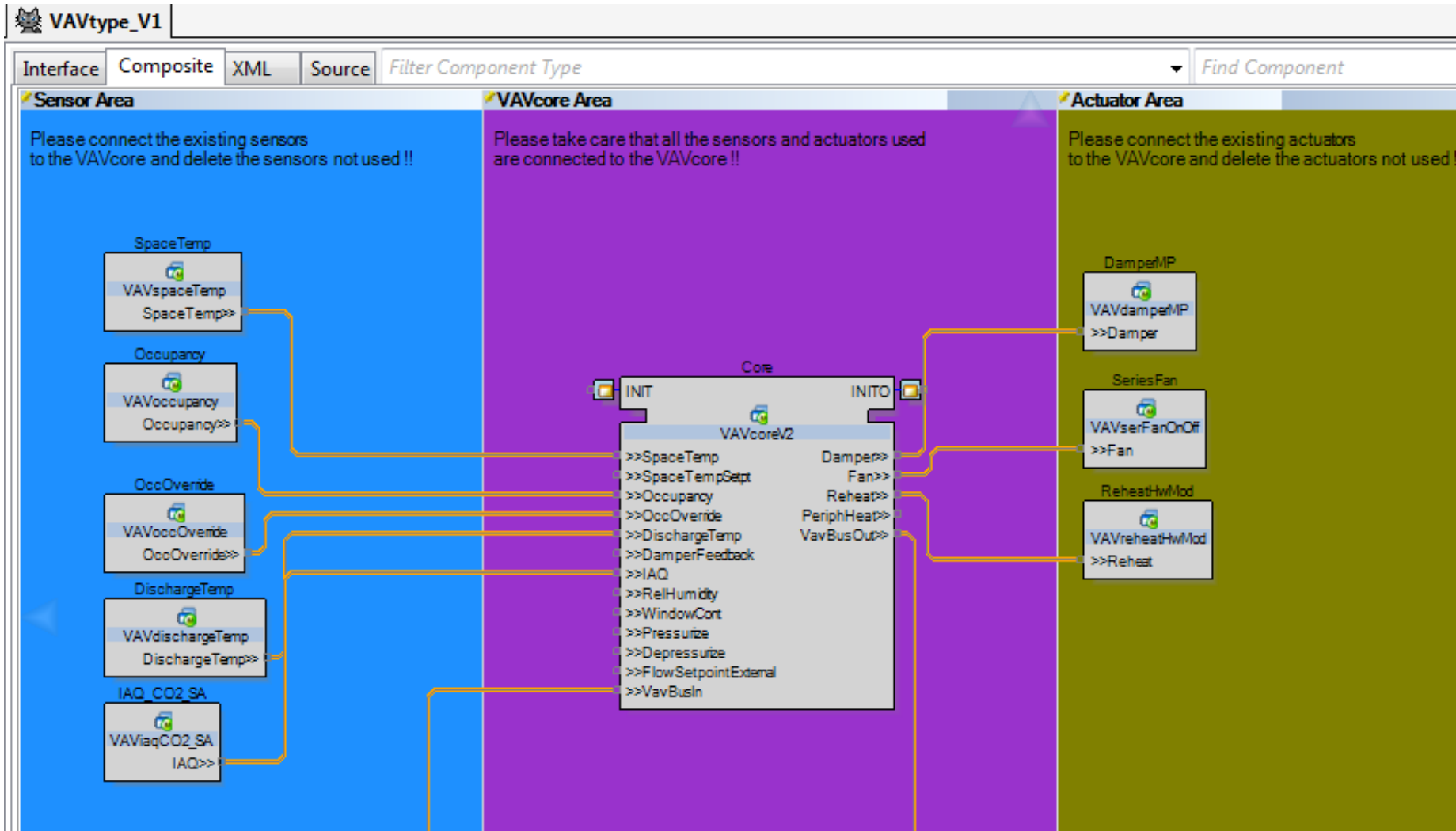


# Scenariusz dla zestawu Centrala HVAC + zestaw VAV

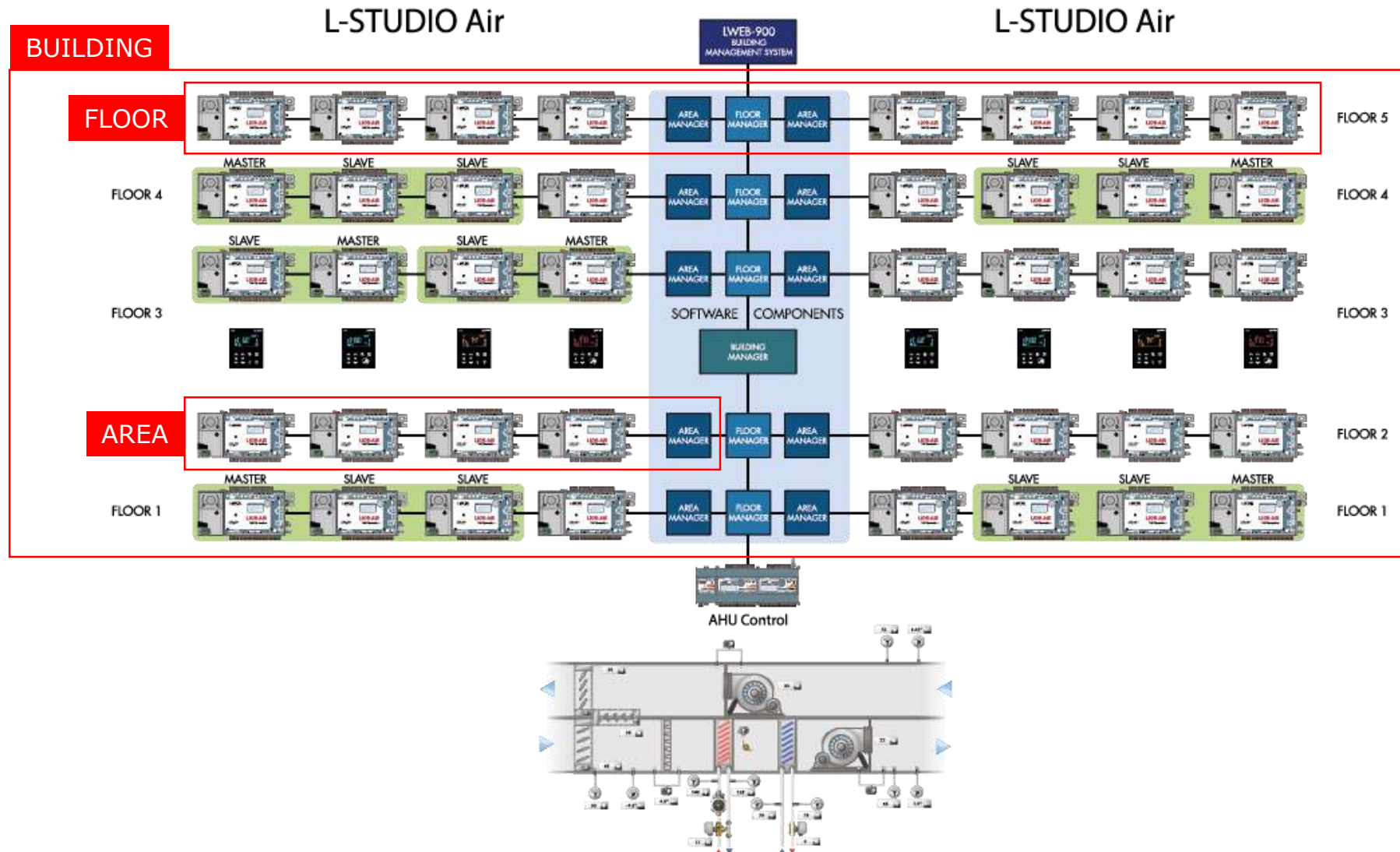




# Konfiguracja VAV: czujniki & elementy wykonawcze

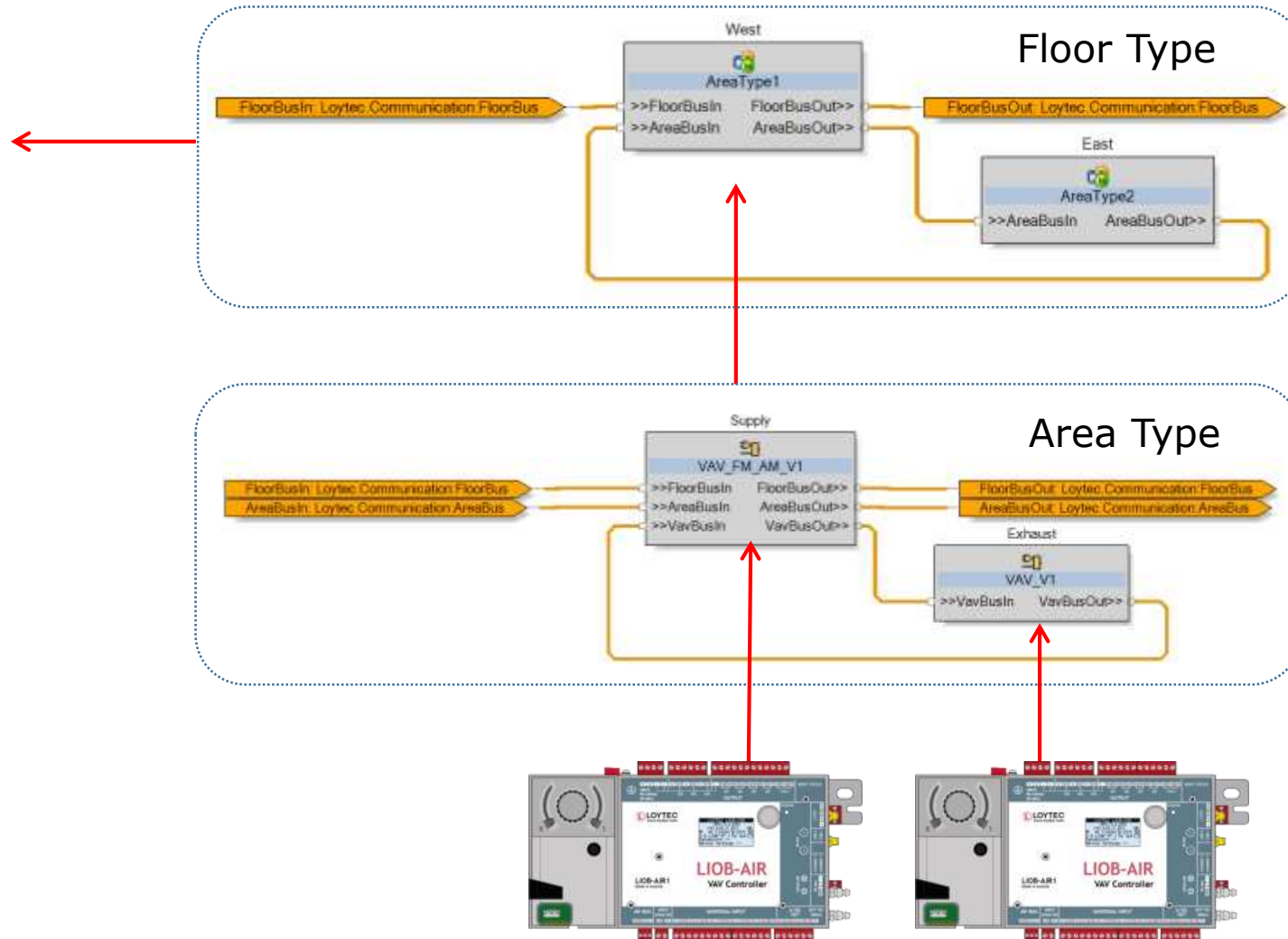
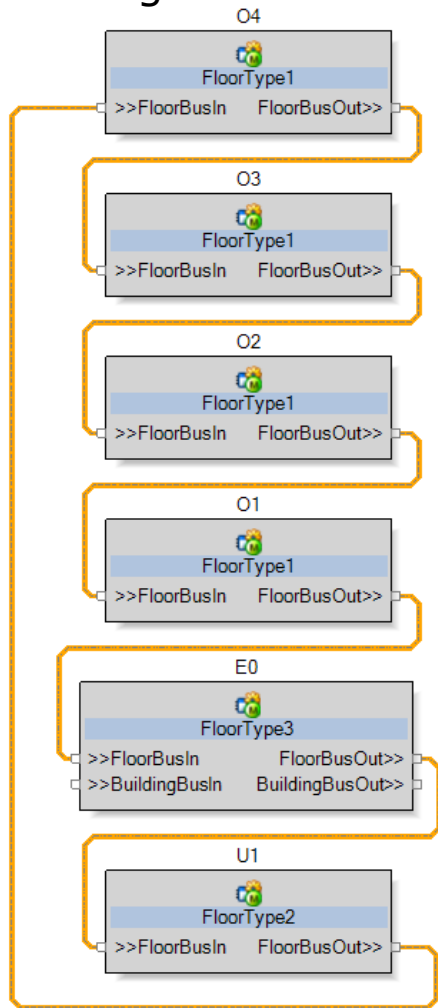


# Scenariusz strukturalny



# L-STUDIO AIR Engineering

## Building

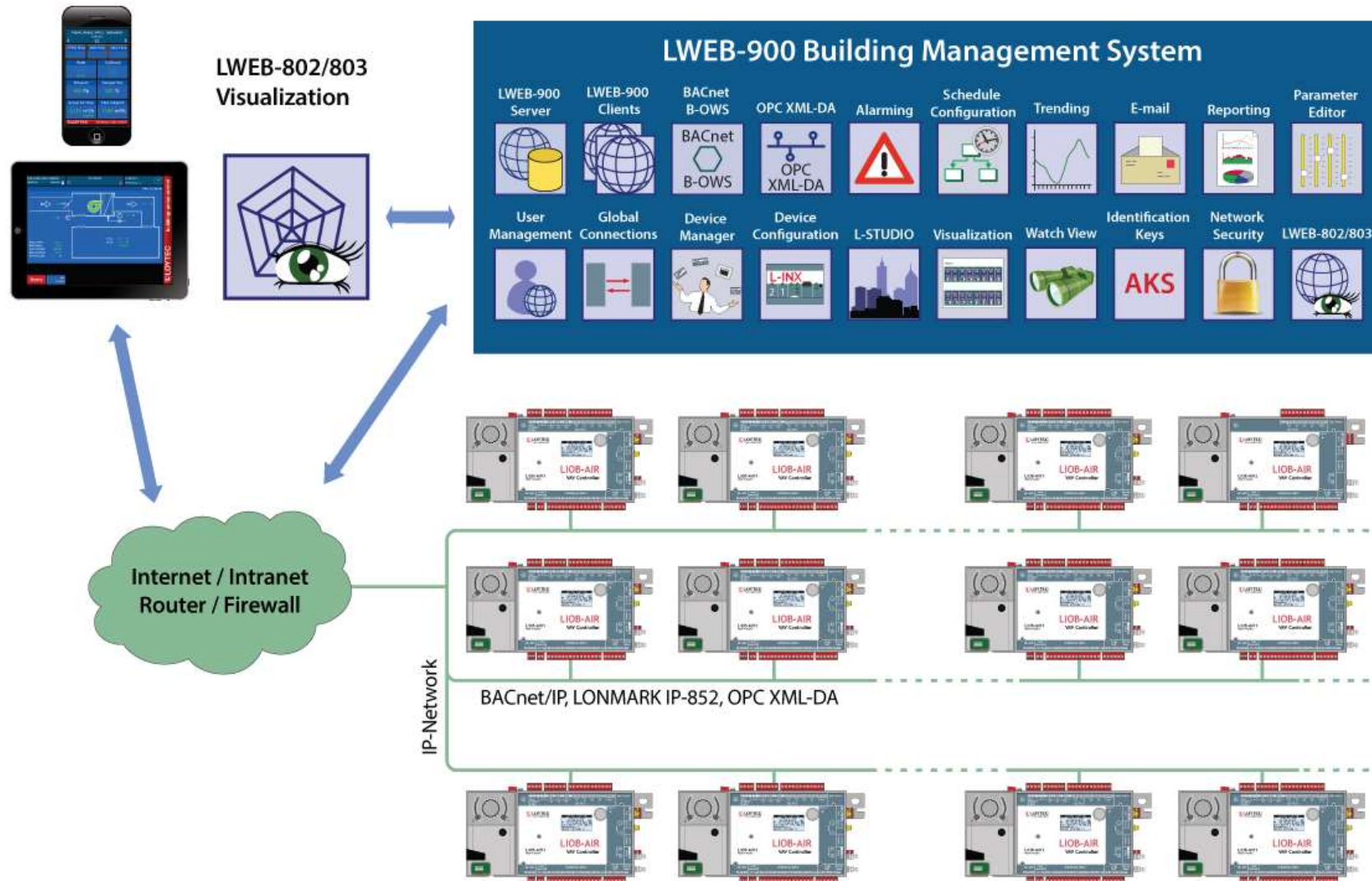




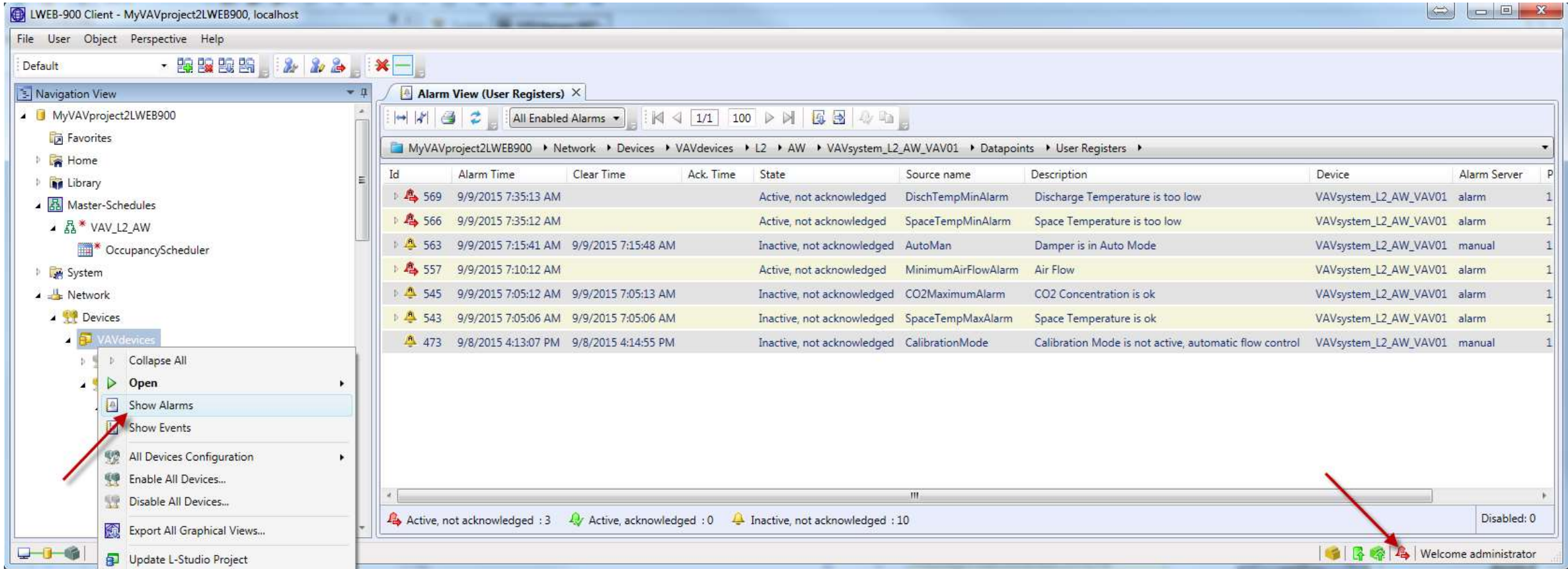
# Building Management Integration

## LWEB-900

# LIOB-AIR System Architecture



# Alarm Management

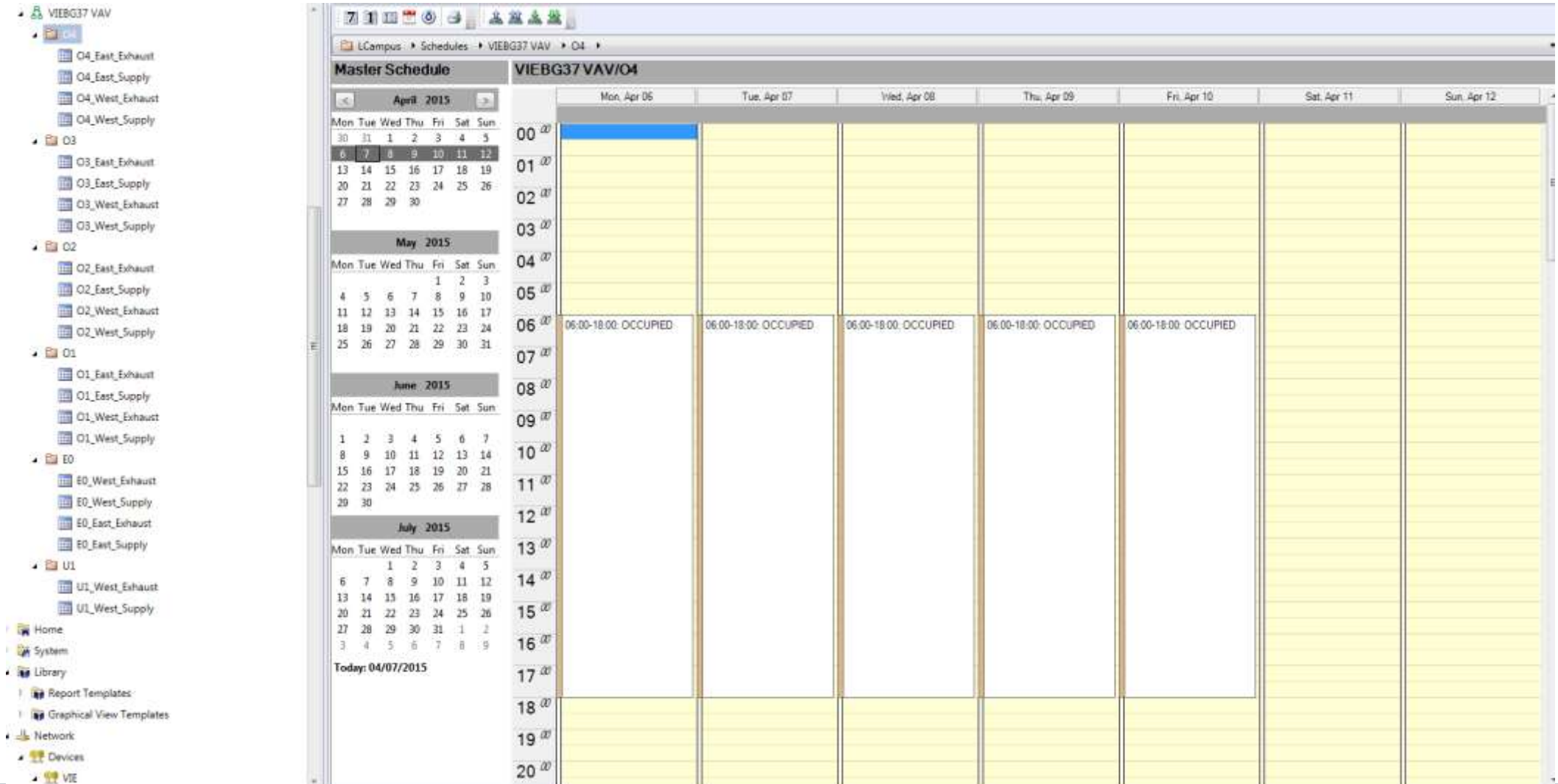


The screenshot displays the LWEB-900 Client software interface for alarm management. The main window shows a table of alarms with the following columns: Id, Alarm Time, Clear Time, Ack. Time, State, Source name, Description, Device, Alarm Server, and P. The table lists several active and inactive alarms, including Discharge Temperature, Space Temperature, Damper, Air Flow, CO2 Concentration, and Calibration Mode alarms.

Id	Alarm Time	Clear Time	Ack. Time	State	Source name	Description	Device	Alarm Server	P
569	9/9/2015 7:35:13 AM			Active, not acknowledged	DischTempMinAlarm	Discharge Temperature is too low	VAVsystem_L2_AW_VAV01	alarm	1
566	9/9/2015 7:35:12 AM			Active, not acknowledged	SpaceTempMinAlarm	Space Temperature is too low	VAVsystem_L2_AW_VAV01	alarm	1
563	9/9/2015 7:15:41 AM	9/9/2015 7:15:48 AM		Inactive, not acknowledged	AutoMan	Damper is in Auto Mode	VAVsystem_L2_AW_VAV01	manual	1
557	9/9/2015 7:10:12 AM			Active, not acknowledged	MinimumAirFlowAlarm	Air Flow	VAVsystem_L2_AW_VAV01	alarm	1
545	9/9/2015 7:05:12 AM	9/9/2015 7:05:13 AM		Inactive, not acknowledged	CO2MaximumAlarm	CO2 Concentration is ok	VAVsystem_L2_AW_VAV01	alarm	1
543	9/9/2015 7:05:06 AM	9/9/2015 7:05:06 AM		Inactive, not acknowledged	SpaceTempMaxAlarm	Space Temperature is ok	VAVsystem_L2_AW_VAV01	alarm	1
473	9/8/2015 4:13:07 PM	9/8/2015 4:14:55 PM		Inactive, not acknowledged	CalibrationMode	Calibration Mode is not active, automatic flow control	VAVsystem_L2_AW_VAV01	manual	1

The status bar at the bottom indicates: Active, not acknowledged : 3; Active, acknowledged : 0; Inactive, not acknowledged : 10; Disabled: 0.

# Time-of-Day Scheduling










































































The screenshot displays a software interface for scheduling. On the left, a tree view shows a hierarchy of building components: VIEBG37 VAV, O4 (O4\_East\_Exhaust, O4\_East\_Supply, O4\_West\_Exhaust, O4\_West\_Supply), O3 (O3\_East\_Exhaust, O3\_East\_Supply, O3\_West\_Exhaust, O3\_West\_Supply), O2 (O2\_East\_Exhaust, O2\_East\_Supply, O2\_West\_Exhaust, O2\_West\_Supply), O1 (O1\_East\_Exhaust, O1\_East\_Supply, O1\_West\_Exhaust, O1\_West\_Supply), E0 (E0\_West\_Exhaust, E0\_West\_Supply, E0\_East\_Exhaust, E0\_East\_Supply), and U1 (U1\_West\_Exhaust, U1\_West\_Supply). Below this are links for Home, System, Library, Report Templates, Graphical View Templates, Network, Devices, and VIE.

The main window shows the 'Master Schedule' for 'VIEBG37 VAV/O4'. It includes a calendar for April 2015 with the 7th highlighted. The schedule grid shows occupancy data for the week of April 6-12, 2015. The grid has a vertical axis for time from 00:00 to 20:00 and a horizontal axis for days. Occupancy is indicated by a blue bar from 06:00 to 18:00 on Monday through Friday.

Time	Mon, Apr 06	Tue, Apr 07	Wed, Apr 08	Thu, Apr 09	Fri, Apr 10	Sat, Apr 11	Sun, Apr 12
00:00							
01:00							
02:00							
03:00							
04:00							
05:00							
06:00	06:00-18:00: OCCUPIED	06:00-18:00: OCCUPIED	06:00-18:00: OCCUPIED	06:00-18:00: OCCUPIED	06:00-18:00: OCCUPIED		
07:00							
08:00							
09:00							
10:00							
11:00							
12:00							
13:00							
14:00							
15:00							
16:00							
17:00							
18:00							
19:00							
20:00							

# Firmware Update, Backup/Restore, Device Replacement

	Device	IP address	Type	FW	LIQB FW	Configuration	Parameter file	Program file	L-Web project	Device status
	BG37_VAV_E0_VAVbuilding	10.101.67.100:80	LROC-100		-			N/A	-	Ok
	BG37_VAV_E0_West_Exhaust	10.101.67.102:80	LIQB-AIR1		N/A			N/A	-	Ok
	BG37_VAV_E0_West_Supply	10.101.67.101:80	LIQB-AIR1		N/A			N/A	-	Ok
	BG37_VAV_E0_East_Exhaust	10.101.67.104:80	LIQB-AIR1		N/A			N/A	-	Ok
	BG37_VAV_E0_East_Supply	10.101.67.103:80	LIQB-AIR1		N/A			N/A	-	Ok
	BG37_VAV_O1_East_Exhaust	10.101.67.114:80	LIQB-AIR1		N/A			N/A	-	Ok
	BG37_VAV_O1_East_Supply	10.101.67.113:80	LIQB-AIR1		N/A			N/A	-	Ok
	BG37_VAV_O1_West_Exhaust	10.101.67.112:80	LIQB-AIR1		N/A			N/A	-	Ok
	BG37_VAV_O1_West_Supply	10.101.67.111:80	LIQB-AIR1		N/A			N/A	-	Ok
	BG37_VAV_O2_East_Exhaust	10.101.67.124:80	LIQB-AIR1		N/A			N/A	-	Ok
	BG37_VAV_O2_East_Supply	10.101.67.123:80	LIQB-AIR1		N/A			N/A	-	Ok
	BG37_VAV_O2_West_Exhaust	10.101.67.122:80	LIQB-AIR1		N/A			N/A	-	Ok
	BG37_VAV_O2_West_Supply	10.101.67.121:80	LIQB-AIR1		N/A			N/A	-	Ok
	BG37_VAV_O3_East_Exhaust	10.101.67.134:80	LIQB-AIR1		N/A			N/A	-	Ok
	BG37_VAV_O3_East_Supply	10.101.67.133:80	LIQB-AIR1		N/A			N/A	-	Ok
	BG37_VAV_O3_West_Exhaust	10.101.67.132:80	LIQB-AIR1		N/A			N/A	-	Ok
	BG37_VAV_O3_West_Supply	10.101.67.131:80	LIQB-AIR1		N/A			N/A	-	Ok
	BG37_VAV_O4_East_Exhaust	10.101.67.144:80	LIQB-AIR1		N/A			N/A	-	Ok
	BG37_VAV_O4_East_Supply	10.101.67.143:80	LIQB-AIR1		N/A			N/A	-	Ok
	BG37_VAV_O4_West_Exhaust	10.101.67.142:80	LIQB-AIR1		N/A			N/A	-	Ok
	BG37_VAV_O4_West_Supply	10.101.67.141:80	LIQB-AIR1		N/A			N/A	-	Ok
	BG37_VAV_U1_West_Exhaust	10.101.67.12:80	LIQB-AIR1		N/A			N/A	-	Ok
	BG37_VAV_U1_West_Supply	10.101.67.11:80	LIQB-AIR1		N/A			N/A	-	Ok

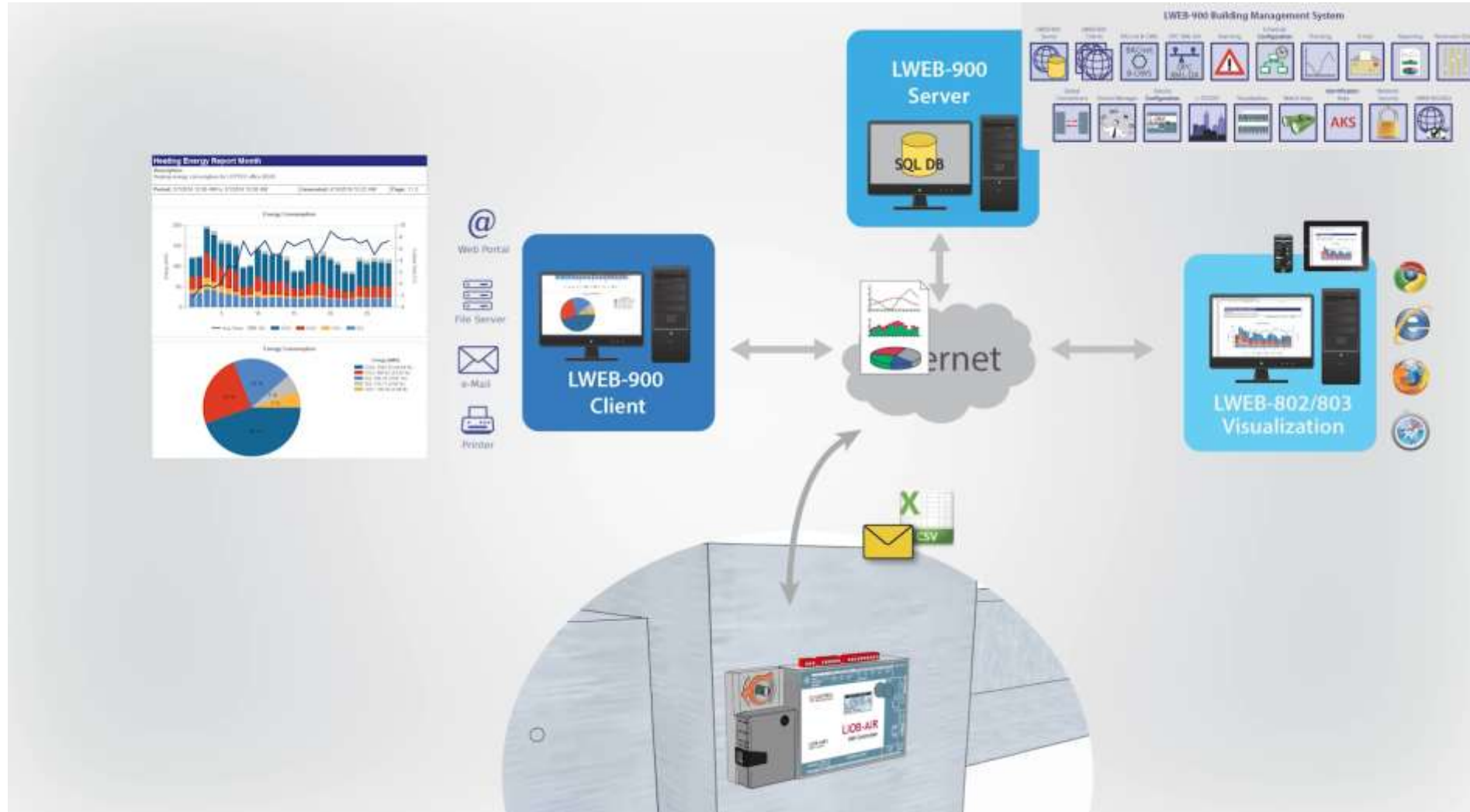
<b>Firmware file</b>		<input type="button" value="Select new firmware file"/>
<b>Type</b>		LIQB-AIR1
<b>Latest version in database</b>		5.2.0 - 2015-03-31 19:09:46
<b>Version in database for this device</b>		5.2.0 - 2015-03-31 19:09:46
<b>Version on device</b>		5.2.0 - 2015-03-23 08:03:42



# Change Operating Parameters

Group	Parameter	Parameter												
		idRoom	idSegment	DuctArea	DuctDiameter	MaxFlowCooling	MaxFlowHeating	MaxFlowUnitHeating	MinFlowCooling	MinFlowHeating	MinFlowUnitHeating	NominalFlowBox	PitotFactor	
01	BG37_VAV_E0_East_Exhaust:Datapoints	E0Foyer	6022	0.03 m <sup>2</sup>	0.25 m	504 m <sup>3</sup> /h	504 m <sup>3</sup> /h	504 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	900 m <sup>3</sup> /h	2.215 units	
02	BG37_VAV_E0_East_Supply:Datapoints	E0Foyer	6021	0.03 m <sup>2</sup>	0.25 m	504 m <sup>3</sup> /h	504 m <sup>3</sup> /h	504 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	900 m <sup>3</sup> /h	2.215 units	
03	BG37_VAV_E0_West_Exhaust:Datapoints	E0Production	6012	0.0779 m <sup>2</sup>	0.25 m	2756 m <sup>3</sup> /h	2756 m <sup>3</sup> /h	2756 m <sup>3</sup> /h	300 m <sup>3</sup> /h	300 m <sup>3</sup> /h	300 m <sup>3</sup> /h	3680 m <sup>3</sup> /h	4.81 units	
04	BG37_VAV_E0_West_Supply:Datapoints	E0Production	6011	0.0779 m <sup>2</sup>	0.25 m	2256 m <sup>3</sup> /h	2256 m <sup>3</sup> /h	2256 m <sup>3</sup> /h	300 m <sup>3</sup> /h	300 m <sup>3</sup> /h	300 m <sup>3</sup> /h	3680 m <sup>3</sup> /h	4.81 units	
05	BG37_VAV_O1_East_Exhaust:Datapoints	O1East	6122	0.03 m <sup>2</sup>	0.25 m	494 m <sup>3</sup> /h	494 m <sup>3</sup> /h	494 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	1400 m <sup>3</sup> /h	2.215 units	
06	BG37_VAV_O1_East_Supply:Datapoints	O1East	6121	0.03 m <sup>2</sup>	0.25 m	494 m <sup>3</sup> /h	494 m <sup>3</sup> /h	494 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	1400 m <sup>3</sup> /h	2.215 units	
07	BG37_VAV_O1_West_Exhaust:Datapoints	O1West	6112	0.03 m <sup>2</sup>	0.25 m	508 m <sup>3</sup> /h	508 m <sup>3</sup> /h	508 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	1400 m <sup>3</sup> /h	2.215 units	
08	BG37_VAV_O1_West_Supply:Datapoints	O1West	6111	0.03 m <sup>2</sup>	0.25 m	508 m <sup>3</sup> /h	508 m <sup>3</sup> /h	508 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	1400 m <sup>3</sup> /h	2.215 units	
09	BG37_VAV_O2_East_Exhaust:Datapoints	O2East	6222	0.0201 m <sup>2</sup>	0.25 m	561 m <sup>3</sup> /h	561 m <sup>3</sup> /h	561 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	900 m <sup>3</sup> /h	2.215 units	
10	BG37_VAV_O2_East_Supply:Datapoints	O2East	6221	0.0201 m <sup>2</sup>	0.25 m	561 m <sup>3</sup> /h	561 m <sup>3</sup> /h	561 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	900 m <sup>3</sup> /h	2.215 units	
11	BG37_VAV_O2_West_Exhaust:Datapoints	O2West	6212	0.0201 m <sup>2</sup>	0.25 m	523 m <sup>3</sup> /h	523 m <sup>3</sup> /h	523 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	900 m <sup>3</sup> /h	2.215 units	
12	BG37_VAV_O2_West_Supply:Datapoints	O2West	6211	0.0201 m <sup>2</sup>	0.25 m	523 m <sup>3</sup> /h	523 m <sup>3</sup> /h	523 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	900 m <sup>3</sup> /h	2.215 units	
13	BG37_VAV_O3_East_Exhaust:Datapoints	O3East	6322	0.0201 m <sup>2</sup>	0.25 m	561 m <sup>3</sup> /h	561 m <sup>3</sup> /h	561 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	900 m <sup>3</sup> /h	2.215 units	
14	BG37_VAV_O3_East_Supply:Datapoints	O3East	6321	0.0201 m <sup>2</sup>	0.25 m	561 m <sup>3</sup> /h	561 m <sup>3</sup> /h	561 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	900 m <sup>3</sup> /h	2.215 units	
15	BG37_VAV_O3_West_Exhaust:Datapoints	O3West	6312	0.0201 m <sup>2</sup>	0.25 m	520 m <sup>3</sup> /h	520 m <sup>3</sup> /h	520 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	900 m <sup>3</sup> /h	2.215 units	
16	BG37_VAV_O3_West_Supply:Datapoints	O3West	6311	0.0201 m <sup>2</sup>	0.25 m	520 m <sup>3</sup> /h	520 m <sup>3</sup> /h	520 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	900 m <sup>3</sup> /h	2.215 units	
17	BG37_VAV_O4_East_Exhaust:Datapoints	O4East	6422	0.0201 m <sup>2</sup>	0.25 m	385 m <sup>3</sup> /h	385 m <sup>3</sup> /h	385 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	900 m <sup>3</sup> /h	2.215 units	
18	BG37_VAV_O4_East_Supply:Datapoints	O4East	6421	0.0201 m <sup>2</sup>	0.25 m	385 m <sup>3</sup> /h	385 m <sup>3</sup> /h	385 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	900 m <sup>3</sup> /h	2.215 units	
19	BG37_VAV_O4_West_Exhaust:Datapoints	O4West	6412	0.0201 m <sup>2</sup>	0.25 m	523 m <sup>3</sup> /h	523 m <sup>3</sup> /h	523 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	900 m <sup>3</sup> /h	2.215 units	
20	BG37_VAV_O4_West_Supply:Datapoints	O4West	6411	0.0779 m <sup>2</sup>	0.25 m	523 m <sup>3</sup> /h	523 m <sup>3</sup> /h	523 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	100 m <sup>3</sup> /h	3680 m <sup>3</sup> /h	4.81 units	
21	BG37_VAV_U1_West_Exhaust:Datapoints	U1Basement	6912	0.0779 m <sup>2</sup>	0.25 m	2228 m <sup>3</sup> /h	2228 m <sup>3</sup> /h	2228 m <sup>3</sup> /h	300 m <sup>3</sup> /h	300 m <sup>3</sup> /h	300 m <sup>3</sup> /h	3680 m <sup>3</sup> /h	4.81 units	
22	BG37_VAV_U1_West_Supply:Datapoints	U1Basement	6911	0.0779 m <sup>2</sup>	0.25 m	2228 m <sup>3</sup> /h	2228 m <sup>3</sup> /h	2228 m <sup>3</sup> /h	300 m <sup>3</sup> /h	300 m <sup>3</sup> /h	300 m <sup>3</sup> /h	3680 m <sup>3</sup> /h	4.81 units	

# Automatic Reporting





# Prosta integracja ze sterownikami L-ROC Room Control

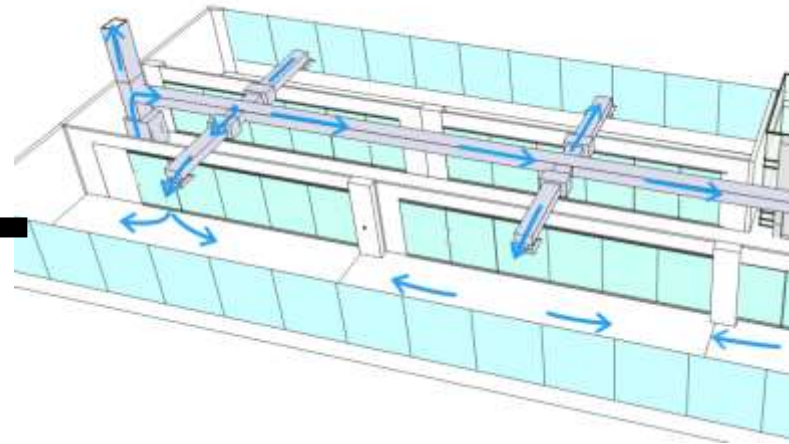
## L-ROC

# L-STUDIO może to zinterować !

## L-STUDIO



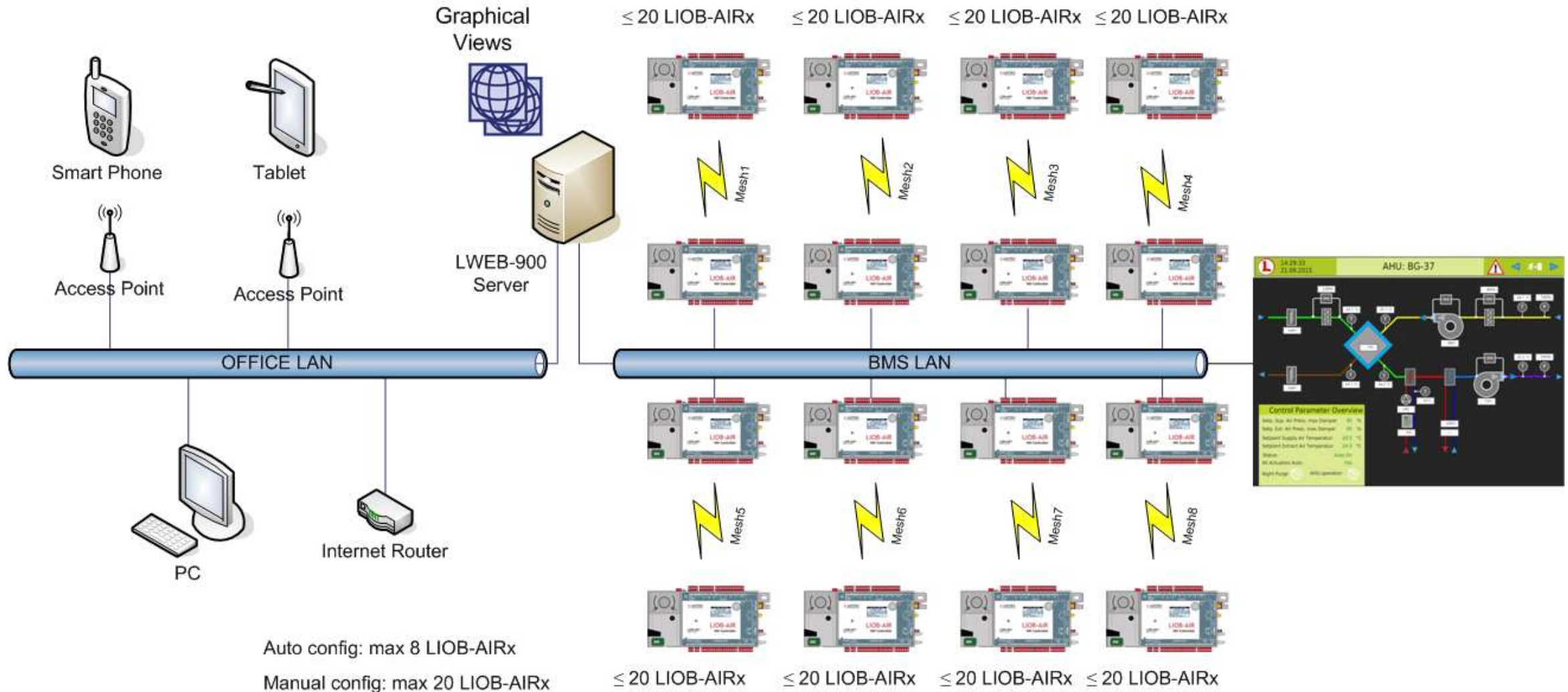
L-ROC Room Control



Ventilation



# Duża instalacja sieci WLAN Mesh



# Podsumowanie

- 1 Bardzo szybka integracja systemu
- 1 Projekt w pełni oparty na technologii IP
- 1 Nie potrzeba żadnych dodatkowych elementów
- 1 W pełni rozproszony system VAV
- 1 Komunikacja przewodowa i bezprzewodowa
- 1 System w pełni programowalny
- 1 24/7 wbudowane ciągłe testy on-line
- 1 Zaawansowany algorytm DCV
- 1 Integracja z BACnet & LON



# Więcej Informacji



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