BridgeThings

A novel and highly scalable wireless monitoring & control solution

The Challenge

The need for monitoring resource consumption is growing – Climate change policies and global competitiveness are driving this change – PAT scheme, GreenPro / Industry norms etc.

Climate Change Policy

Competitiveness

Green Buildings/Industry

Resource consumption monitoring

"Things" that needs to be monitored are growing – understanding consumption in detail has become necessary to improve performance & drive efficiency.

Energy

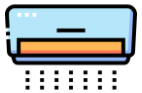
Water

Lighting

Solar

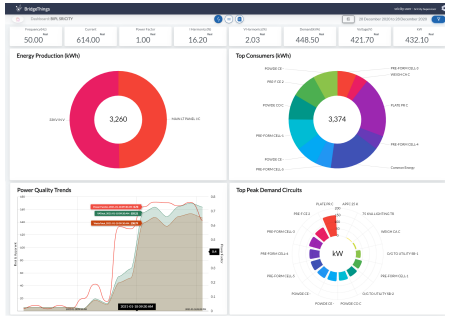
Gas

Fuel



Air Conditioning

Biogas



Monitoring different assets

A unified approach

- Wireless network with BridgeThings Long range IoT gateways – covering entire facility.
- Wireless sensors will be connected to energy/water/gas/fuel meters or anything that needs to be monitored, like motors, pressure, temperature etc.
- Sensors upload consumption data to cloud via the gateway – 24x7
- Cloud based data analytics platform for understanding consumption patterns and improve efficiency.

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Wireless Utility monitoring & efficiency

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Cloud Server

- Fuel, gas consumption can be monitored and correlated with production information
- Process data like operating temperature, pressure can also be monitored by the same system
- Loads like HVAC & Lighting can be monitored and optimized.

1 MW Biogas/ Solar Unit

- Continuous load data
- Energy consumption patterns
- Power quality information

BridgeThings Long range wireless

Grid Connection

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Other utilities & process information

Fuel | Gas | Process data | HVAC | Lighting

- Segregated Unit wise consumption
- Load contribution information
- Unit wise energy cost information

BridgeThings Long range wireless

BridgeThings Long range wireless

- Complete water consumption data – supply & demand.
- Effective planning of water supply with detailed understanding of consumption patterns

Energy Consumption

Unit-I Production Line 1	Unit - II Production Line 2	Unit III Energy meter	Unit - IV Energy Meter	Unit - V Energy Meter

Water Consumption

Water for steam | Process water | Borewell water

LoRaWAN Gateway(s)
Each serving a range of 2KM radius

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4G/Ethernet Backhaul

Network Server

Application Server

LORAWAN <> MODBUS

LORAWAN <> Pulse

LORAWAN <> 0-10V/0-5V

LORAWAN <> 4-20mA

LORAWAN <> RS232

LORAWAN <> I2C

Protocol Converters

Energy Meter

Water Meter

PLC

4-20mA Sensors

RS232 Sensors

I2C Pressure Sensors

Installations

Use Case – Specific Energy monitoring & management.

- Energy, water supply & consuming assets are widely distributed in the facility.
- Monitoring them on continuous basis will help us understand consumption patterns.
- For example – Understanding what stage the facility is consuming more resources – **what's the peak specific energy** ? – energy/tonne

Use Case – Water Monitoring

- Water flow meter are usually widely distributed across the plant. A wired system is difficult to execute
- Wireless system will help in easy integration and any future deployments – drop in an end node and data will be uploaded
- Helps you increase the number of points that are monitored, helping you to understand your consumption better.

Use case – Emergency Light monitoring

- Emergency lights are critical for safety - They need to be lit 24x7.
- Monitoring them daily to replace failed ones is an important task.
- Battery powered, lux monitoring sensors can easily monitor emergency lamps and relay the information to a central dashboard.
- Quick replacement of failed/flickering lights – can help a lot during emergency.

Use Case - Monitoring motors

- Wirelessly monitor condition of motors to predict failures and save critical production time.
- Easy to integrate assets that are widely distributed onto to a single cloud platform.
- Understand assets that are relatively highly stressed in the entire production line.

Use Case – AC Energy Savers

- BridgeThings SPAC energy savers monitors temperature & humidity in a space and control air-conditioners to operate in a comfortable zone.
- Split ACs across the plant/facility can be controlled from a central dashboard like setting a fixed setpoint
- Understanding the cooling pattern of each AC – will help us know if it requires immediate maintenance – filter blockages, lower rate of cooling etc.
- Can control any air-conditioner, irrespective of tonnage and make.
- As our devices are not connected to the AC's directly, there won't be an issue with the warranty

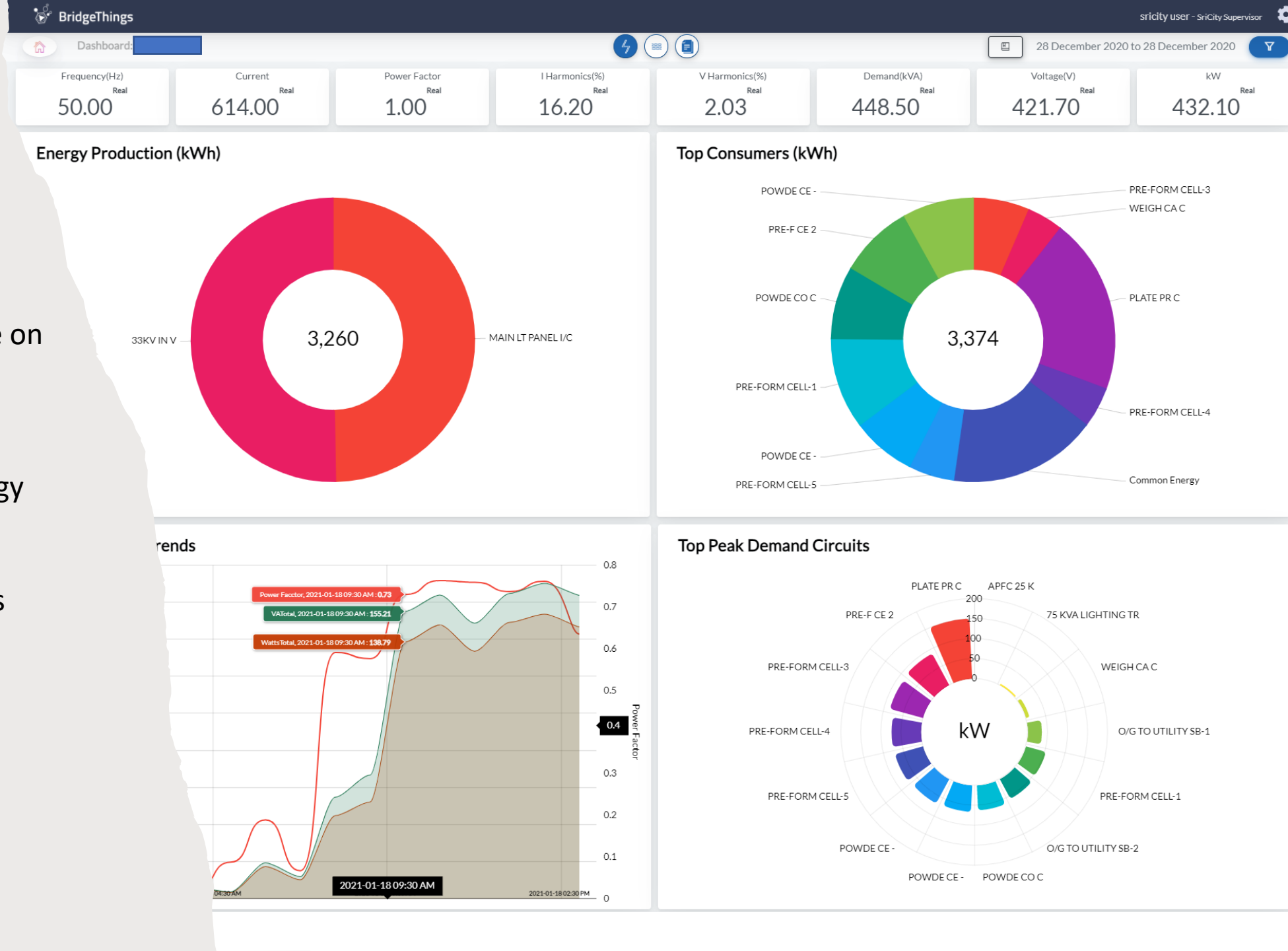
Cloud – based dashboard.

Complete energy consumption data available on the cloud.

Alerts can be configured based on avg. specific energy usage.

Quantify the improvements done at each stage of the production line.

Take steps towards sustainable by improving resource consumption in a phased manner.



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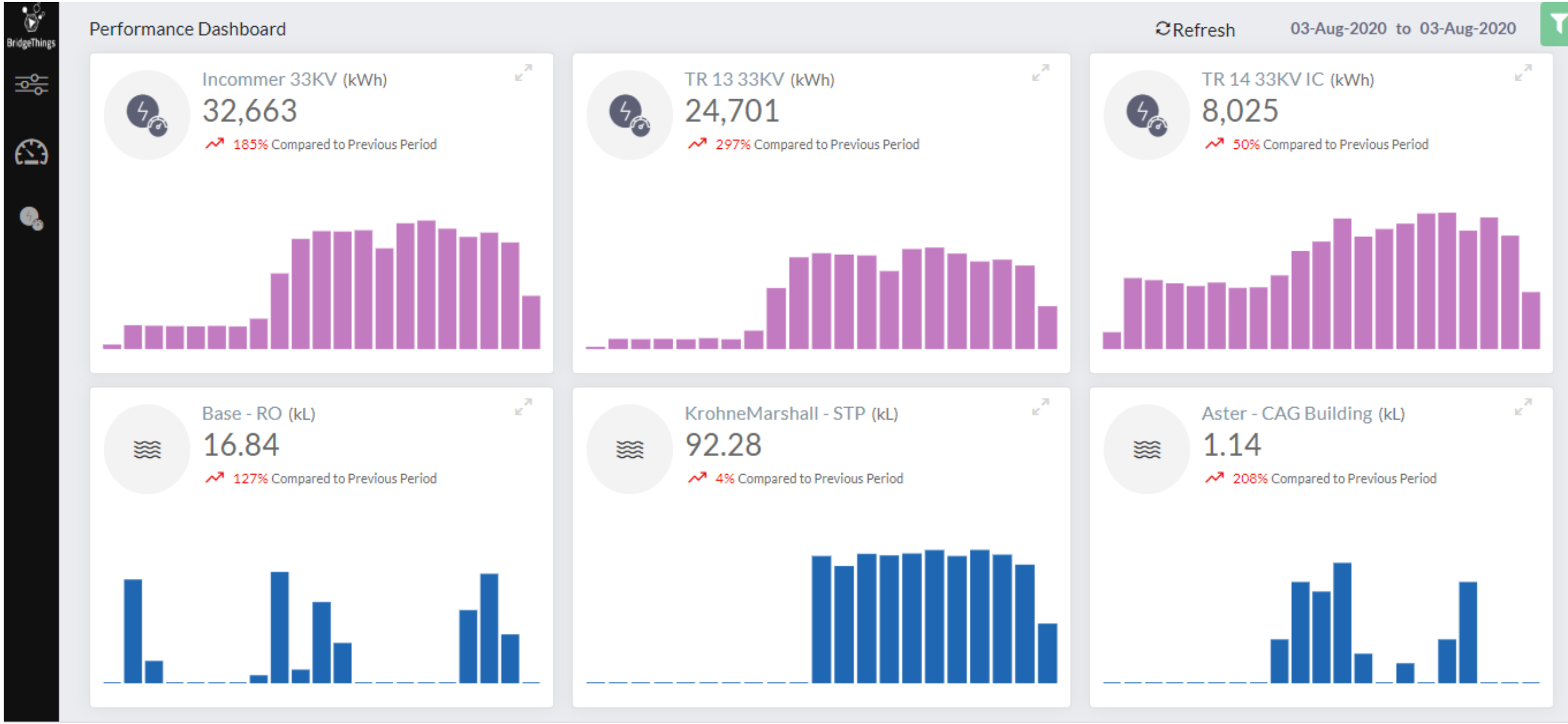
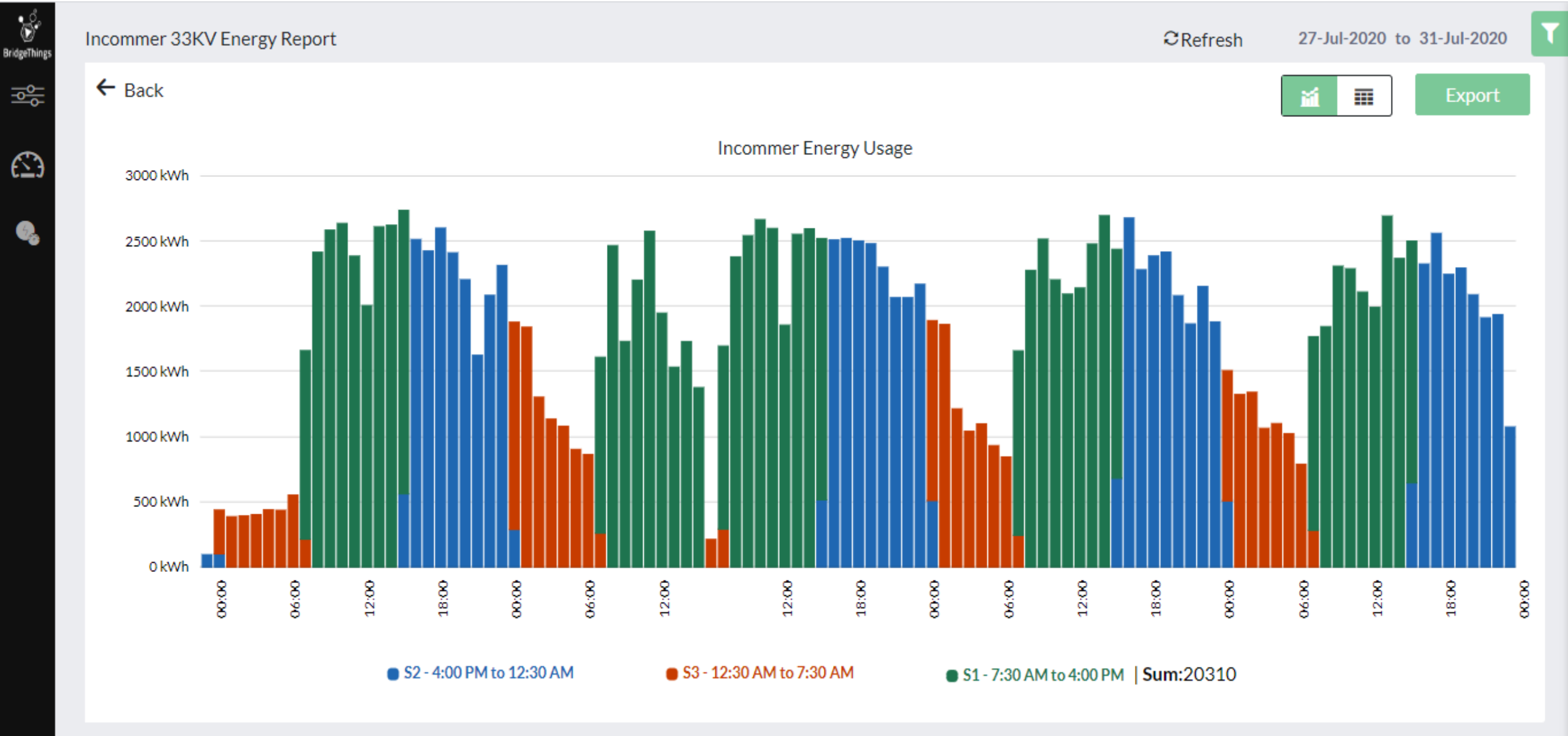
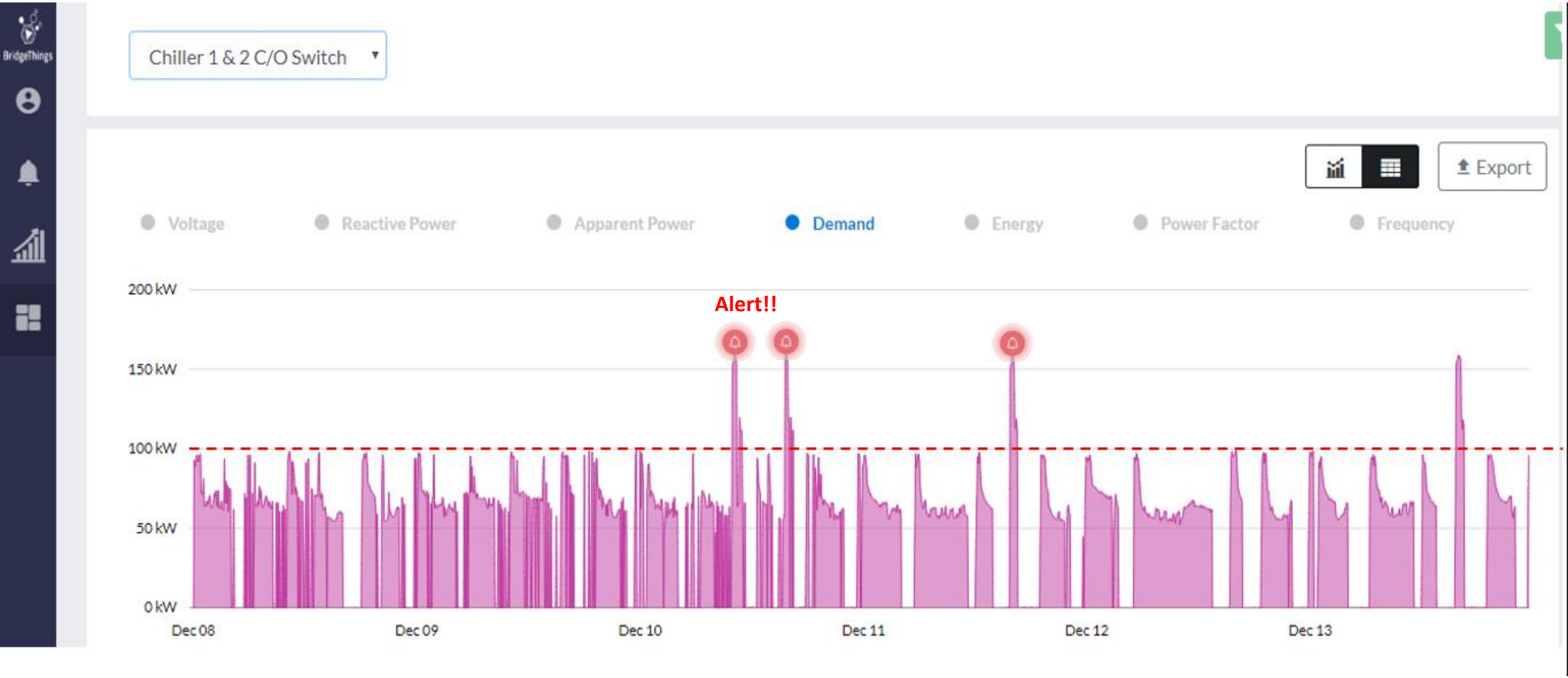
Customized dashboard - Monitoring multiple utilities



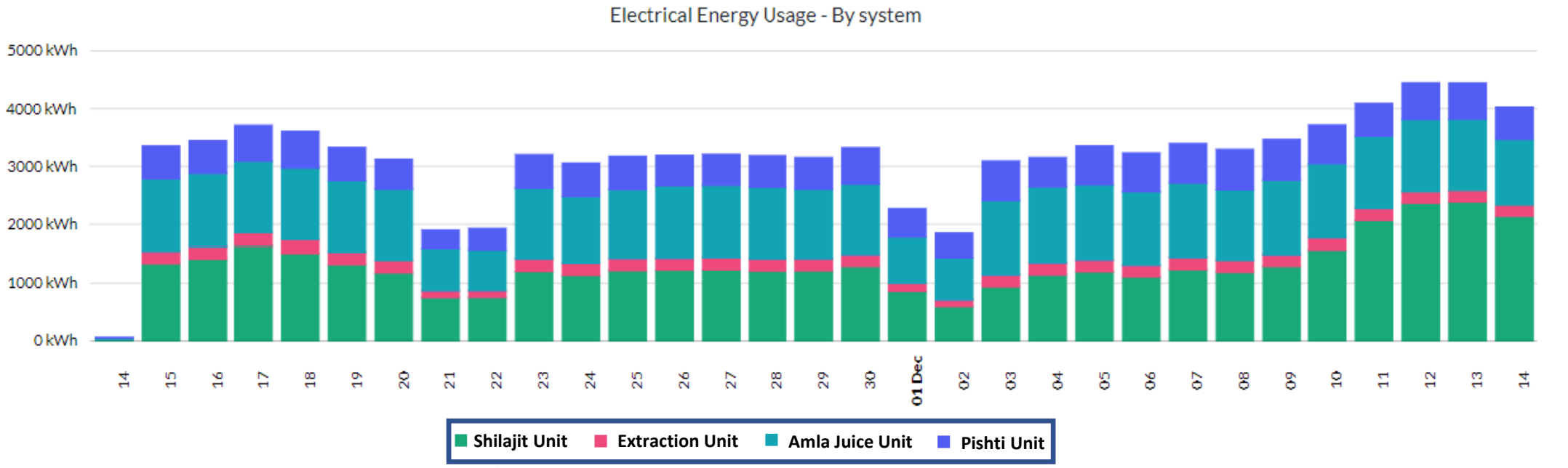
Time based/Shift wise energy monitoring

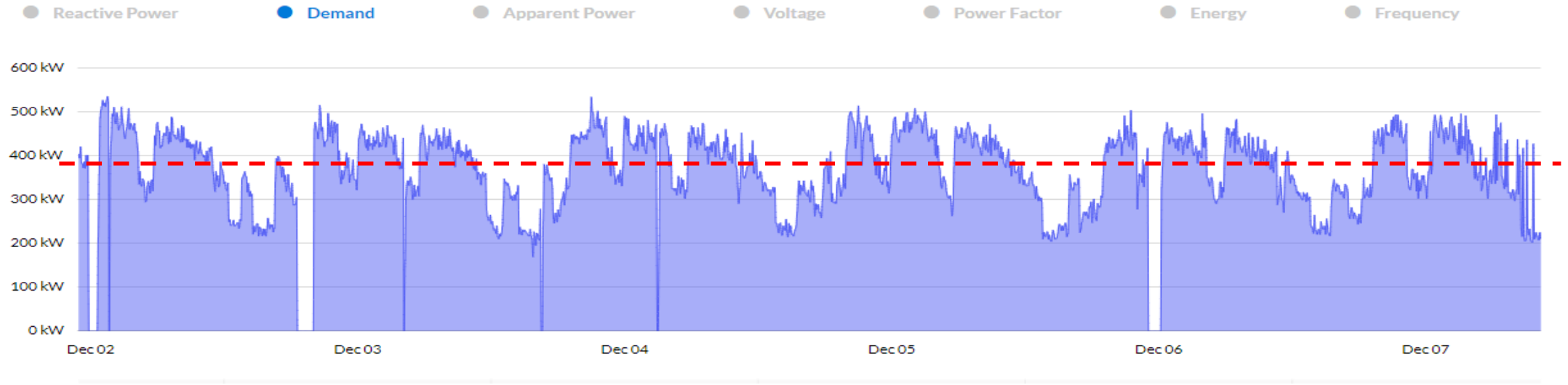


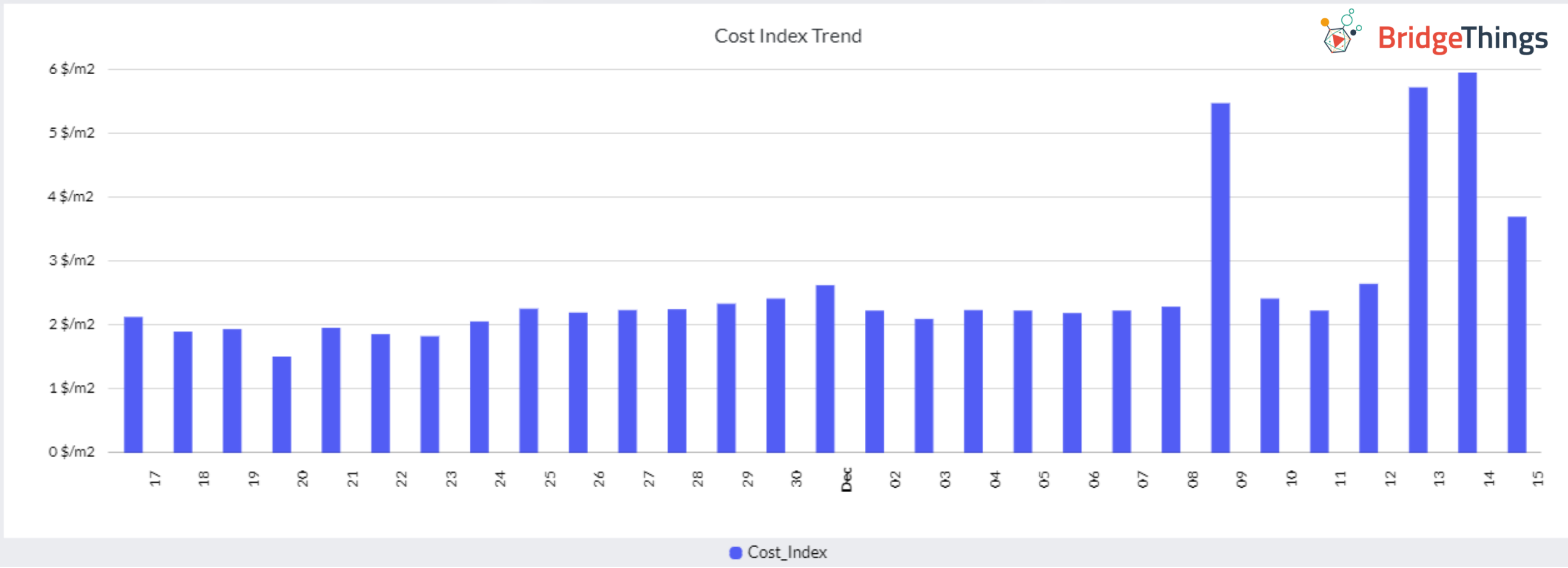
Load wise monitoring with alerts – identifying inefficiencies



Demand trimming, Energy segregation

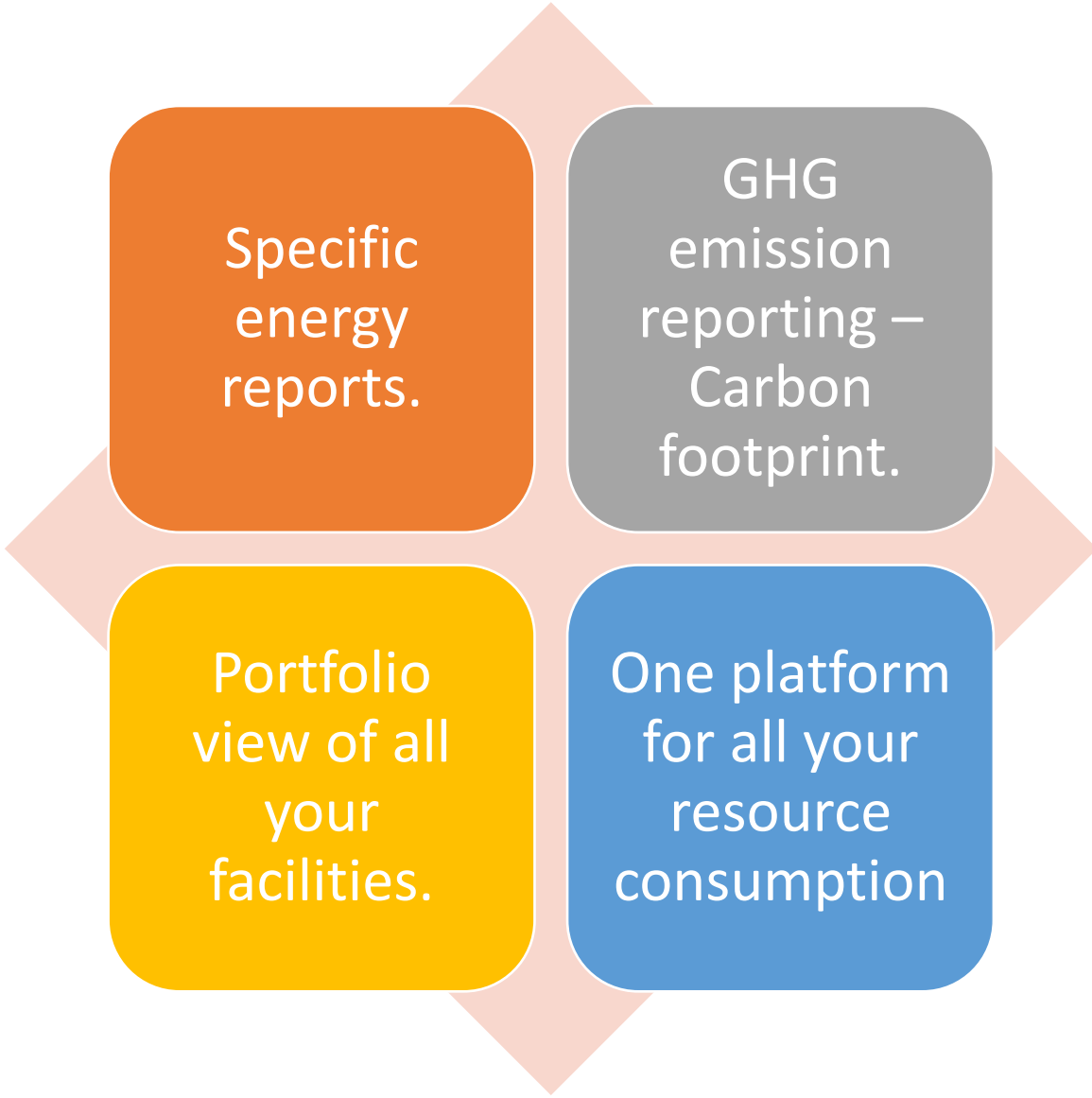






- Cost Index Trend – Overall cost /m2
- Helps track costs on daily basis
- Monitor unified resource costs for all utilities.

Customizations



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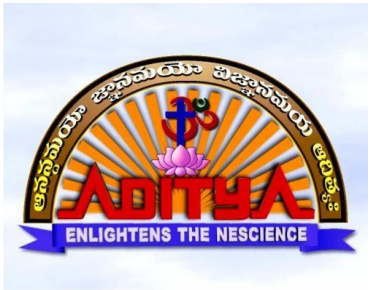
Few Customers



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Email : info@bridgethings.com
Phone: +91 9948078292, 9177299566
www.bridgethings.com