



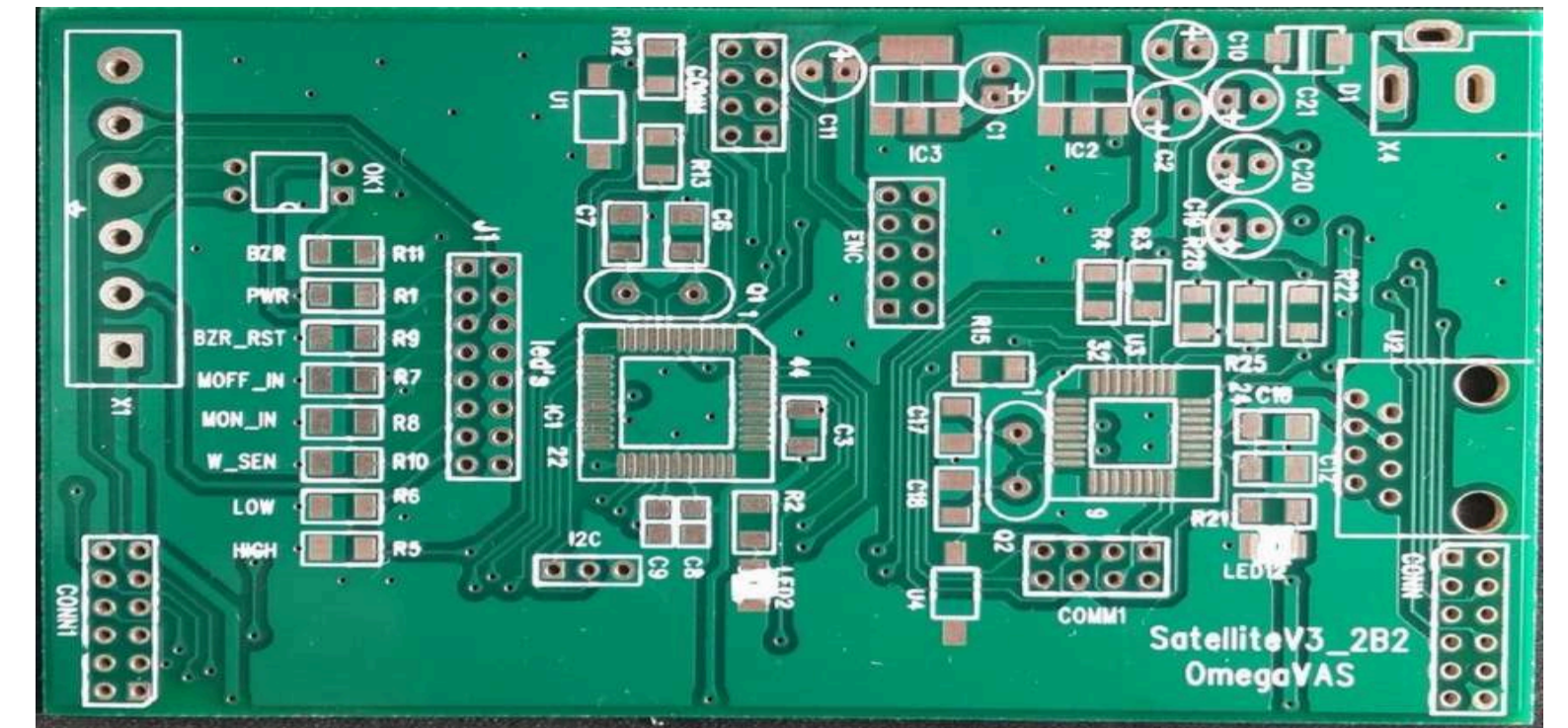
SMART IOT SOLUTIONS

شركة ريجكوم الهندسية
REGTCOM
ENGINEERING COMPANY



OMEGA IOT

- ▶ *Hardware Design*
- ▶ *Manufacture IoT Controllers & Gateways*
- ▶ *Build Firmware and Software*
- ▶ *Custom Software, Dashboards & Visualization*
- ▶ *Real-time Data Capture + Analytics*





SOLUTION SPACE



BMS

HVAC

Energy

Water

Lighting

Logistics + Shipping

Smart City

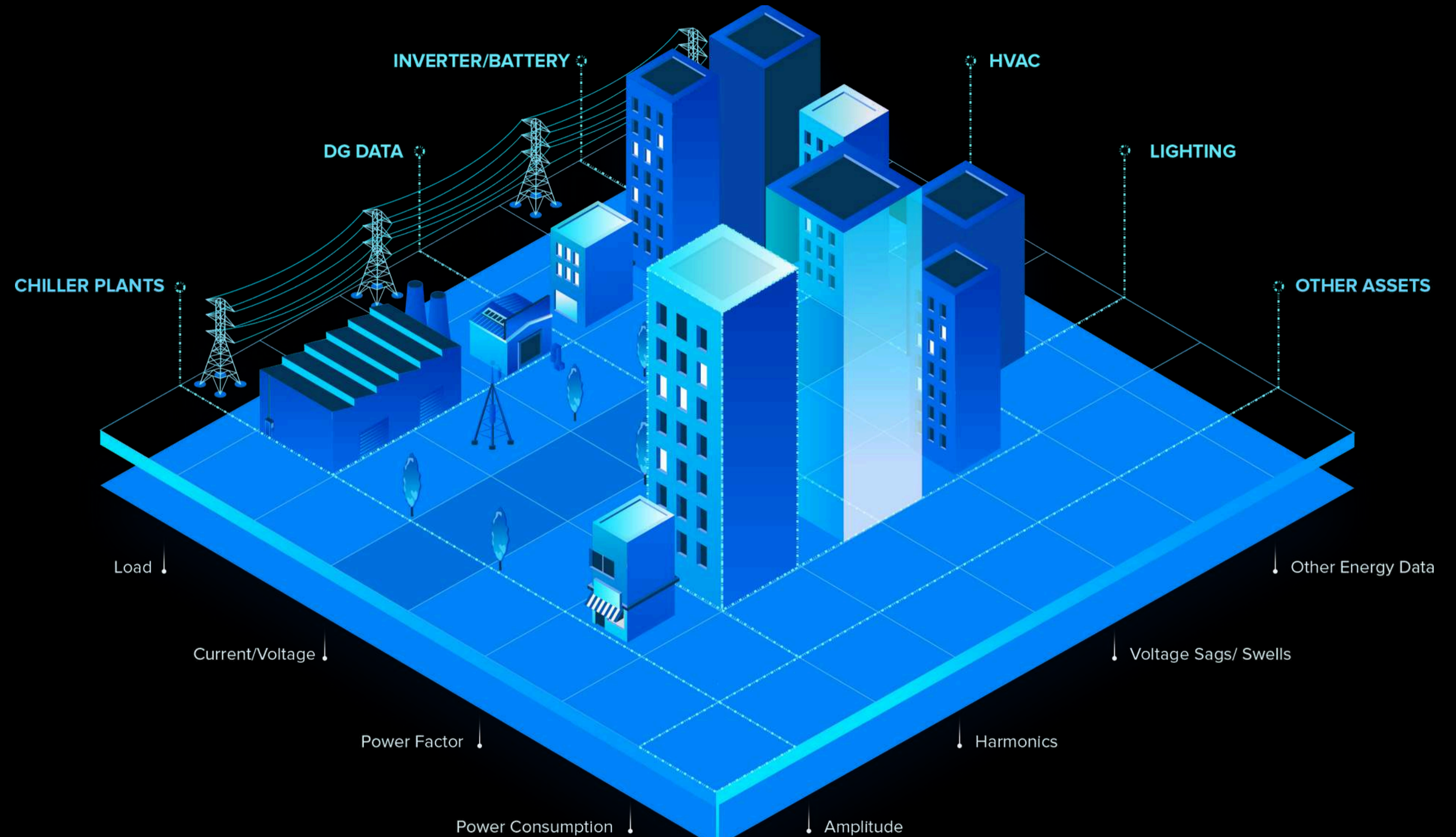
Industry 4.0

Digitalization

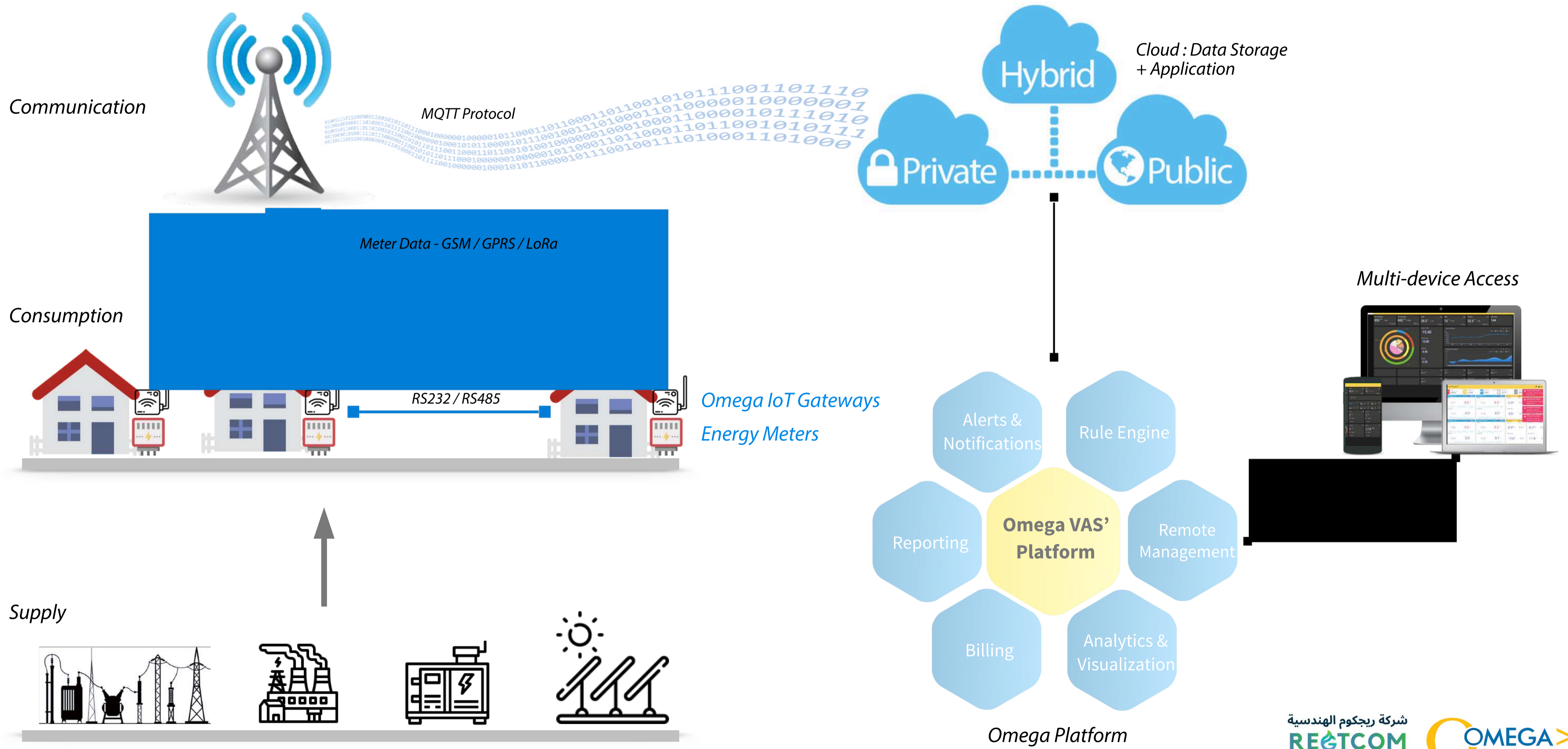


ENERGY MGT. APPLICATION AREAS

- ▶ *Industries*
- ▶ *Commercial Buildings*
- ▶ *Smart Cities*
- ▶ *Residential Communities*
- ▶ *Townships*
- ▶ *and more.....*

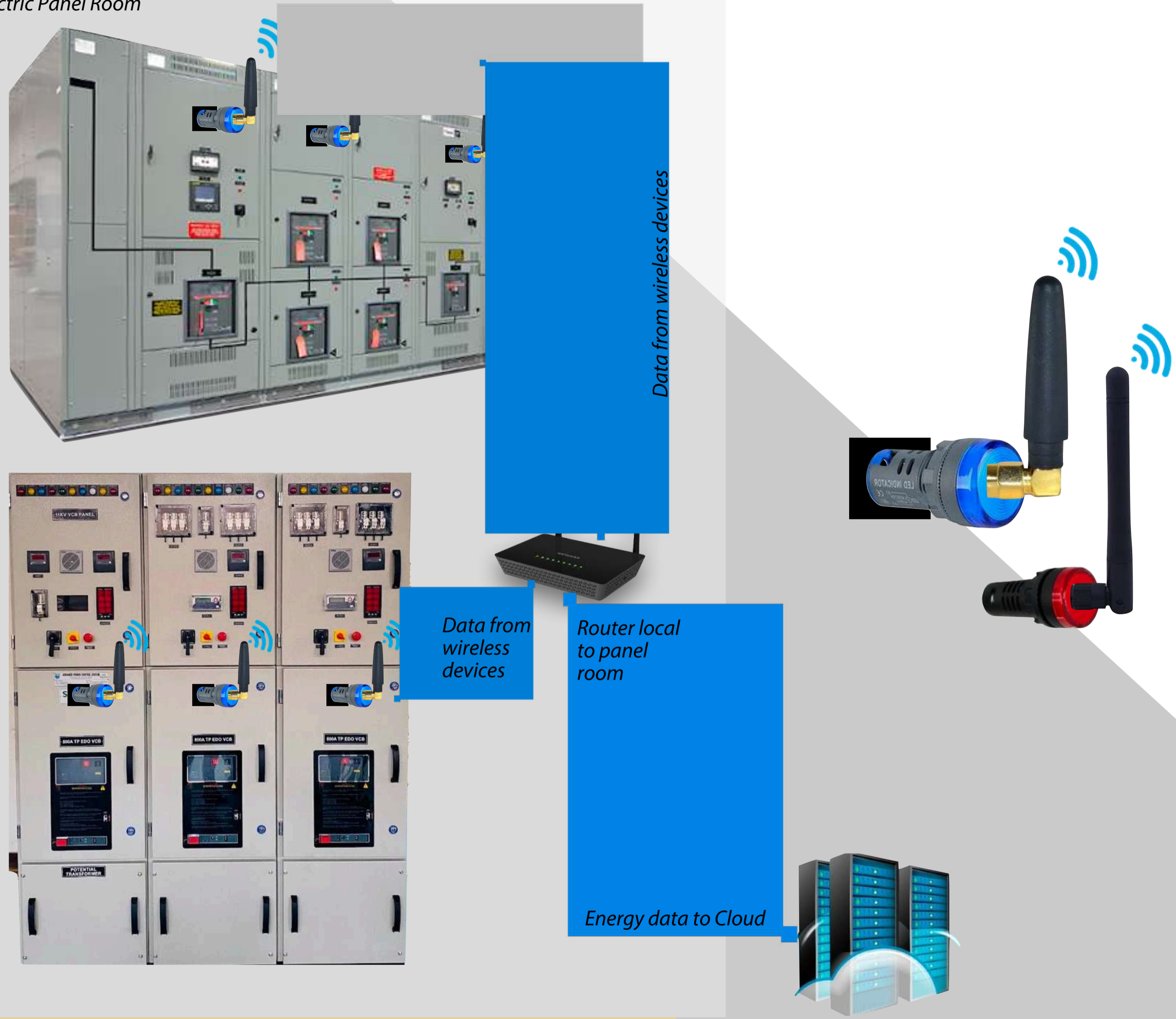


ENERGY MGT. ARCHITECTURE



WIRELESS ENERGY MONITORING

Electric Panel Room

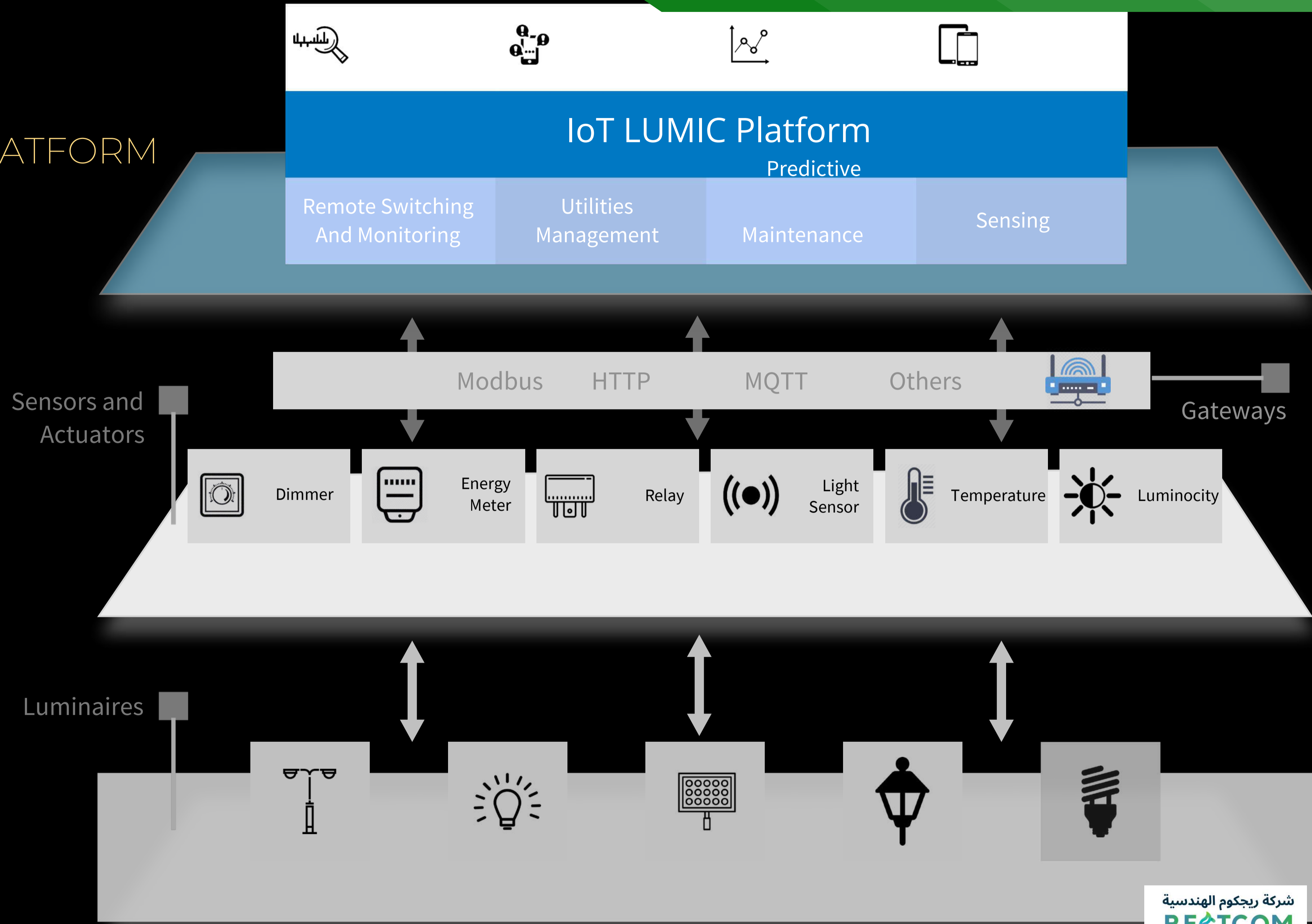


- ▶ *Wireless devices connect to energy meters*
- ▶ *Plug-n-play - ext. power supply not required*
- ▶ *Minimal cable ~ 9 inches long for connection*
- ▶ *About 60 devices can connect to one router*
- ▶ *Only 1 wireless router per panel room*
- ▶ *No data drops*
- ▶ *Minimal implementation time (< 1 week)*

Quick turn around

LUMIC

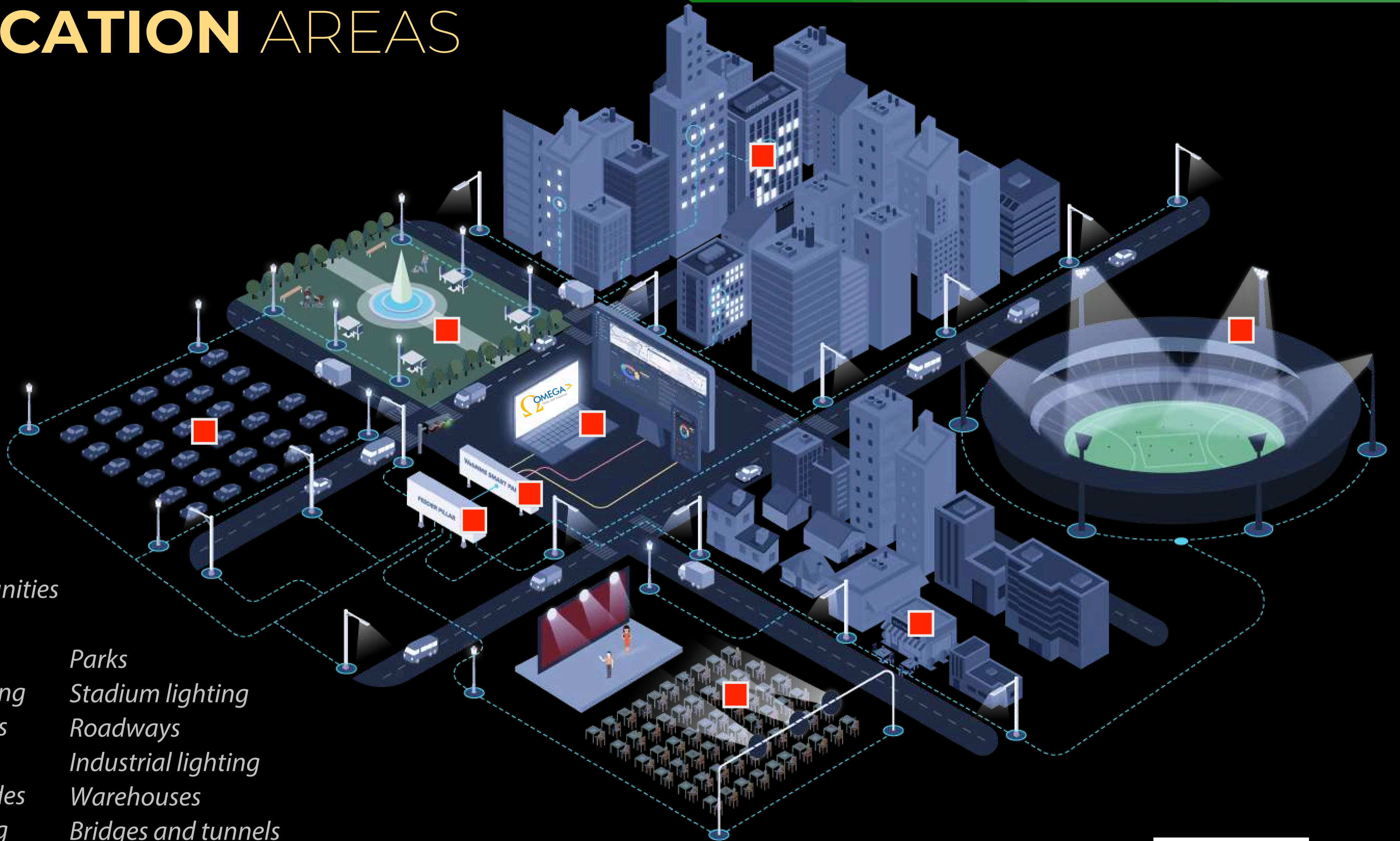
LIGHTINGPLATFORM



APPLICATION AREAS

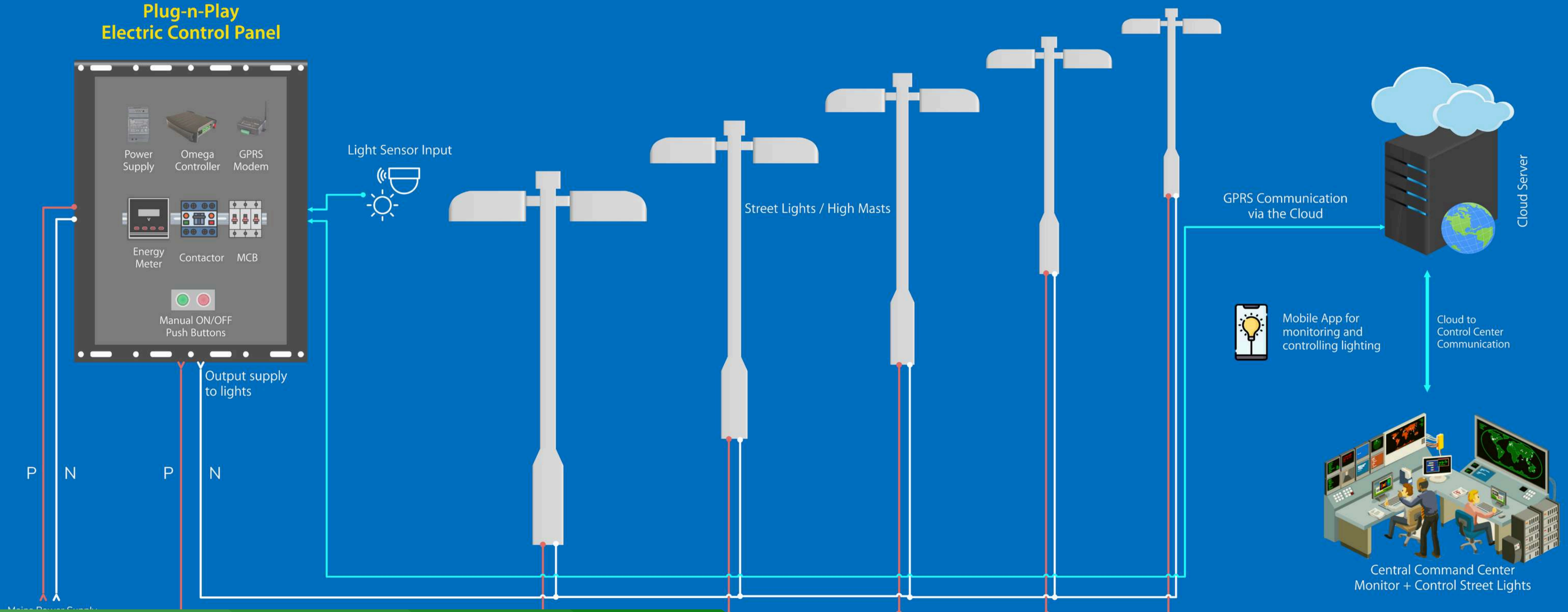
Airports
Street lights
Gated communities
Townships
Periphery
Campus lighting
Pathway lights
Parking lots
Building facades
Indoor lighting

Parks
Stadium lighting
Roadways
Industrial lighting
Warehouses
Bridges and tunnels



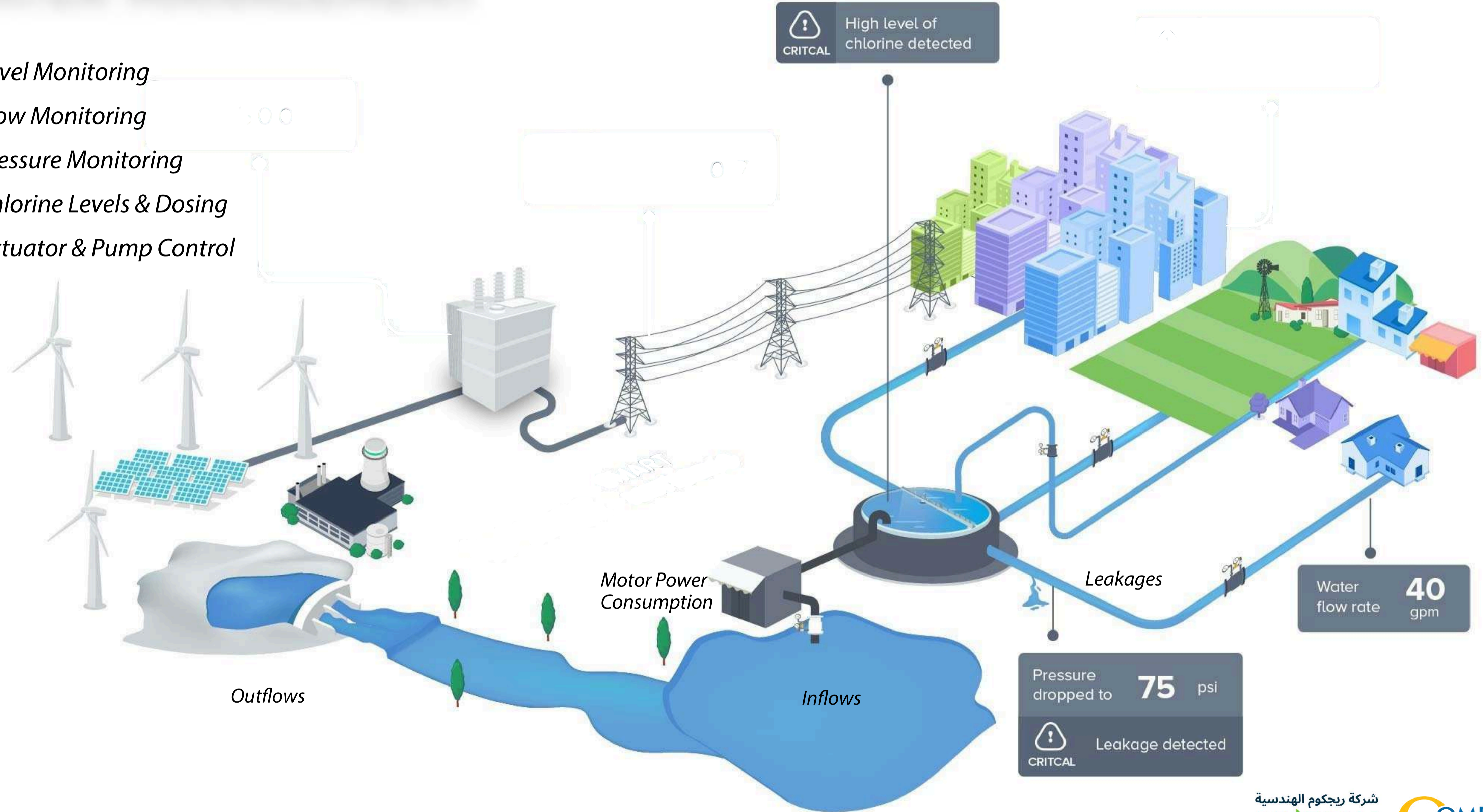
FULLY AUTOMATED LIGHTING : USE CASE

TYPICAL LIGHTING SCHEMATIC FOR STREET LIGHTS AND HIGH MASTS



WATER MANAGEMENT

- ▶ Level Monitoring
- ▶ Flow Monitoring
- ▶ Pressure Monitoring
- ▶ Chlorine Levels & Dosing
- ▶ Actuator & Pump Control



Pressurized Irrigation Project : IoT based Central Monitoring & Control System

Use Case

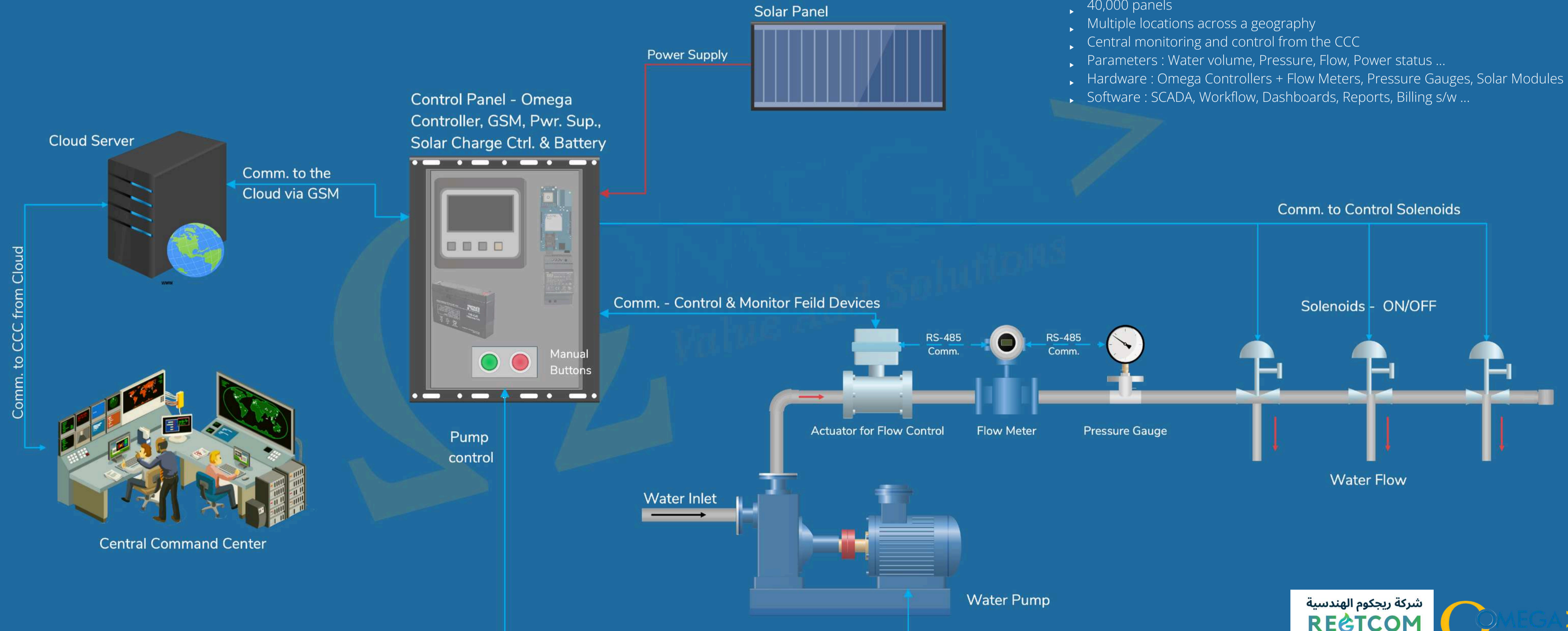
- ▶ *40,000 control & monitoring equipment*
- ▶ *Multiple locations across a geography*
- ▶ *Central monitoring and control from the CCC*
- ▶ *Parameters : Water volume, Pressure, Flow, Power status ...*
- ▶ *Hardware : Omega Controllers + Flow Meters, Pressure Gauges, Solar Module ...*
- ▶ *Software : SCADA, Workflow, Dashboards, Reports, Billing s/w ...*

USE CASE : PRESSURIZED IRRIGATION SYSTEM

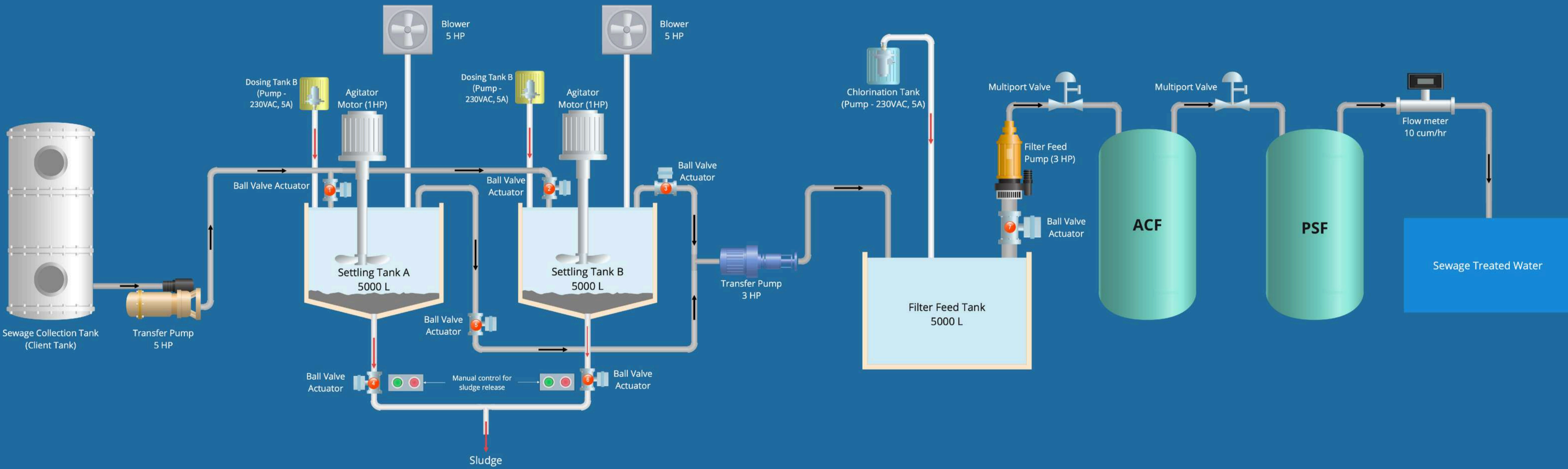
Typical Work-flow Schematic of a Pumping Station

Use Case

- ▶ 40,000 panels
- ▶ Multiple locations across a geography
- ▶ Central monitoring and control from the CCC
- ▶ Parameters : Water volume, Pressure, Flow, Power status ...
- ▶ Hardware : Omega Controllers + Flow Meters, Pressure Gauges, Solar Modules ...
- ▶ Software : SCADA, Workflow, Dashboards, Reports, Billing s/w ...



WATER TREATMENT SCADA



OMEGA IOT CONTROLLERS

For controlling multiple functions across applications in HV and LV.



Multi Function Devices

Modular analog and digital I/O devices for control and monitoring multiple field sensors with communication.



OEM / Vendor Agnostic

Communicates with multiple OEM controllers with easy configuration on-the-fly across multiple protocols.



Multi Function Devices

Modular analog and digital I/O devices for control and monitoring multiple field sensors with communication.



Industrial Grade Protection

Built-in protection against ESD, EMF, surges and spikes.



Easy Maintenance

Plug-n-play, easy field installation and maintenance.



OMEGA CONTROLLER

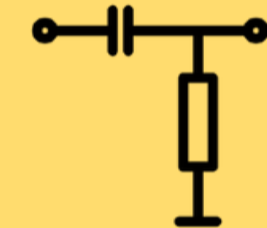
MODEL : 4AI

Four channel current or voltage selectable and communicates via Ethernet, Wireless, Modbus TCP/RTU RS-485



Analog Device

Four channel current and voltage inputs



Ethernet

For wired connectivity



WiFi

For wireless connectivity



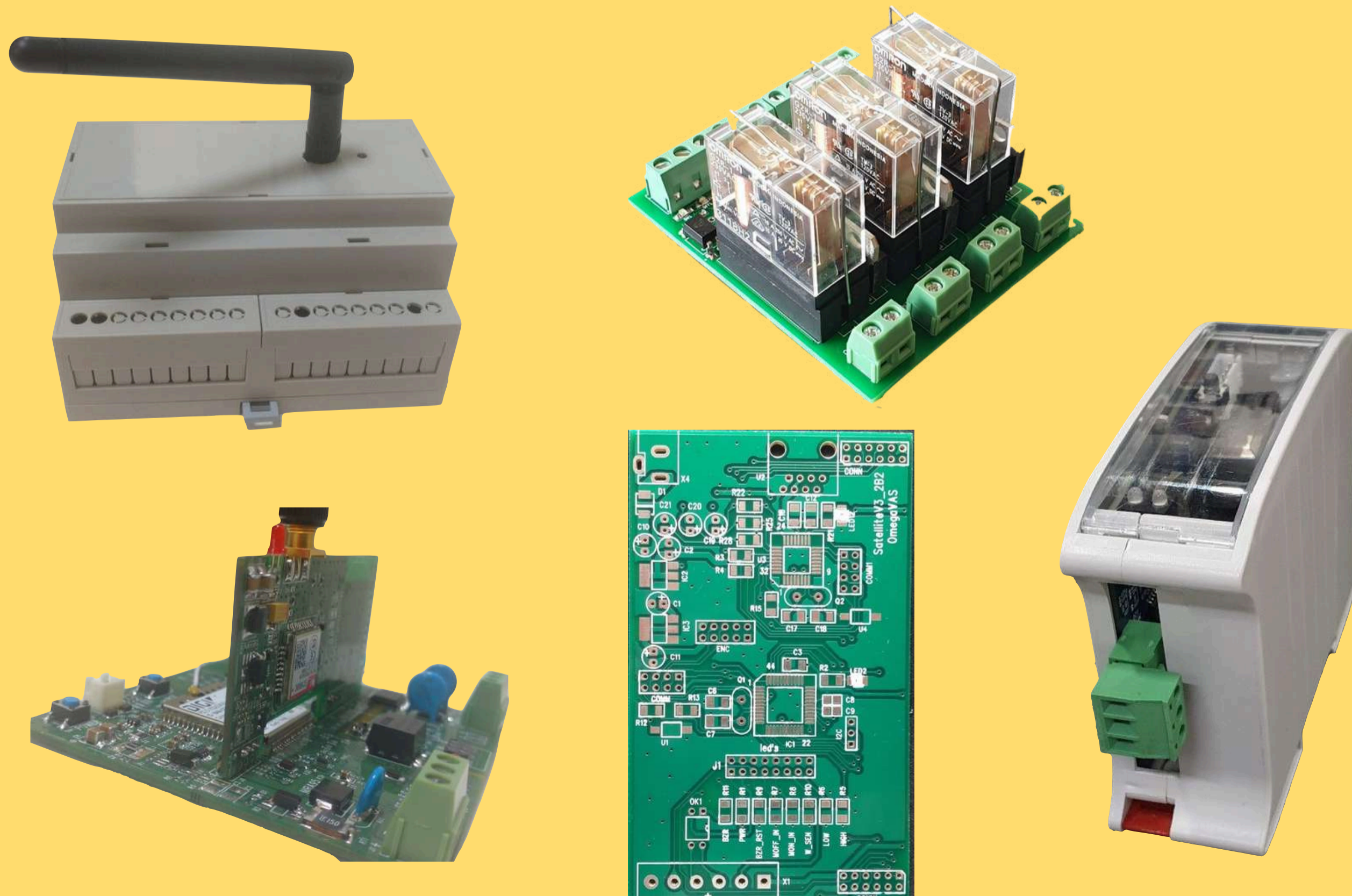
GSM / GPRS

GPS/GPRS/GSM connectivity for remote locations



UNIVERSAL DATA GATEWAYS

Used in BMS, HVAC, Solar and other applications to collect various parameters from field devices and send it to the Cloud over MQTT protocol.

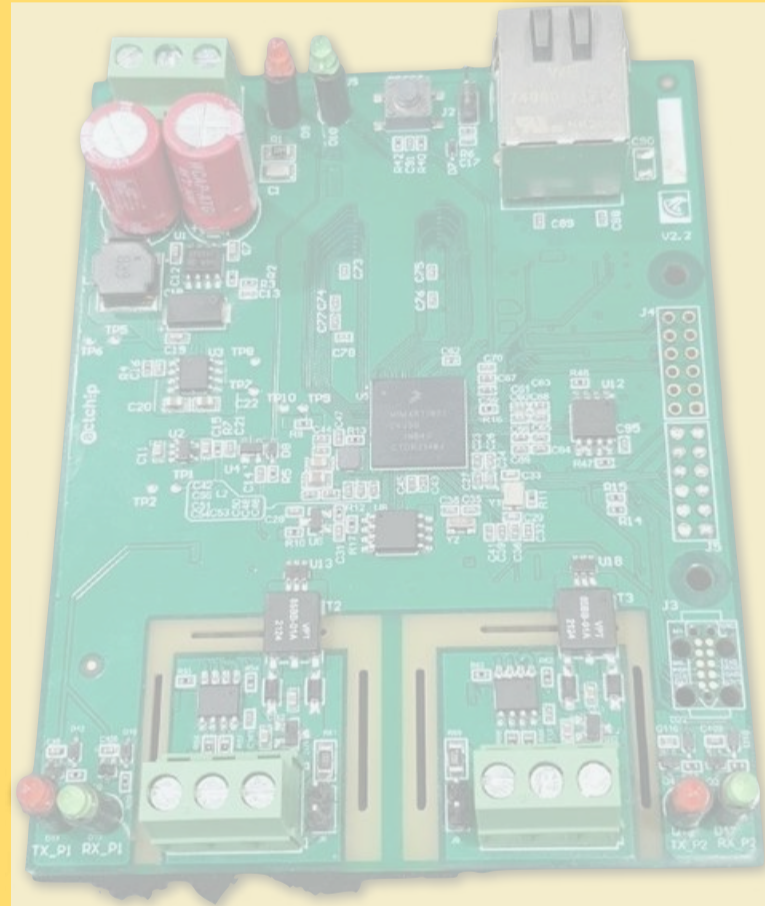


Features

- ▶ **Analog inputs:**
 - 0 – 10 V
 - 4 – 20 mA
- ▶ **Digital Inputs**
 - Up-to 32 digital inputs/outputs
- ▶ **Communication interfaces :**
 - MODBUS RTU (over RS-485)
 - Ethernet
 - BLE
 - WiFi
 - Zigbee
 - GPRS (for cloud connectivity)
- ▶ **Memory :**
 - Internal : Flash 256 MB
 - External : Expandable up to 8 GB
- ▶ **Built-in GUI for configuration**

OTHER PRODUCTS

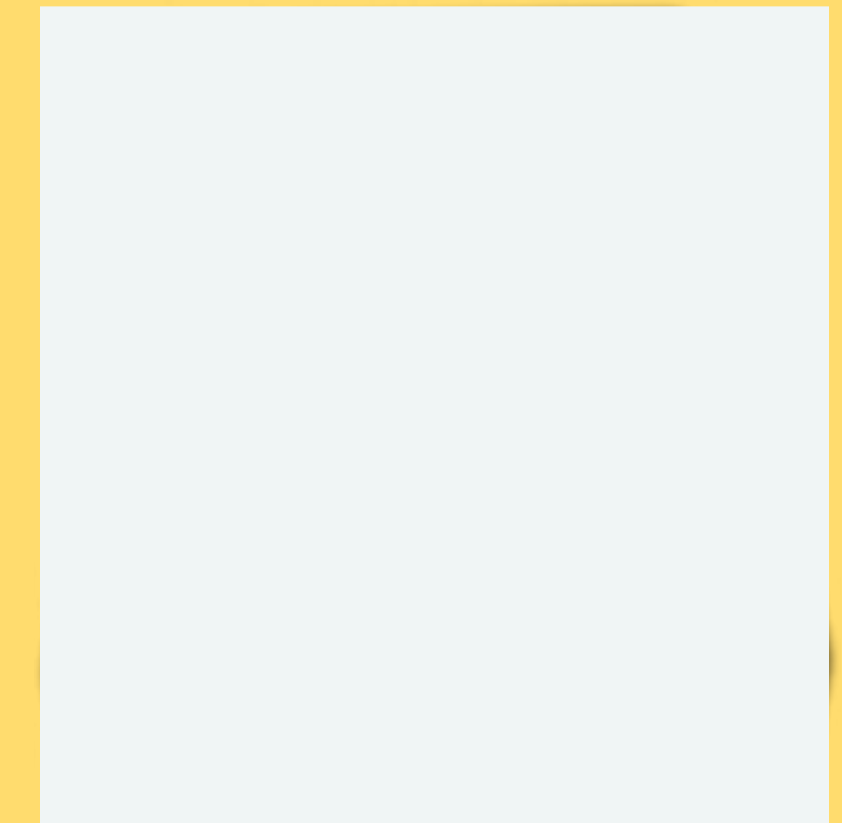
**Multi-protocol
BACnet converter**



**Bluetooth Enabled
Wearable Device**



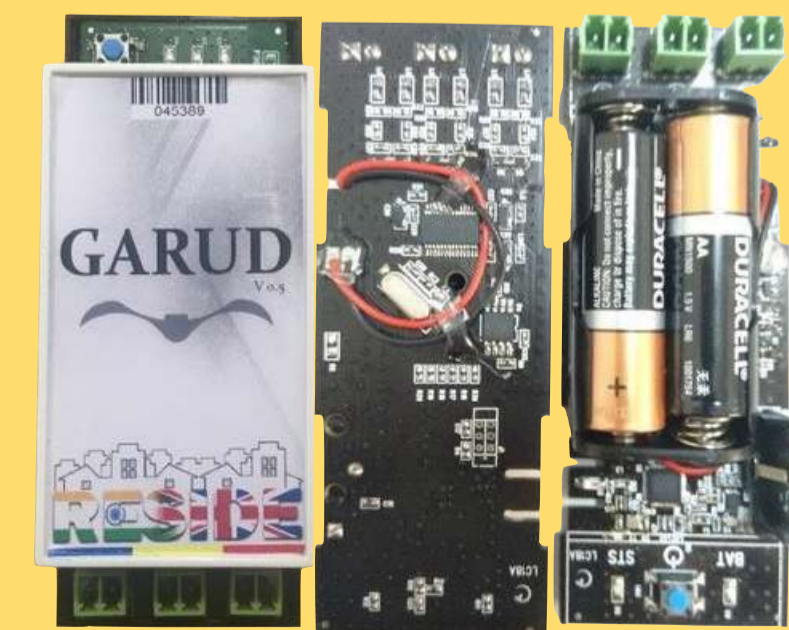
GPRS / GSM Modem



**USB - RS485 Protocol
Converter**



**Bluetooth Enabled 3 Ph
Current Logger**



TECH PROTOCOLS + COMMUNICATION



PROTOCOLS & INTERFACE

▶ MODBUS (RTU / TCP)

RS 485 / 422 / 432

▶ TCP/IP / Ethernet

▶ HTTP

▶ IoT

• MQTT

▶ BACnet

▶ OPC UA / DA

▶ CANBus

▶ Profibus

▶ DLMS

▶ Dali

▶ KNX

EXTERNAL

COMM.

▶ GPRS / GSM (2G / 4G / 5G)

▶ Ethernet (TCP / IP)

▶ WiFi

▶ RF

• LoRa • Thread

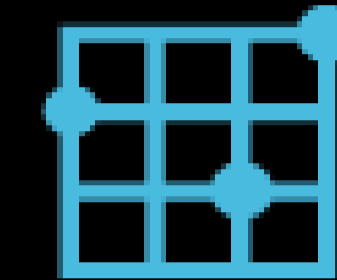
▶ BLE Mesh

▶ NB-IoT

UTILITIES : HARDWARE & SOFTWARE INTEGRATION



Energy & Utilities Management



Smart Grid

Electric Power



Solar

Water



Wind

Lighting



Waste Management

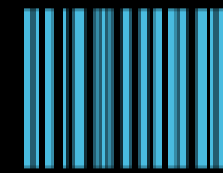
SOFTWARE INTEGRATION + SERVICES

AI + ML



Firmware Management

Asset Tracking



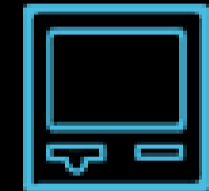
Location-based Services

Cloud Deployment & Management



Mobile Apps

Databases Handling & Optimization



Self Service Apps

ERP Integration



Visualization & Analytics

Facilities Management



Wearable Technology



IOT : SUPPLY CHAIN

IoT (Internet of Things)
enabling continuous real-time supply chain visibility

- Network**
- GSM
 - WIFI
 - WIDE Area
 - Low energy



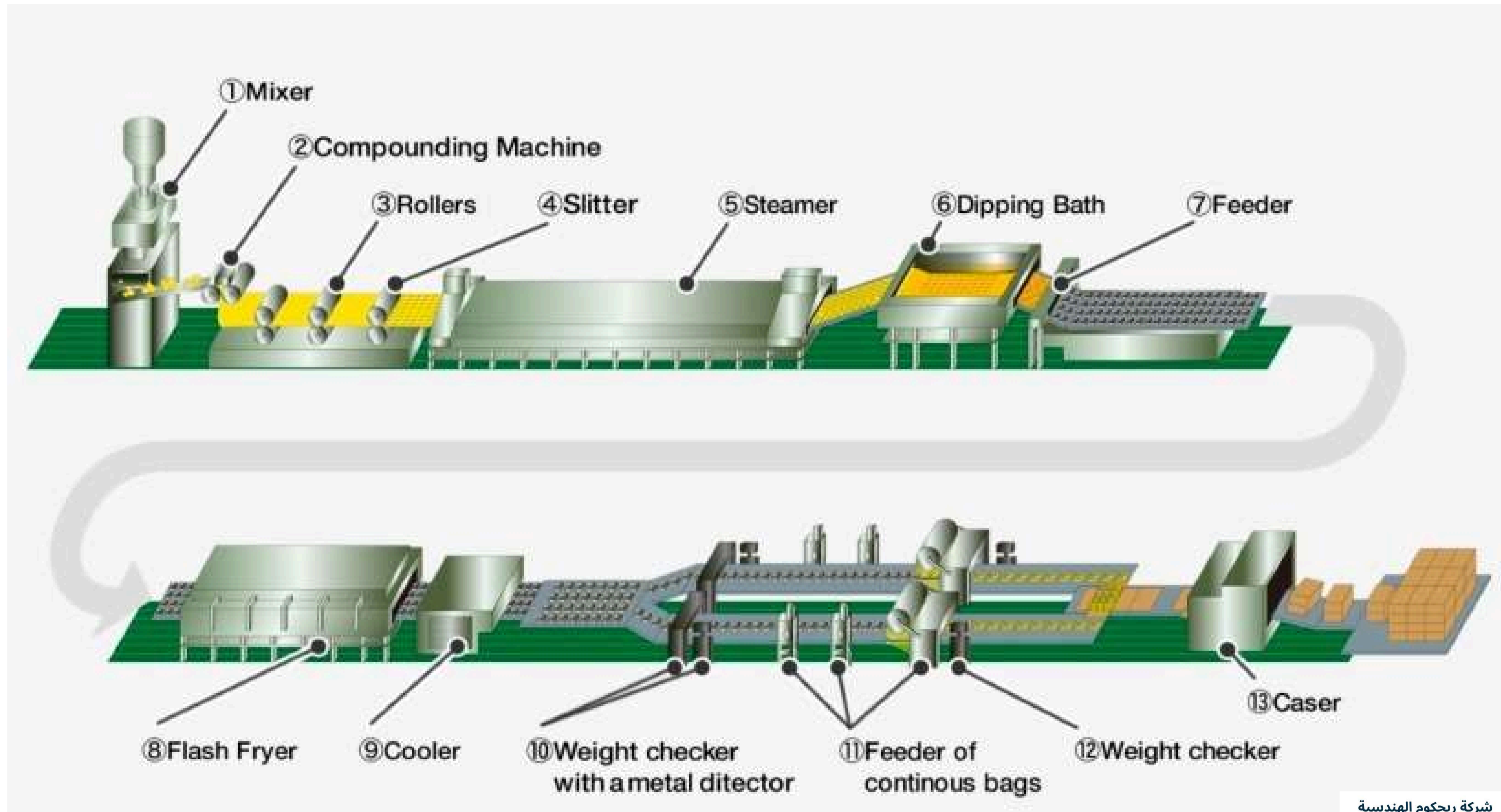
Tracking
Real-time location

Monitoring
Real-time condition status

Analytics
Real-time exception alerts: delays, condition

Image Courtesy : Cropin

FOOD MANUFACTURING PROCESS





BUILDING MANAGEMENT SYSTEM

HVAC

TOTAL POWER CONSUMPTION **12039 KW**

HIGHEST LOAD CONSUMED **50 KW/H** 7TH FLOOR

CHILLER STATUS
TOTAL **3** WORKING **1**

AHU STATUS
TOTAL **52** WORKING **37**

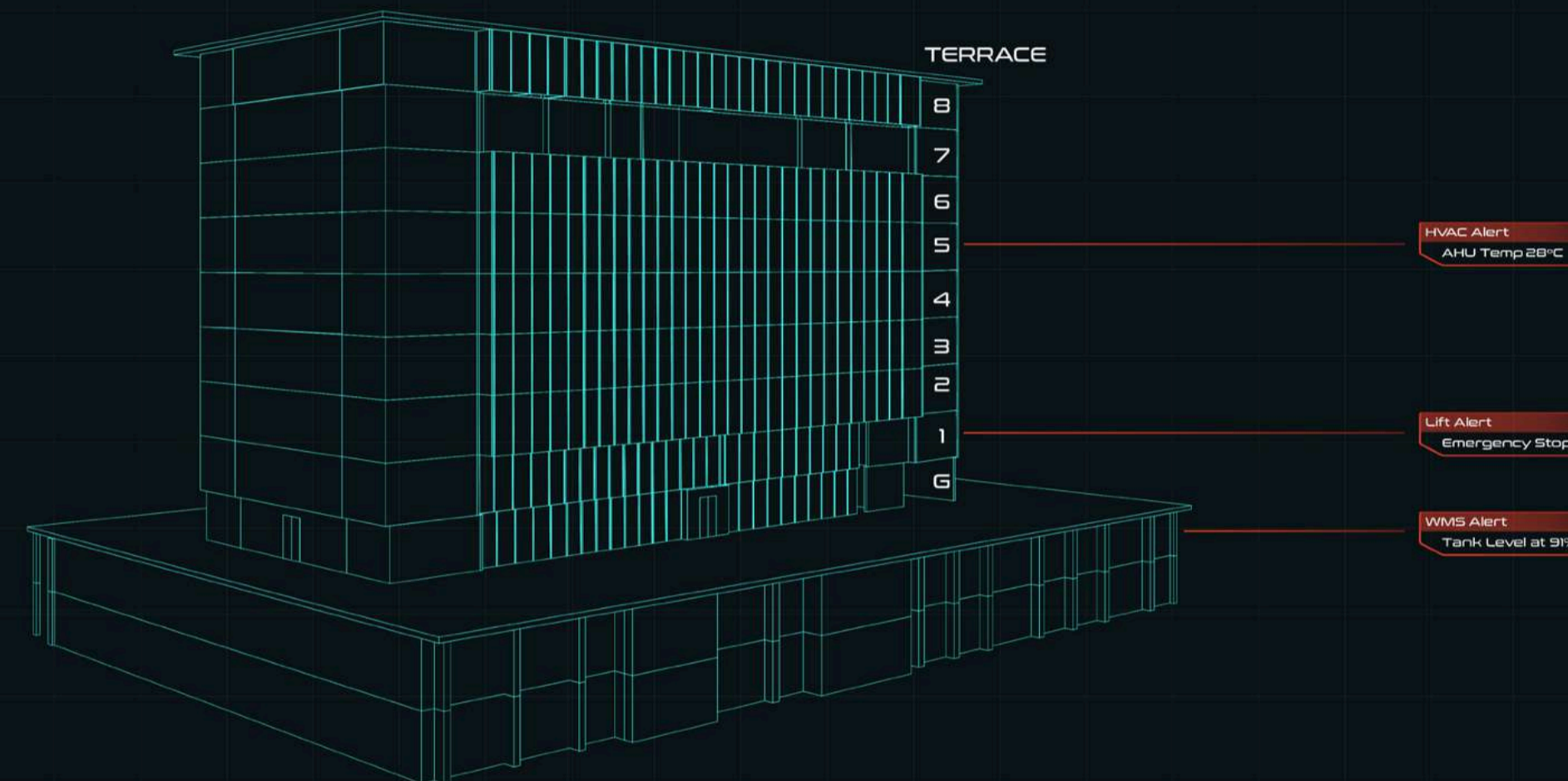
EMS

BREAKERS
TOTAL **50** WORKING **48** POWER FACTOR **0.8**

TOTAL LOAD **50** TOTAL EB DRAWN **20%**

HIGHEST LOAD CONSUMED **50 KW/H** 7TH FLOOR

HIGHEST LOAD CONSUMED **600** PRIMARY PUMP



STP

TOTAL INFLOW **12791** LITRES

TOTAL OUTFLOW **2778** LITRES

PUMPS
TOTAL **10** WORKING **10**

TANK LEVELS **FULL CAPACITY**

WMS

PUMPS
TOTAL **10** WORKING **10**

AVERAGE WATER CONSUMPTION **583** L/Hr

TANK LEVELS **65%**

DG

TOTAL POWER OUTPUT **50,000** KW/H

FUEL LEVELS **65%**

TOTAL RUN TIME **6 HOURS**

UPS

TOTAL POWER OUTPUT **50,000** KW/H

OVERALL BATTERY HEALTH **35%**

AVERAGE RUN TIME **3 HOURS**

FIRE

BUILDING FIRE STATUS **NORMAL**

FIRE TANK LEVELS **38%**

JOCKEY PUMP PRESSURE **60 Pa**

LMS

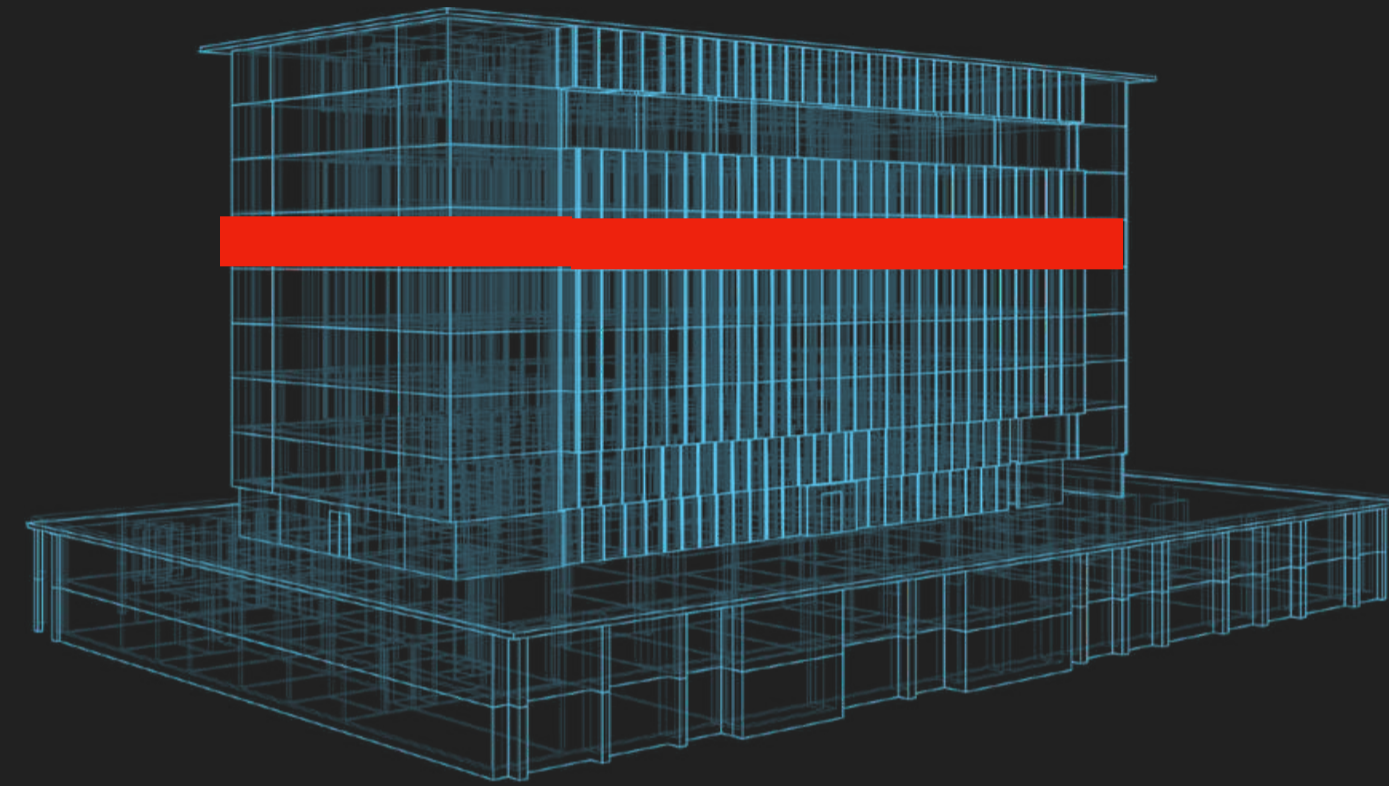
TOTAL POWER CONSUMED **60,000** KW/H

AVERAGE POWER CONSUMED **7600** KW/H /FLOOR

DAY MODE NIGHT MODE

BUILDING MANAGEMENT SYSTEM

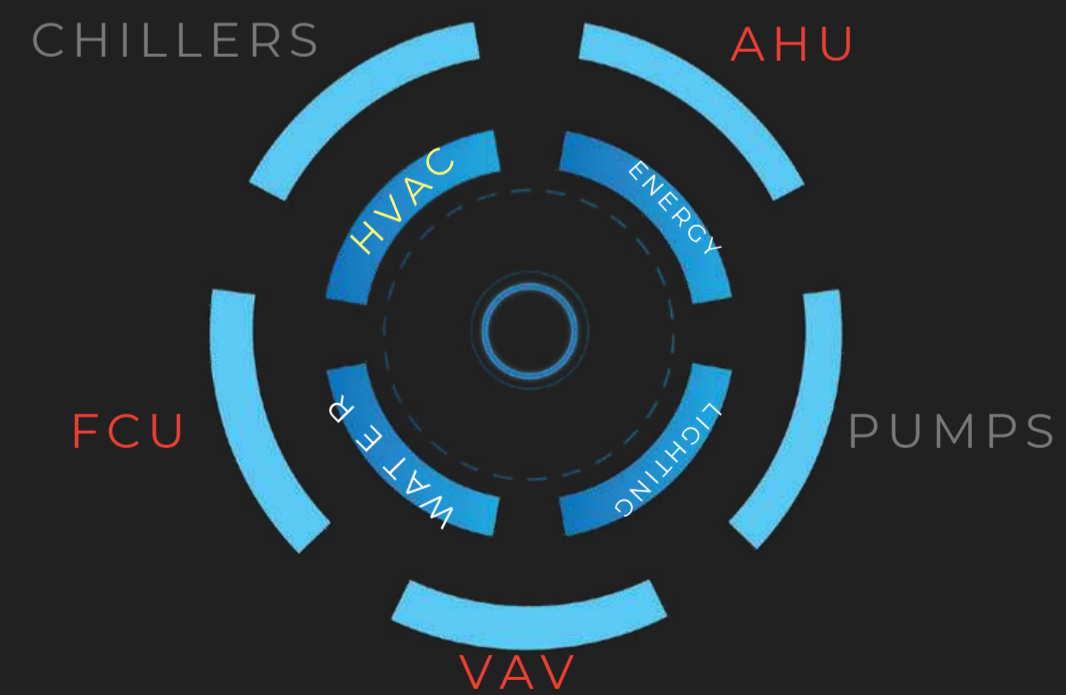
FACILITY



FLOOR 7

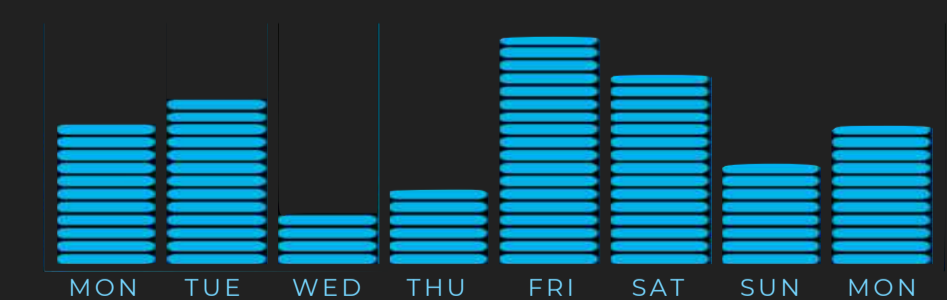
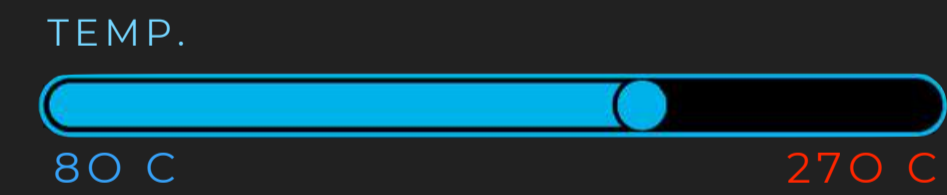


NAVIGATION DIAL



HVAC DETAILS - FLOOR 7

<p>AHU</p> <p>Return Air (o C) : 18 Supply Air (o C) : 9</p>	<p>FCU</p> <p>Status : Running</p>
<p>VAV</p> <p>Status : Closed</p>	<p>DAMPERS</p> <p>Status : Open (25%)</p>





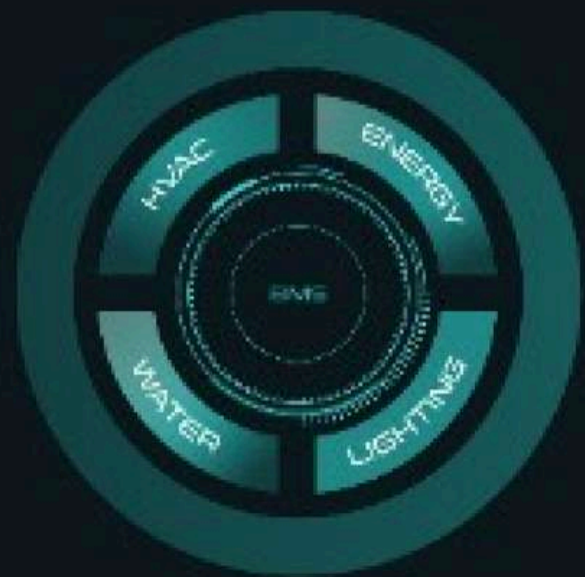
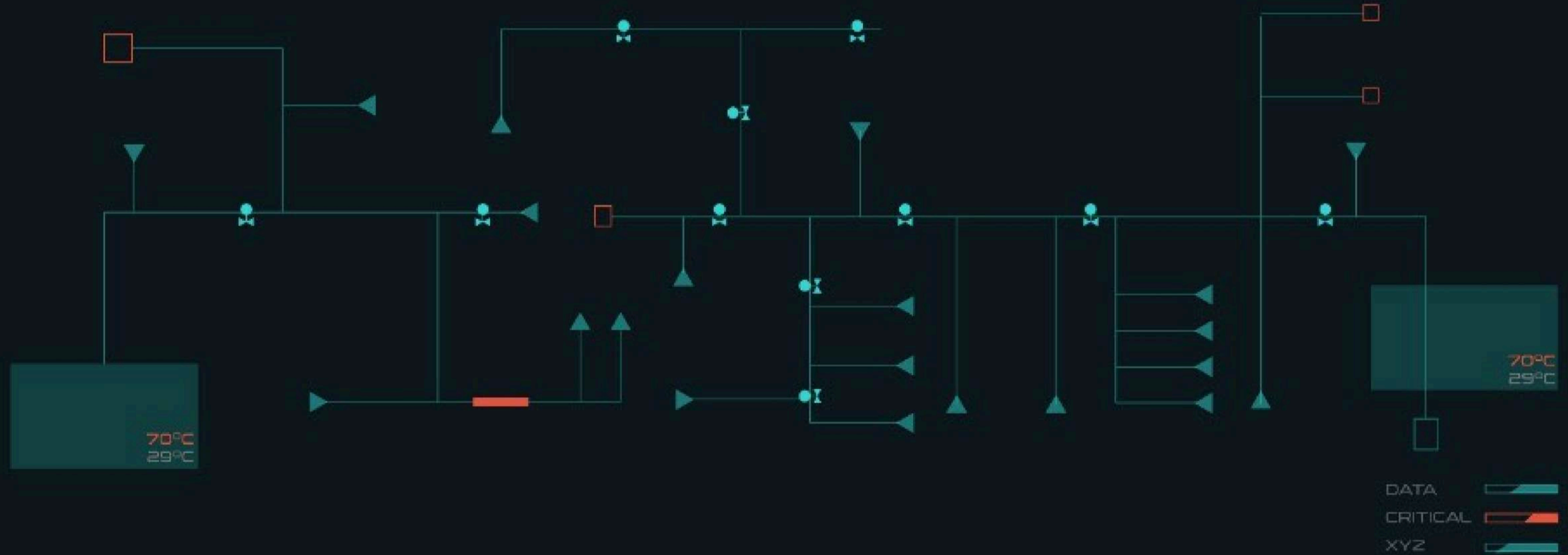
HVAC
AHU

- 8th
- 7th
- 6th
- 5th
- 4th
- 3rd
- 2nd
- 1st
- GF
- UB
- LB

DATA

CRITICAL

XYZ



GRAPH DATA



FILTER FLUCTUATIONS



POWER CONSUMPTION



CONTROLS

STATUS ON OFF

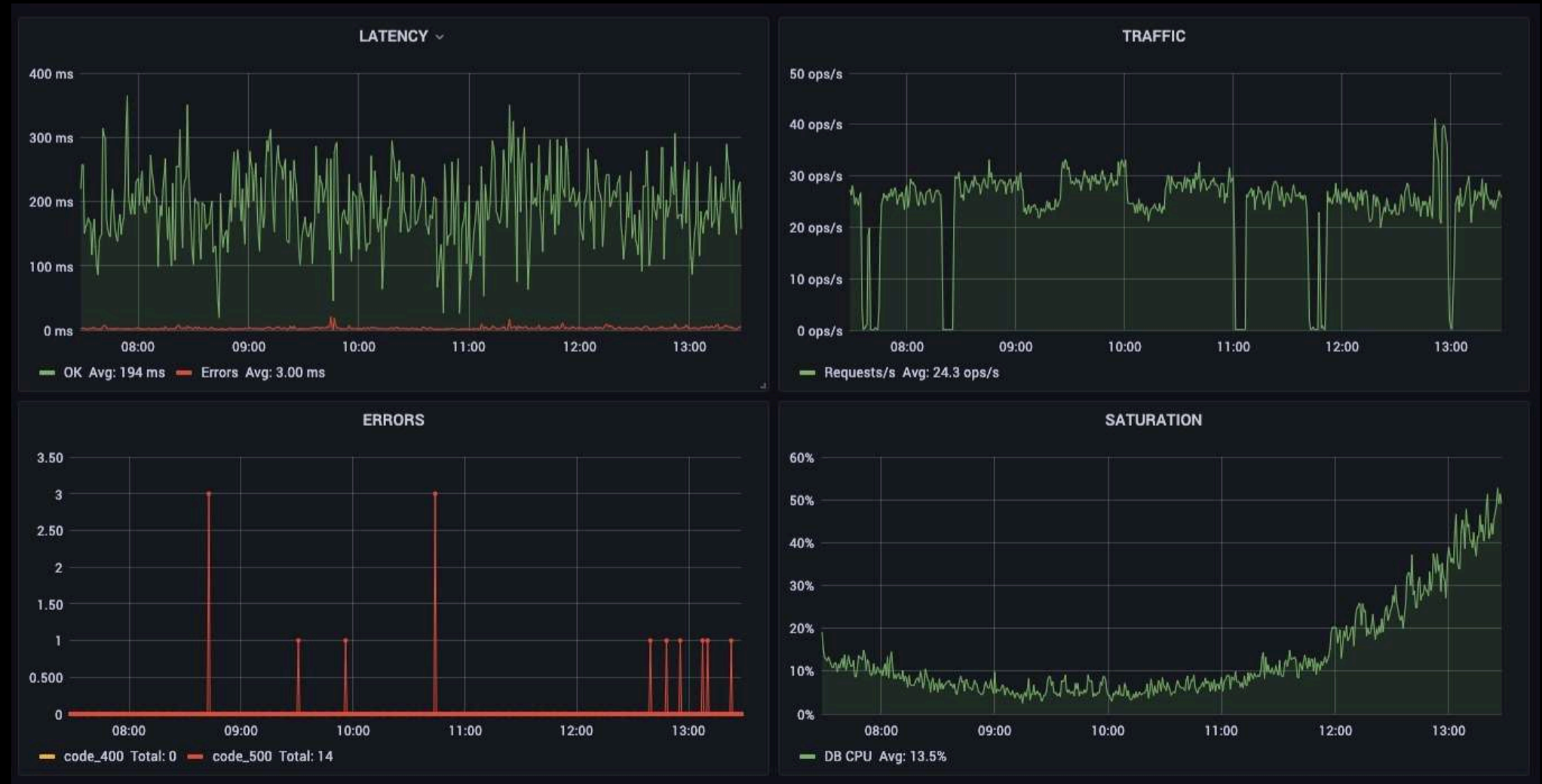
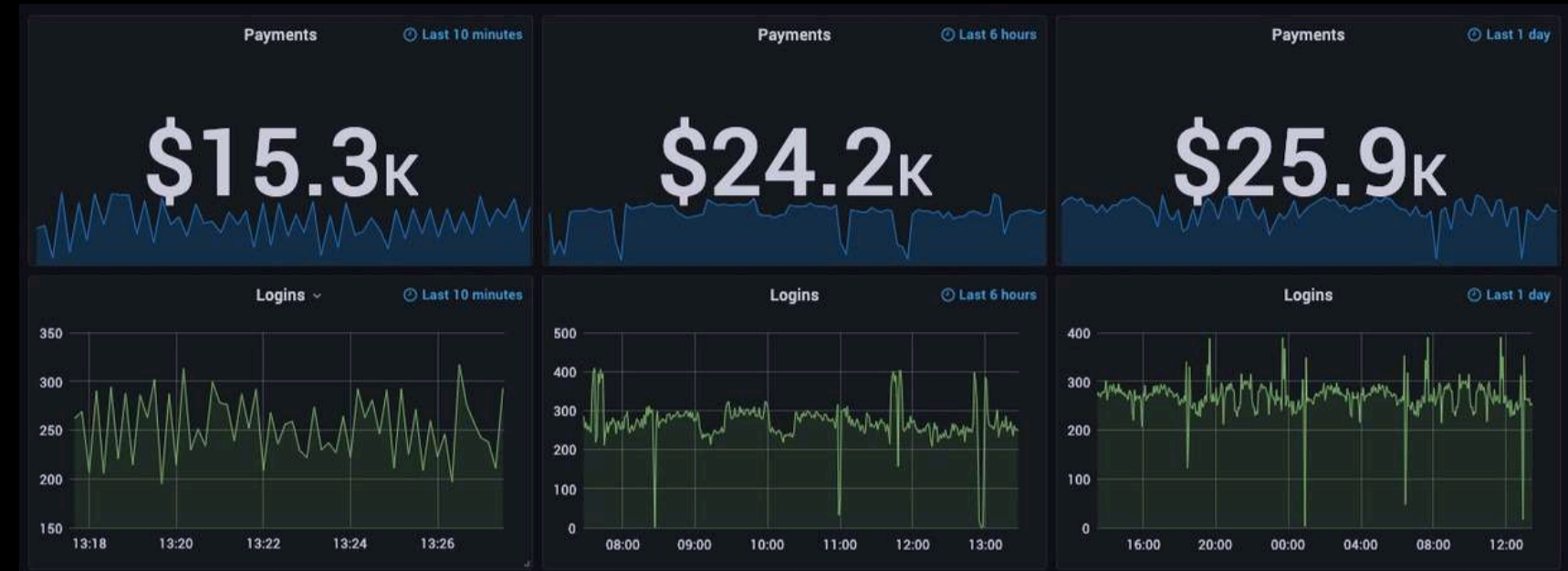
TEMPERATURE 25°C

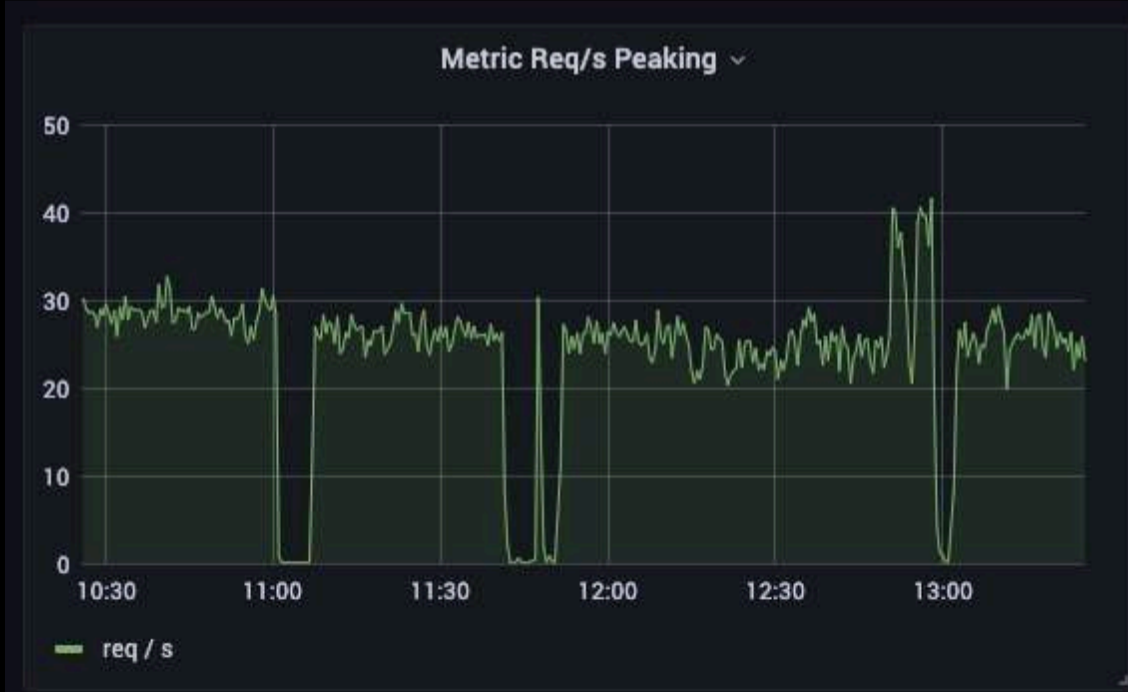
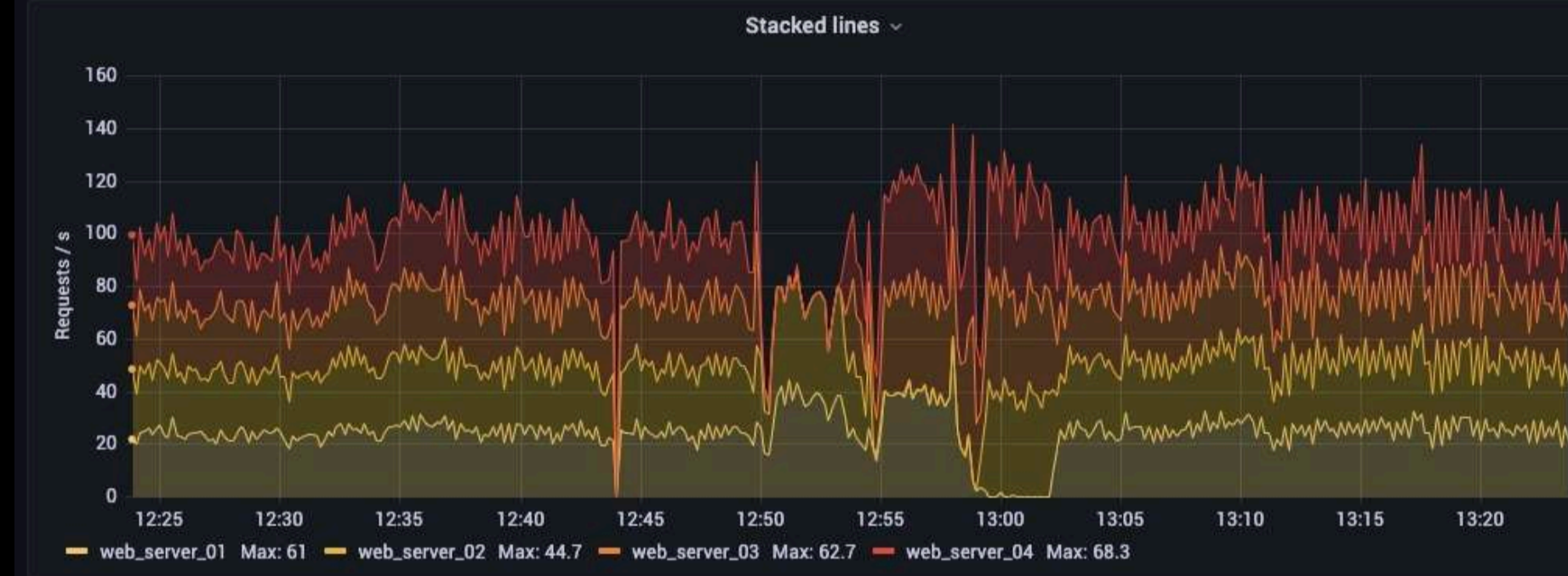
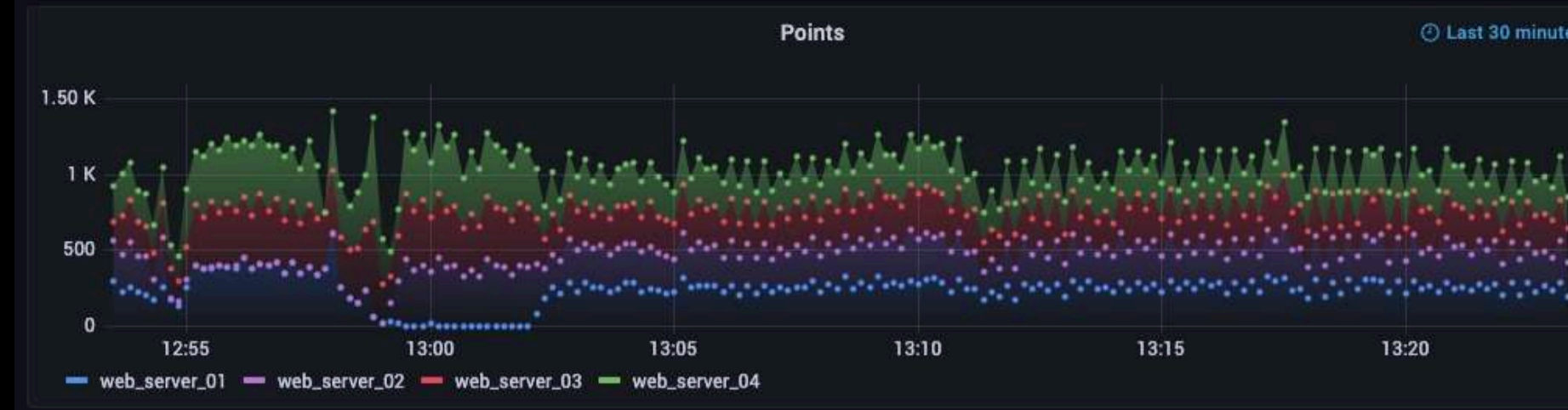
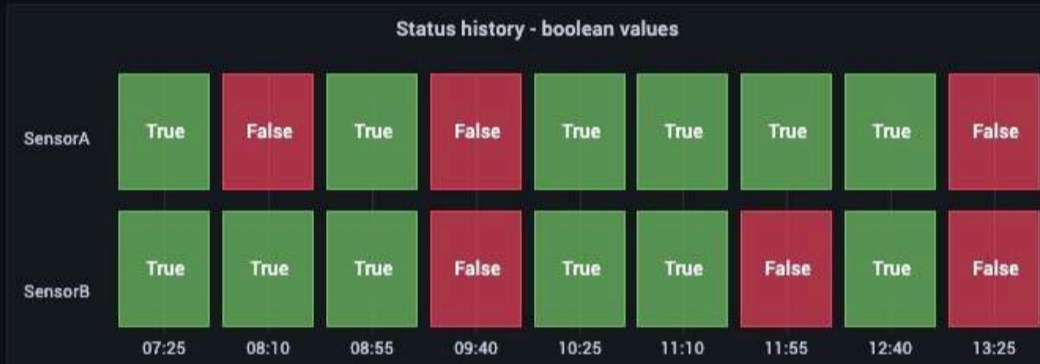
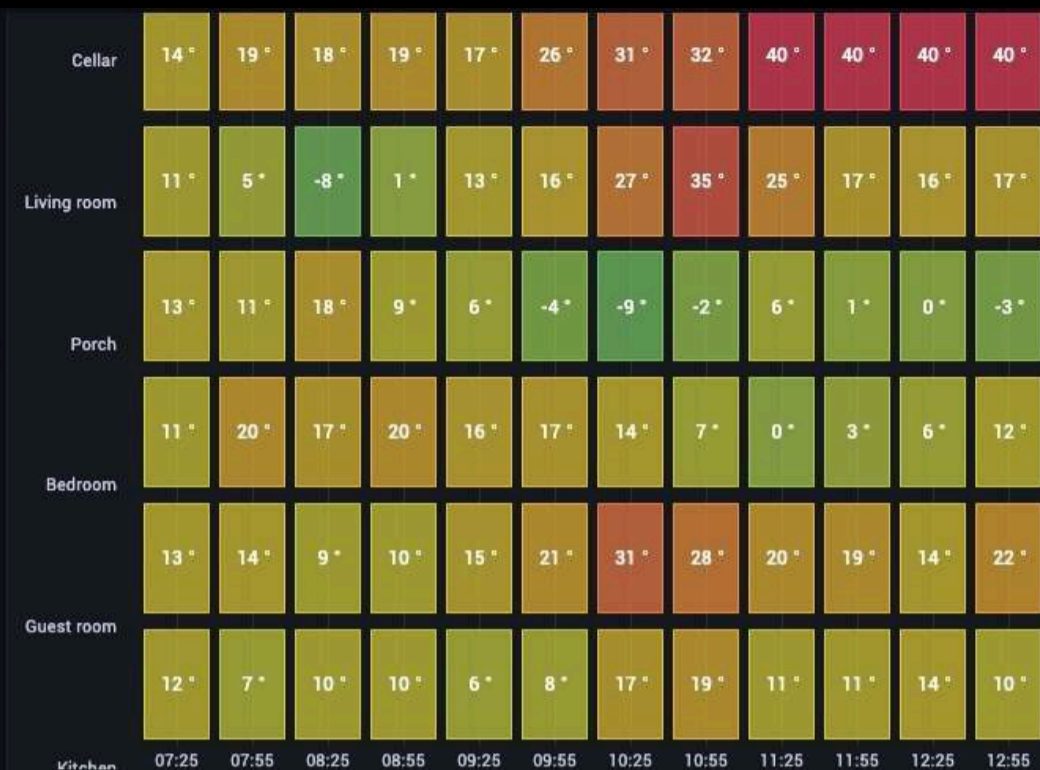
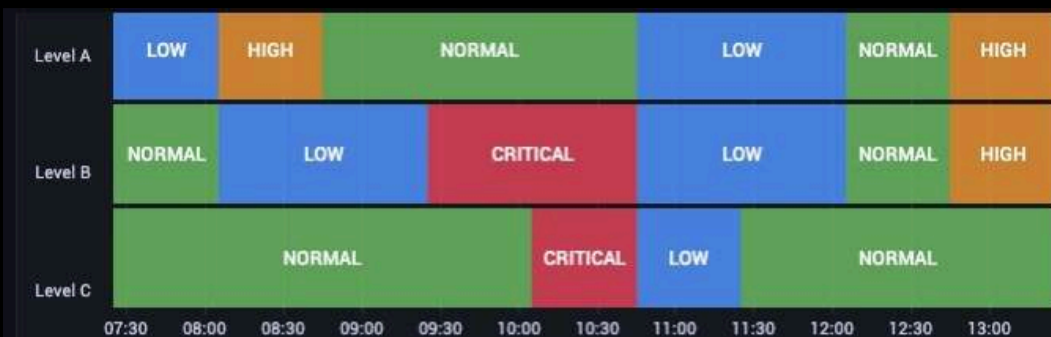
DASHBOARDS + VISUALIZATION

Color backgrounds or value using thresholds or value mappings				Image cell and bar gauge cell				
Field	Max	Mean	Last +	id	Catch phrase	Image	Something	Sensor
A-series3	105*	97.8*	104*	1	Cross-group next generation mid...		Engineering	36.7
A-series6	91.3*	82.2*	87.7*	2	Horizontal non-volatile system e...		Support	4.80
A-series4	89.9*	84.2*	86.6*	3	Open-source analyzing hierarchy		Legal	79.3
A-series12	94.6*	88.8*	84.9*	4	Universal 4th generation alliance		Support	20.8
A-series	82.2*	78.7*	80.0*	5	Multi-tiered mobile analyzer		Sales	36.7
A-series11	78.1*	71.6*	72.2*	6	Profound interactive installation		Engineering	96.5
A-series1	69.6*	66.4*	67.6*	7	Multi-lateral object-oriented colla...		Product Management	22.3
A-series13	69.8*	65.1*	66.9*	8	Re-contextualized zero tolerance...		Accounting	8.40
A-series2	46.4*	41.0*	44.0*	9	Re-contextualized multimedia po...		Services	98.8
A-series9	41.9*	32.1*	40.9*	10	Open-source impactful moderator		Business Development	77.7
A-series7	27.1*	19.8*	22.5*	11	User-friendly explicit website		Training	90.5
A-series10	24.4*	19.2*	20.2*	12	Customizable analyzing process ...		Research and Develop...	60.5
A-series14	20.2*	13.9*	19.5*	13	Networked 6th generation foreca...		Human Resources	20.3
A-series8	27.0*	20.9*	14.6*	14	Fully-configurable 24/7 matrices		Business Development	45.9
A-series5	21.1*	16.0*	11.4*	15	Cross-platform bottom-line circuit		Accounting	46.6

Gradient color scheme				
Field	Max	Mean	Last +	Min
A-series11	79.5*	74.7*	76.7*	70.0*
A-series9	82.9*	76.8*	71.7*	71.1*
A-series10	73.6*	65.1*	67.3*	56.4*
A-series	58.1*	46.8*	58.1*	37.5*
A-series3	57.9*	54.5*	52.2*	51.6*
A-series5	54.4*	47.2*	47.6*	42.4*
A-series1	70.5*	58.6*	46.0*	45.1*
A-series14	50.4*	42.7*	39.7*	37.3*
A-series7	44.4*	37.8*	34.8*	32.8*
A-series6	43.8*	38.0*	33.2*	32.9*
A-series12	30.9*	25.6*	24.2*	20.5*
A-series8	19.4*	14.0*	8.96*	8.54*







Dashboard Loads Peaking
 FIRING for 1h 37m 23s
 > 1 instance

ExampleAlertAlwaysFiring
 FIRING for 13d 42m 47s
 > 4 instances

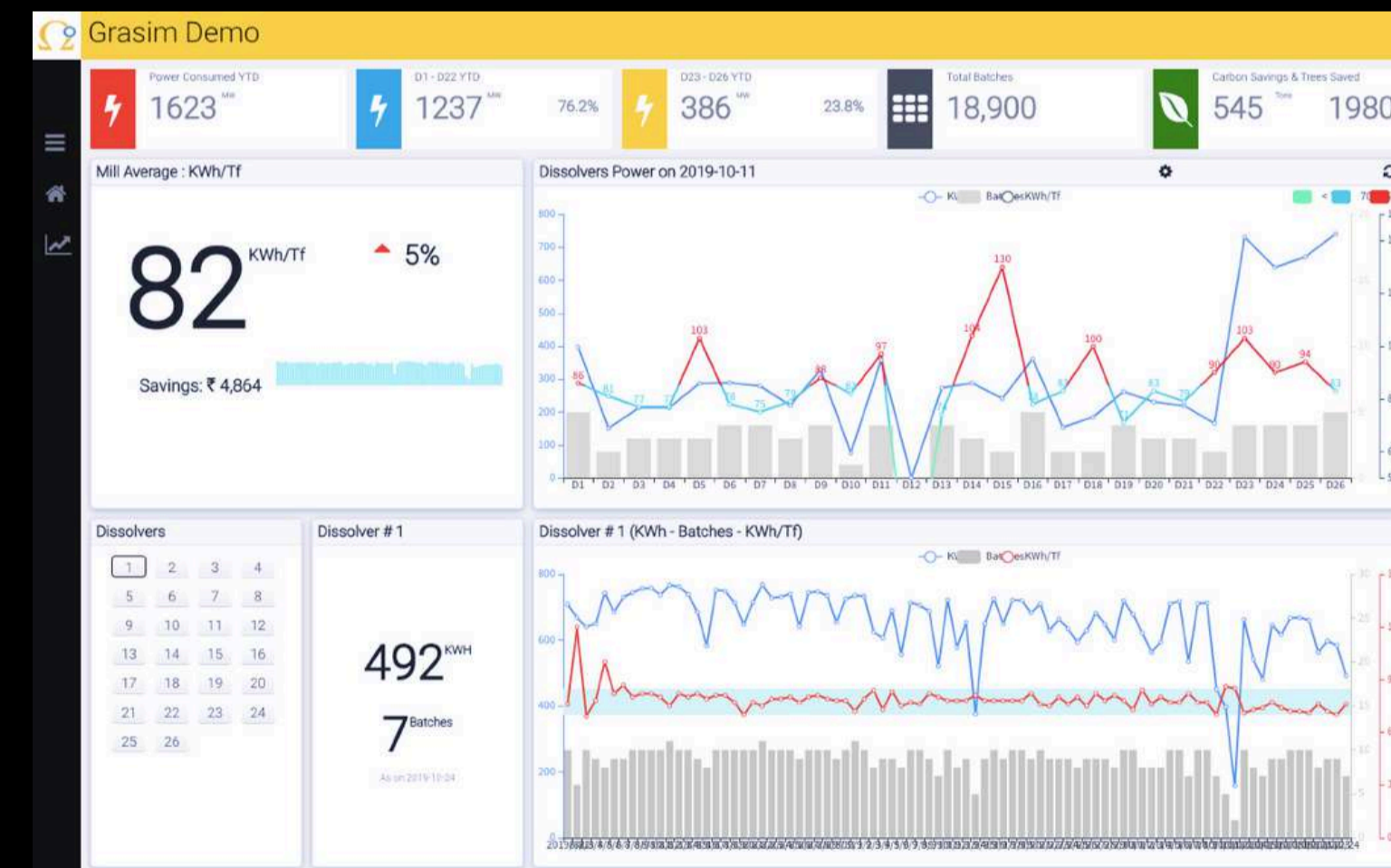
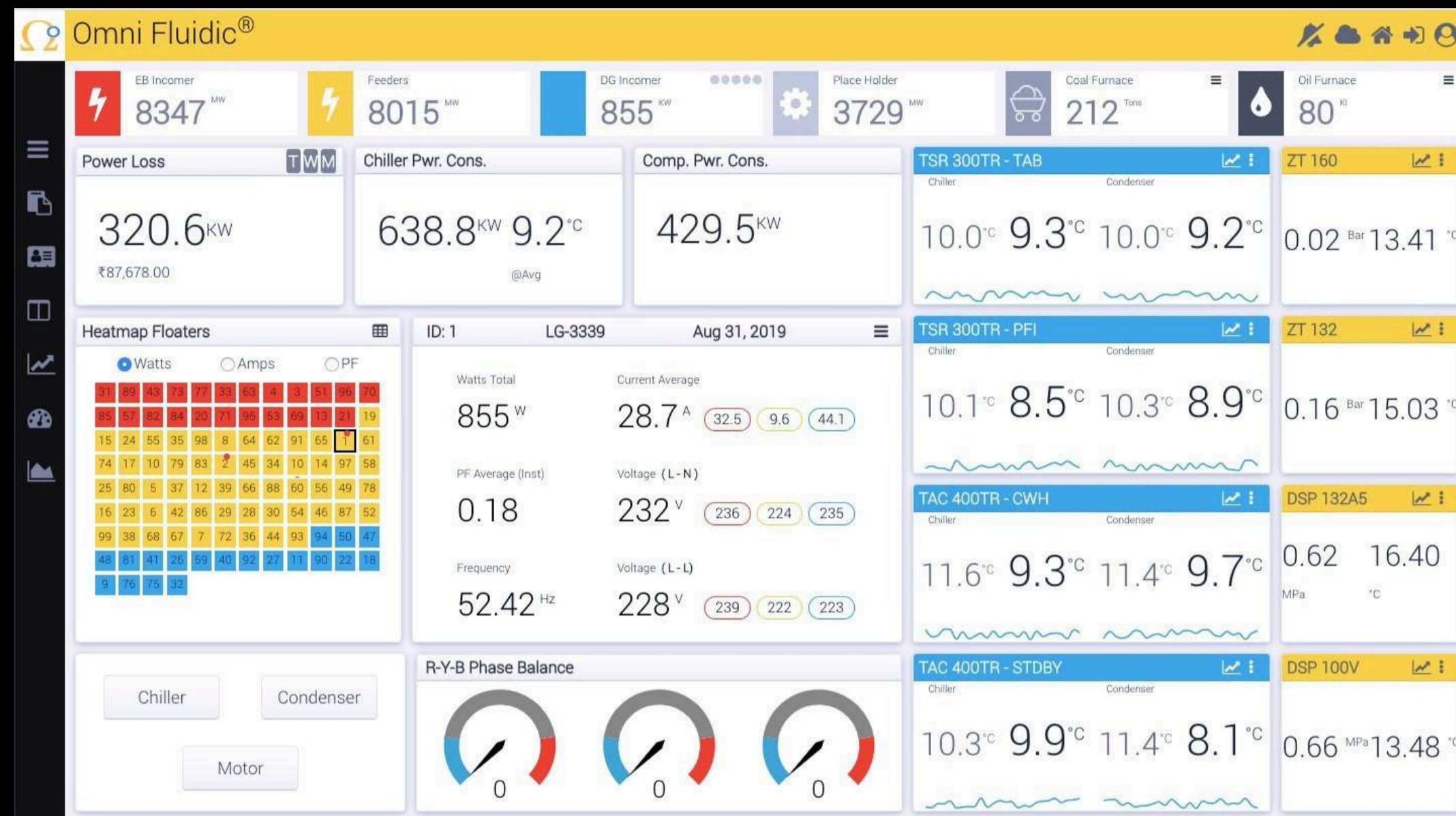
ExampleAlertAlwaysFiring
 FIRING for 13d 42m 47s
 > 4 instances

Metric Requests Peaking
 FIRING for 1h 25m 23s
 > 1 instance

Multi series alerting



DASHBOARDS & MOBILE APPS



شركة ريجكوم الهندسية

REGTCOM

ENGINEERING COMPANY

IOT SOLUTIONS | INDUSTRIAL TRADING | INDUSTRIAL SUPPORT | CONSTRUCTION



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