AgileWorks

IoT Platform for Energy Optimisation & Centralized Monitoring

Centralized Monitoring

• Global Enterprises • Distributed Facilities

AgileWorks enables central monitoring of energy use patterns and equipment health from single dashboard for hundreds of offices of an enterprise. Event driven alerts enable management by exception and adherence to global benchmarks.

Prepared by

Nitin Nistane

08Nov2019

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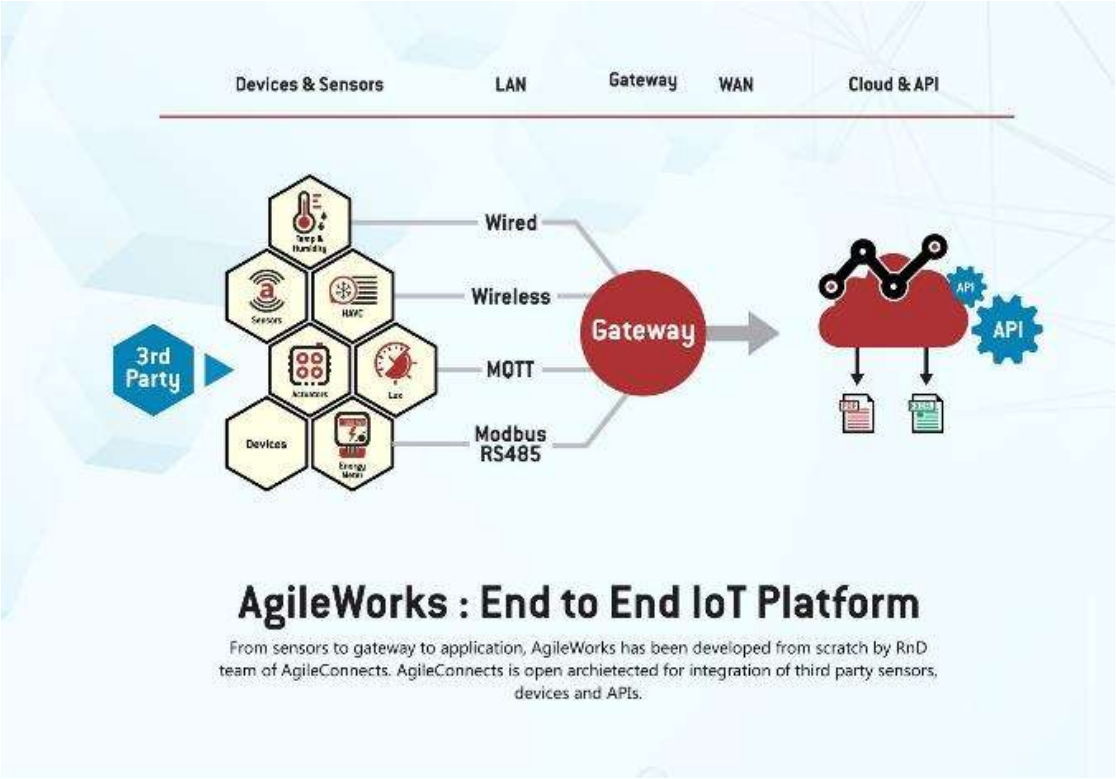
Vision Statement



Be a recognised Internet-of-Things (IoT) technology provider with focus on commercial buildings to deliver

- Energy Savings and use pattern
- HVAC Automation and Asset Monitoring
- Sensor data monitoring: Temperature, Humidity, CO2, PIR
- People demographic and head count (Work in progress)
- Other equipment automation and monitoring: DG Set, Water Management, Lighting (Work in progress)

RoI < 1 Year from Energy Saving Alone	Asset Performance Monitoring	Integration with third party sensors and middleware
Non Intrusive	Non Disruptive	Dynamic Scheduling

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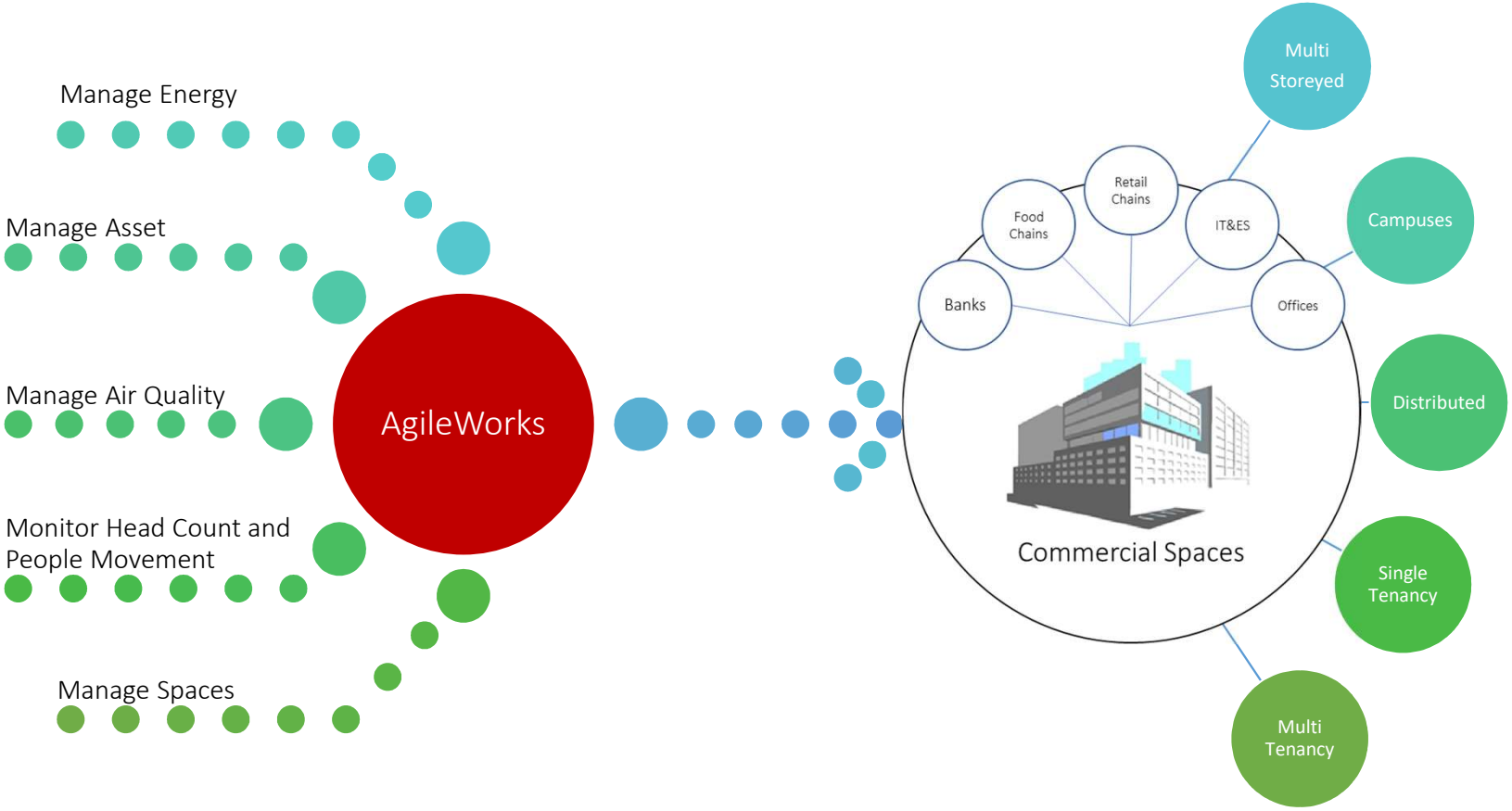
IoT for Commercial Spaces



Own Chiller Own AHUs	Central Chiller Own AHUs	BTU Metering Compatible
Distributed Premises	Single Tenancy	Multi Tenancy

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Business Value

Monitor & Control

- HVAC, Chillers, Freezers, Façade lighting, Other Powered devices
- Dynamic Schedules
- Air Quality: CO2
- Air economizer and demand ventilation
- Smart Energy Metering with 16 energy quality parameters and use patterns

Energy Saving

- Energy savings on HVAC operations
- Less than 1 year RoI
- Energy savings is due to
- Dynamic schedules
- Presence activation and
- Absence deactivation

Asset Performance

- Error and status codes
- Alerts on Temperature breach
- Alerts on Energy benchmark breach
- Alerts on device failure
- Analytical report for energy use patterns
- Analytical reports on equipment use pattern

Full Play WiFi • Advanced algorithms • Real life savings exceeds 10%

Internal Commercial Spaces

AgileWorks is suited for commercial spaces : Single Occupancy or Multi-tenanted. HVAC & Lighting consumes 70% or more energy. AgileConnects instantly transforms legacy HVAC and Lighting infrastructure into connected to deliver energy savings and centralized monitoring.

AgileWorks

- Complete HVAC range:
  - Splits
  - Cassettes
  - Ductables
  - VRV/VRF
  - Chillers AHUs & Fan Coils
- Designed for small, mid sized and large:
  - Commercial spaces
  - Corporate & Government
  - IT&ITES

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Case Study: Future Retail

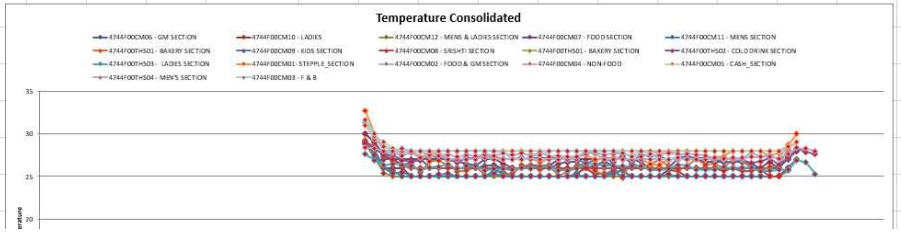
FUTURE RETAIL

4744 - Big Bazaar, Kandiwali 04/06/2019

SN	KWh-SCHN-HVAC-HVAC-4744F00D	KWh-SCHN-HVAC-HVAC-4744F00D	KWh-HVAC	Energy Breach			Temp.Breach		Manual Override	RealFeel Min	RealFeel Max
				High	Low	Off Hr Spk	High	Low			
1	819.63	528.71	1348.34				23			33	39

EQUIPMENT STATUS

SN	MQTT DEVICE ID	FRIENDLY NAME	HVAC TYPE	FAULT DESCRIPTION	FAULT COUNT
1	4744F00CM01	4744F00CM01-	Carrier (1 P 2C)	HVAC: LP1 Fault	3
2	4744F00CM04	4744F00CM04 - NON-FOOD	Carrier (1 P 2C)	HVAC: SPPR Fault	11



FUTURE RETAIL

FUTURE RETAIL LIMITED 04/06/2019

SN	Code	Branch Detail	KWh-EB	KWh-HVAC	KWh-REFRIGERATION	KWh-CUSTOM	Energy Breach			Temp.Breach		Manual Override	RealFeel Min	RealFeel Max
							High	Low	Off Hr Spk	High	Low			
1	4733	Big Bazzar, Mulund, Mumbai	None	1248.31	None	None	None	None	None	57	3	37	None	None
2	5548	Big Bazzar, Panvel	None	342.48	None	None	None	None	None	98	None	36	None	None
3	4744	Big Bazaar, Kandiwali	None	1348.34	None	None	None	None	None	23	None	None	None	None
4	2613	Big Bazzar, Xion Mall, Hinjewadi	None	1390.23	None	None	None	None	None	36	None	3	None	None
5	2556	Big Bazaar, Ville Parle	1284.5	582.82	None	None	None	None	None	6	None	1	None	None
6	4859	Big Bazaar, The Hub Mall, Goregaon	None	673.09	None	None	None	None	None	None	None	None	None	None
7	4788	Big Bazaar, Tarapur	None	505.39	None	None	None	None	None	None	None	1	None	None
8	2626	Big Bazzar, Virar	None	1279.18	None	None	None	None	None	None	None	8	None	None
9	4830	Big Bazaar Malleshwaram	2882.05	949.69	None	None	None	None	None	None	None	6	None	None

Daily Store report being mailed to Store Manager:

- Daily Energy consumption
- HVAC Equipment Status
- Equipment Errors indicating service needs
- Manual overrides at store
- Temperature maintained at various zones
- Local Min and Max weather temperature

Consistent above 10% energy saving

Daily Area report being mailed to Area Manager:

- Daily Energy consumption per store by load type
- HVAC Equipment Status at every store
- Manual overrides at every store
- Local Min and Max weather temperature

Recommendation: Service equipment to get rid of HP/LP faults and redraw new baseline of consumption

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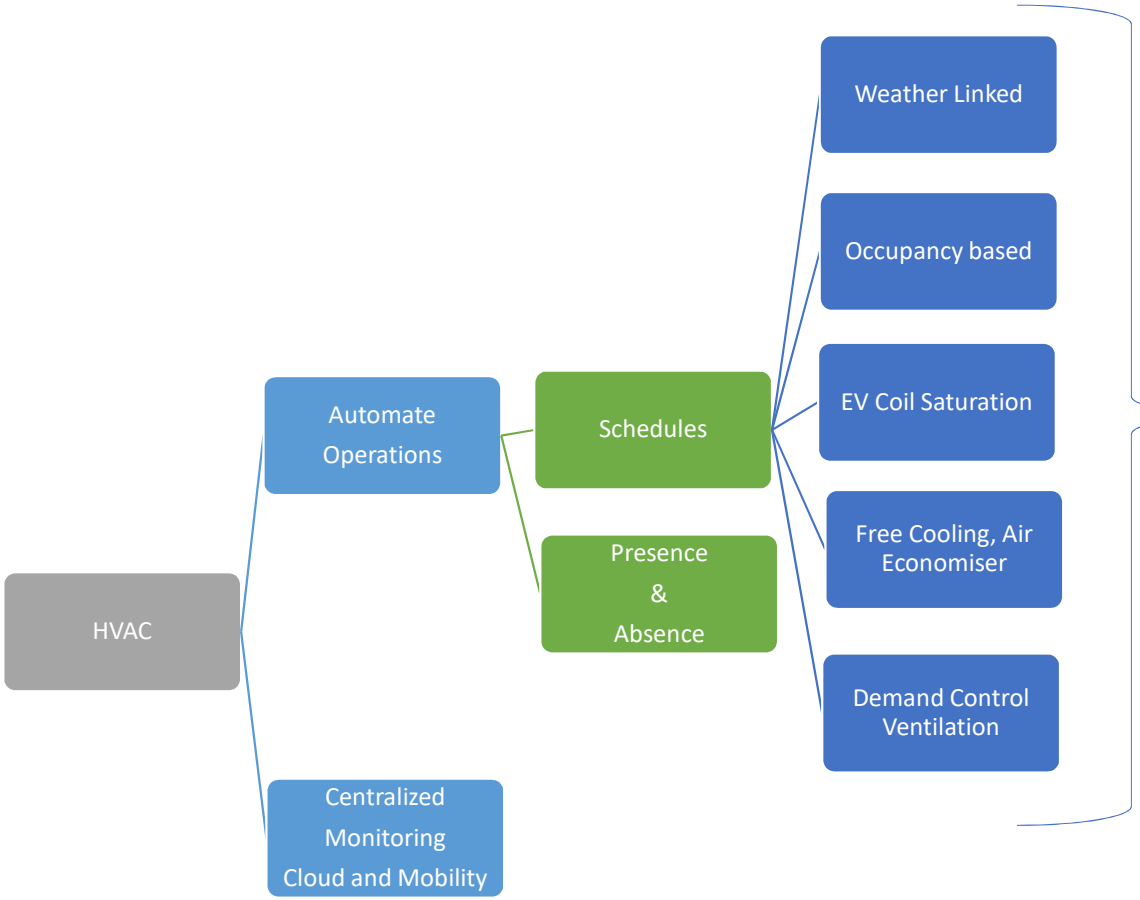
AgileWorks Features

- HVAC Operation Automation
- HVAC Asset Monitoring
- Air Quality Monitoring

HVAC Automation



More than 10% saving

Additionally

CO2	Lighting
• Customer Comfort • Staff comfort	• Energy Saving • Attention Seeking

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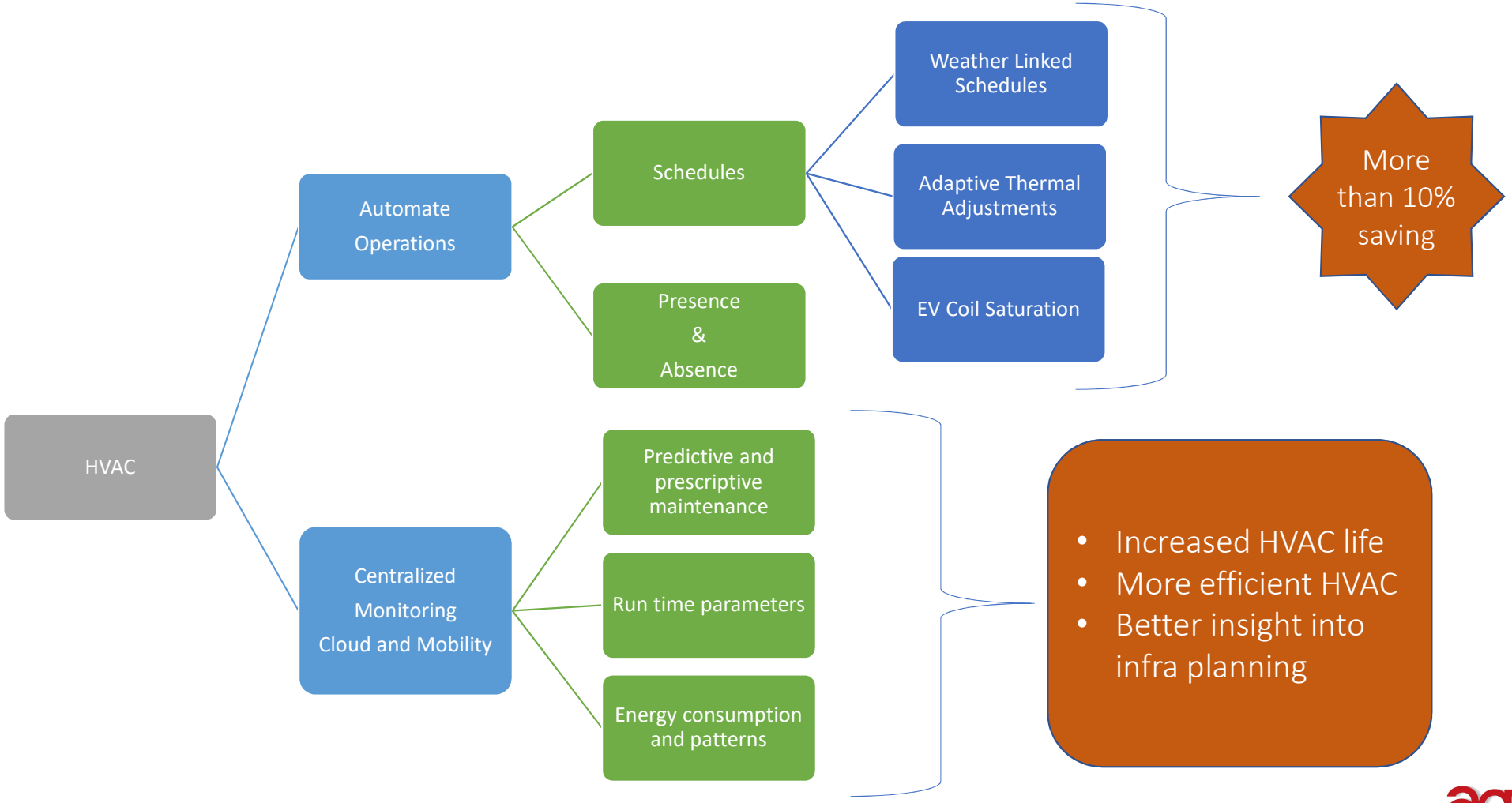
Centralized Monitoring



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Cloud Snapshots

Energy Monitoring from Cloud:

Daily energy consumption for the month with intelligent predictive algorithm

Alert on exceeding daily benchmark

Local temperature: min, max and real feel

Energy Monitoring from Cloud:

- Hourly energy consumption
- Key power quality parameters viz. PF, Hz, Voltages and currents

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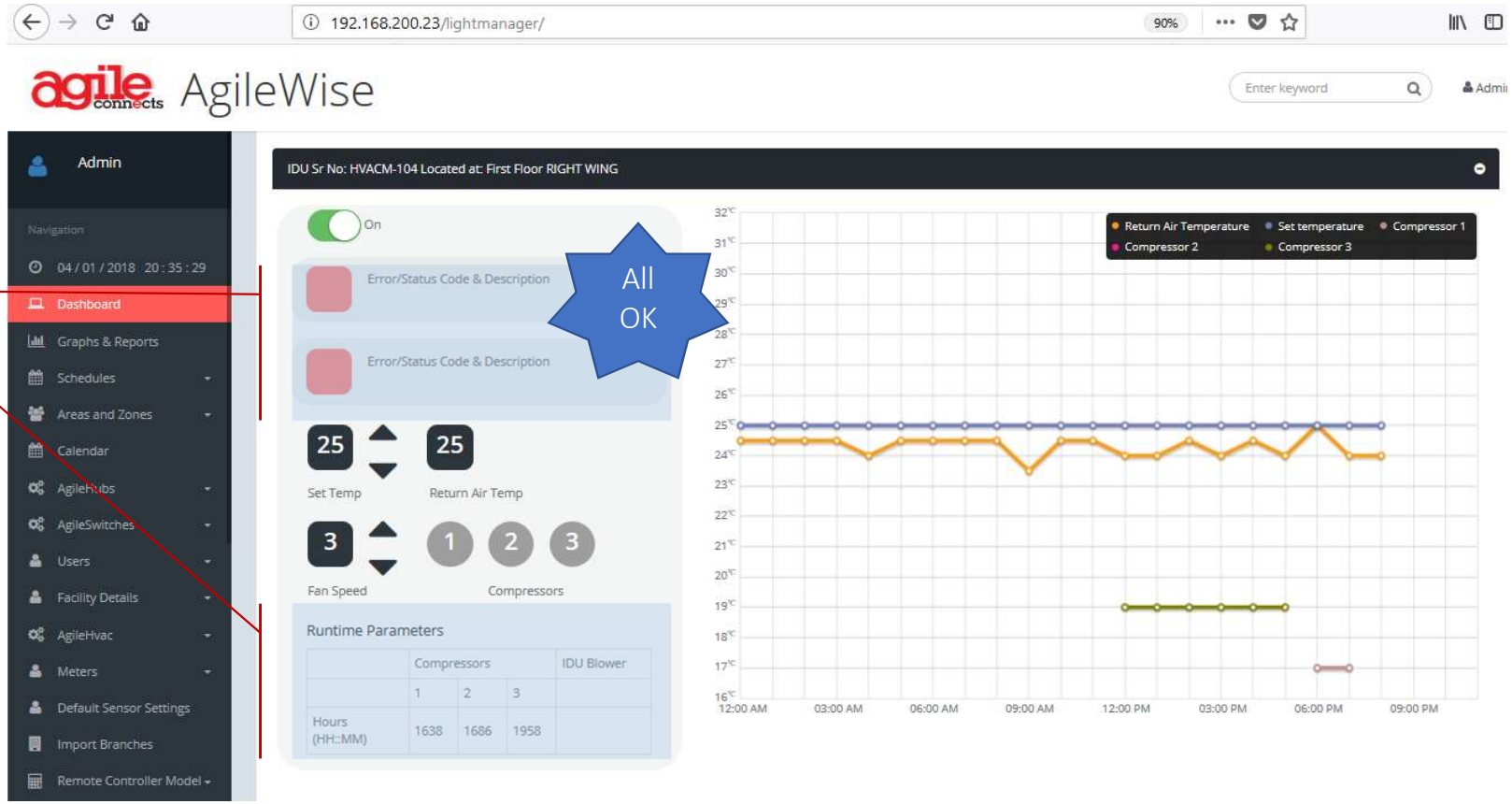
Remote Control on Web

HVAC monitoring & Control

Key AC Health Parameters:

- Overrides
- Error Codes: HP, LP, SPPR
- Compressor run hours
- Blower Run hours
- Time to Next service
- Alert on malfunction



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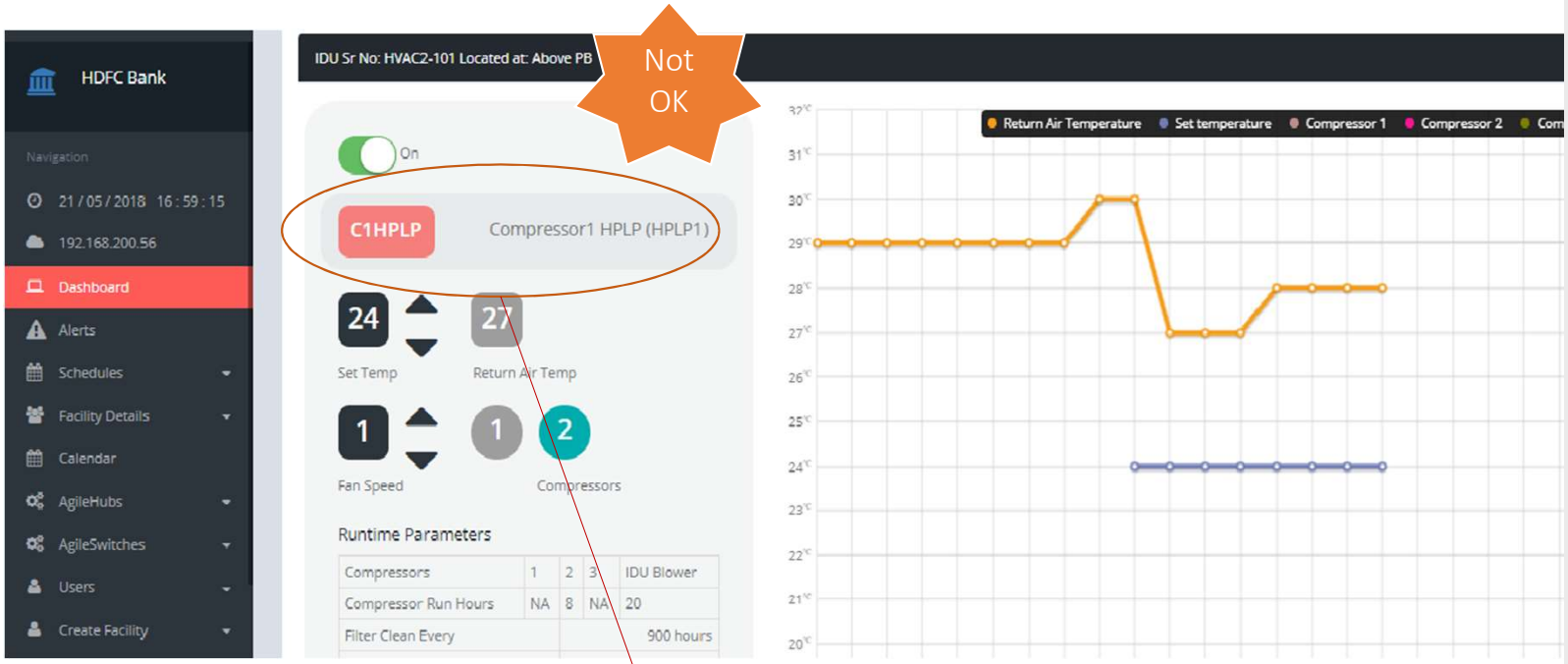
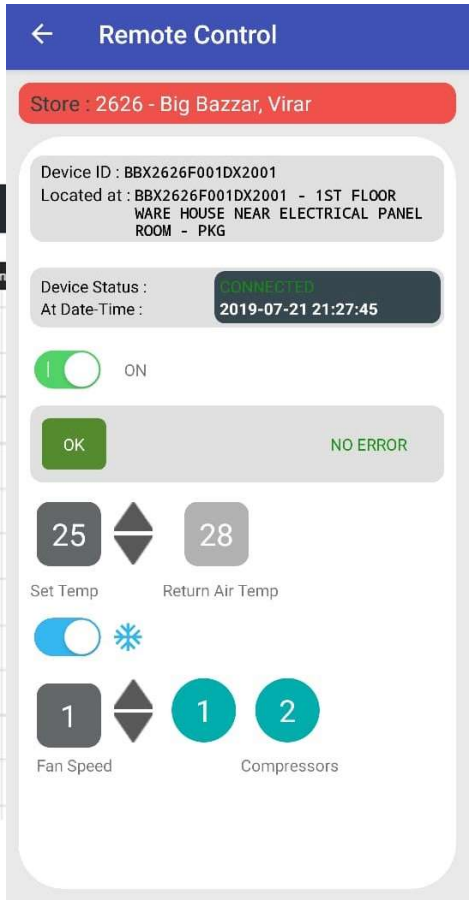
Remote Control on Mobile

HVAC monitoring & Control



Mobile App



Alert HVAC Unit malfunction

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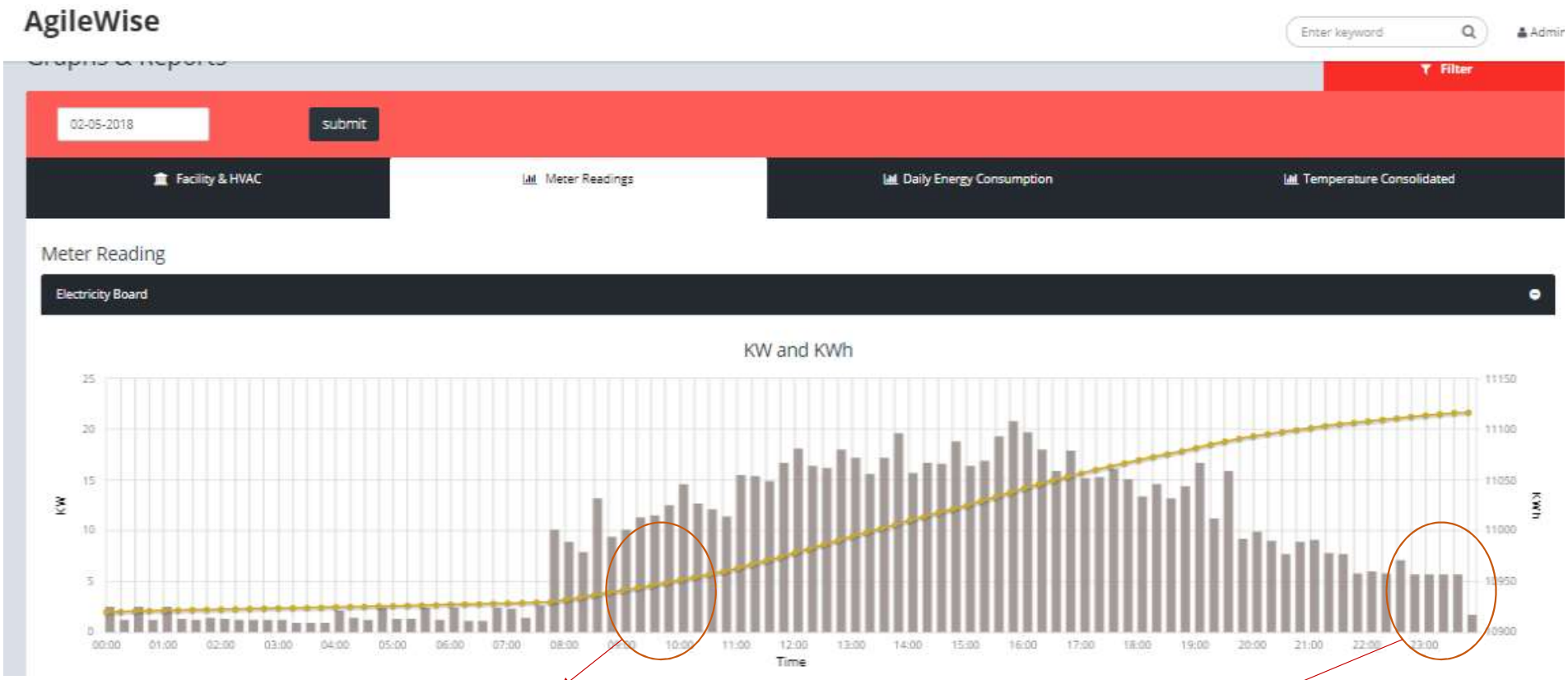
Energy use insights



Alerts on leakages

Cleaning Staff switches ON ACs. Schedule is supposed to switch ON at 9AM

Alert

Staff working late

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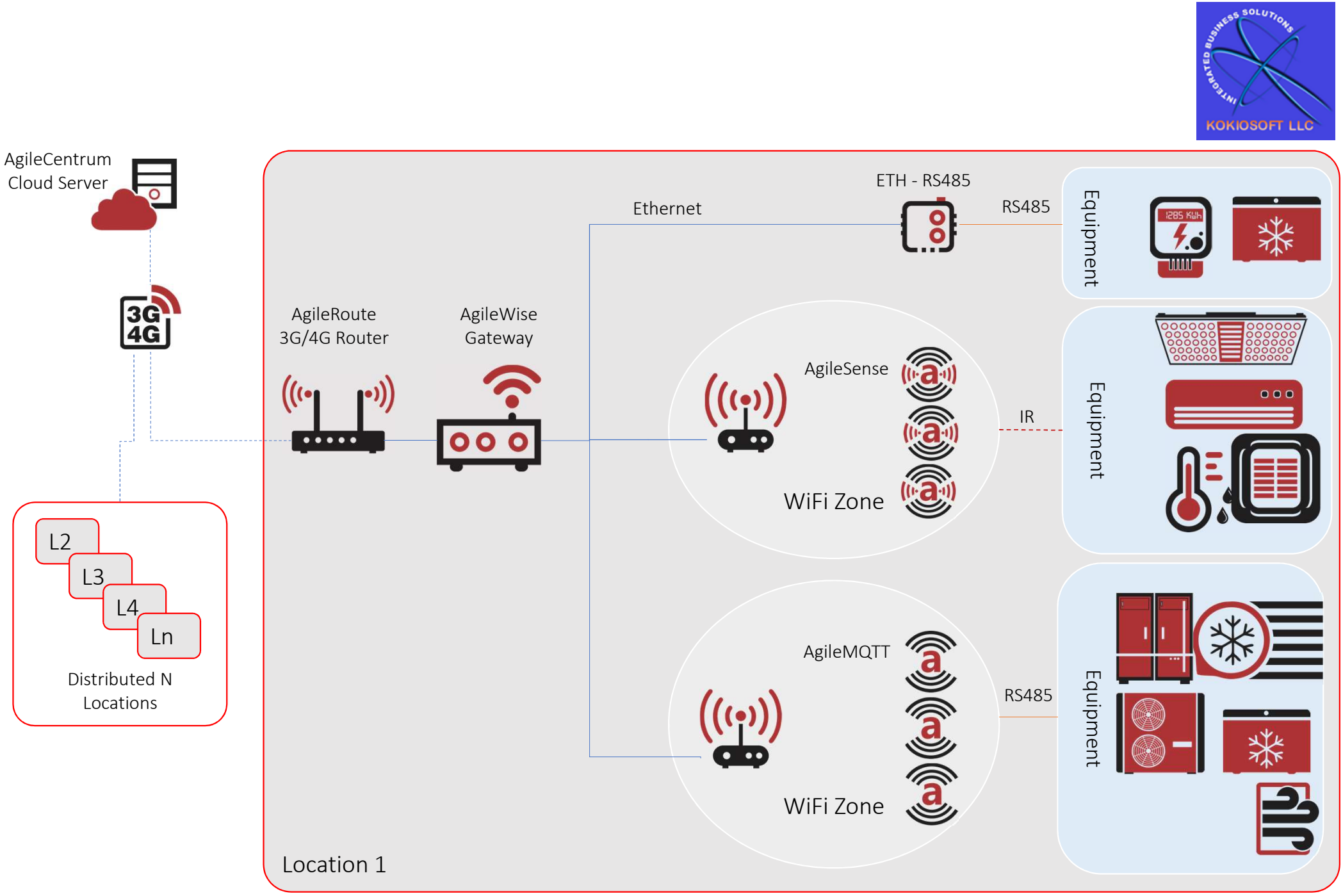
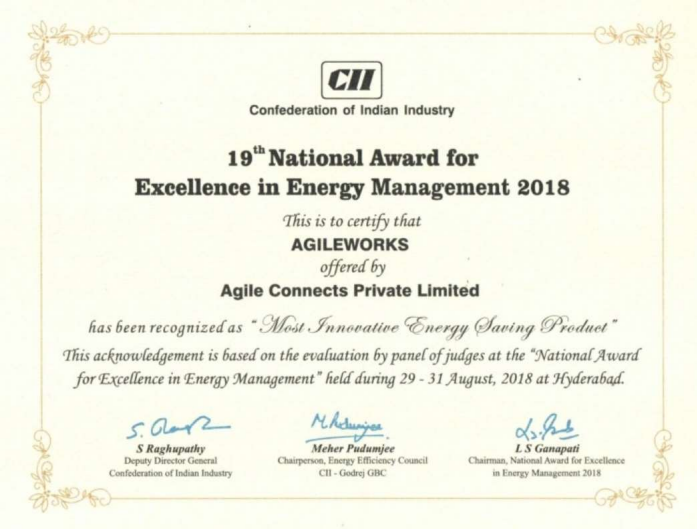

AgileCentrum
Cloud Server
3G
4G
L2
L3
L4
Ln
Distributed N
Locations
AgileRoute
3G/4G Router
AgileWise
Gateway
Ethernet
ETH - RS485
RS485
Equipment
AgileSense
IR
WiFi Zone
AgileMQTT
RS485
WiFi Zone
Location 1

Recognitions



Confederation of Indian Industry

19th National Award for Excellence in Energy Management 2018

This is to certify that

AGILEWORKS

offered by

Agile Connects Private Limited

has been recognized as "Most Innovative Energy Saving Product"

This acknowledgement is based on the evaluation by panel of judges at the "National Award for Excellence in Energy Management" held during 29 - 31 August, 2018 at Hyderabad.

S Raghupathy, Deputy Director General, Confederation of Indian Industry
Meher Pudumjee, Chairperson, Energy Efficiency Council, CII - Godrej GBC
L S Ganapati, Chairman, National Award for Excellence in Energy Management 2018

Industry Recognition

MITCON Technology Business Incubator
- Promoted by : Department of Science & Technology,
- Supported by : Ministry of Micro, Small & Medium Enterprises, Govt. of India, New Delhi.

IS/ISO 9001:2008 Certified
MITCON CONSULTANCY & ENGINEERING SERVICES LTD.

Letter of Support

I, Mr. Chandrashekhar Shankarrao Bhosale, son of Mr. Shankarrao Shamrao Bhosale, in my capacity as Head of MITCON Technology Business Incubator being funded by Department of Science & Technology (DST), Govt. of India, have examined the request of Anand Aurangabadkar, Director of Agile Connects Private Limited to validate the nature of business and after due examination, I recommend that the business being pursued by the applicant is innovative in nature and may therefore be considered as a business covered under the definition of Startup as per the notification no. G.S.R. 180(E) dated February 17, 2016 (F. No. 5(91) / 2015-BE.I).

The detailed reasons for the recommendation are provided in the annexure to this letter.

Mr. Chandrashekhar Shankarrao Bhosale
Head
MITCON Technology Business Incubator

Date : 02/01/2017

Place : Pune, Maharashtra

Start-up India

CIO Review 20 Most Promising IoT Startups 2018 INDIA

AgileConnects :

Enabling Commercial Establishments to Optimize Energy Consumption

Commercials spaces comprising of retails outlets, bank branches, food outlets, shopping complexes, offices, hospitals, warehouses, hotels and other commercial buildings have high energy requirements. HVAC (Heating, Ventilation, Air Conditioning, and Lighting) applications contribute to more than 70% of energy consumption in commercial spaces. HVAC clearly is the biggest impact area in our goal to be energy efficient.

AgileConnects, with offices at Mumbai, Pune, New Delhi, Nagpur and Bangalore, has embarked on a mission to get organisations to global benchmarks on energy consumption for green establishments. Headed by a team of seasoned professionals and serial entrepreneurs, this start-up has developed a robust platform - AgileWorks, which offer customers the opportunity to optimize energy consumption, thereby resulting in cost savings in commercial spaces. AgileWorks is a full play IoT platform that comprises of sensors, actuators, gateway and cloud application.

> AgileWorks is a full play IoT platform that comprises of sensors, actuators, gateway and cloud application

Arvind Khungar, Chief Strategy Officer, AgileConnects takes us through the features of the solution- One of the first components of AgileWorks is AgileSense which is essentially a cluster of sensors and actuators that monitors everything from temperature and humidity to light levels, air quality and people movement. AgileSense is micro-controller-based software-controlled electronics with embedded advanced algorithms that controls and communicates with connected equipments through wired or wireless media. AgileSense also communicates either on wire or wirelessly with in-premise gateway, AgileWise. AgileWise is capacitated for local decision-making based on weather conditions, date and time, user preferences and operating parameters of the connected equipment to arrive at efficient operating set points without compromising on user comfort. Another key component of the solution is AgileCentrum, a cloud-based application that allows central monitoring and configuration of software/firmware while delivering accurate analytical reports. AgileCentrum also archives data for future analysis. The gateway AgileWise, communicates with AgileCentrum in the cloud over multiple WAN technologies.

Built to deliver ROI in less than 12 months, AgileWorks also boasts of advanced features that enable detection of equipment capacities and readjustment of set point to prevent equipment overdrives. The non-disruptive architecture of the solution is an added benefit, which means no alteration to electrical cabling or electrical side of the equipment is required. Further, all the necessary parameters are monitored without any intrusion. AgileWorks is a completely software-driven solution that can go live within six hours of deployment. All updates and patches are distributed from the central cloud server to each sensor and actuators. The ease of implementation in retrofit implementations only adds to the client's advantage.

Ideal for commercial spaces anywhere between 2000sft to 20,000sft, AgileWorks has been rolled out in three large banks and its branches. Strengthened with a team of versatile consultants, AgileConnects brings in the ability to respond to any energy leakages in the system and suggest appropriate measures. Signing off, Arvind Khungar shared that AgileConnects has a comprehensive3-year product development roadmap which will expand AgileWorks functionality to monitor elevators, escalators, communication racks, air side economizers and demand-controlled ventilation, peak load management and more. CR

Arvind Khungar, Chief Strategy Officer

Industry Recognition

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nitin@agileconnects.com ; khungar@agileconnects.com ; anand@agileconnects.com

THANK YOU !