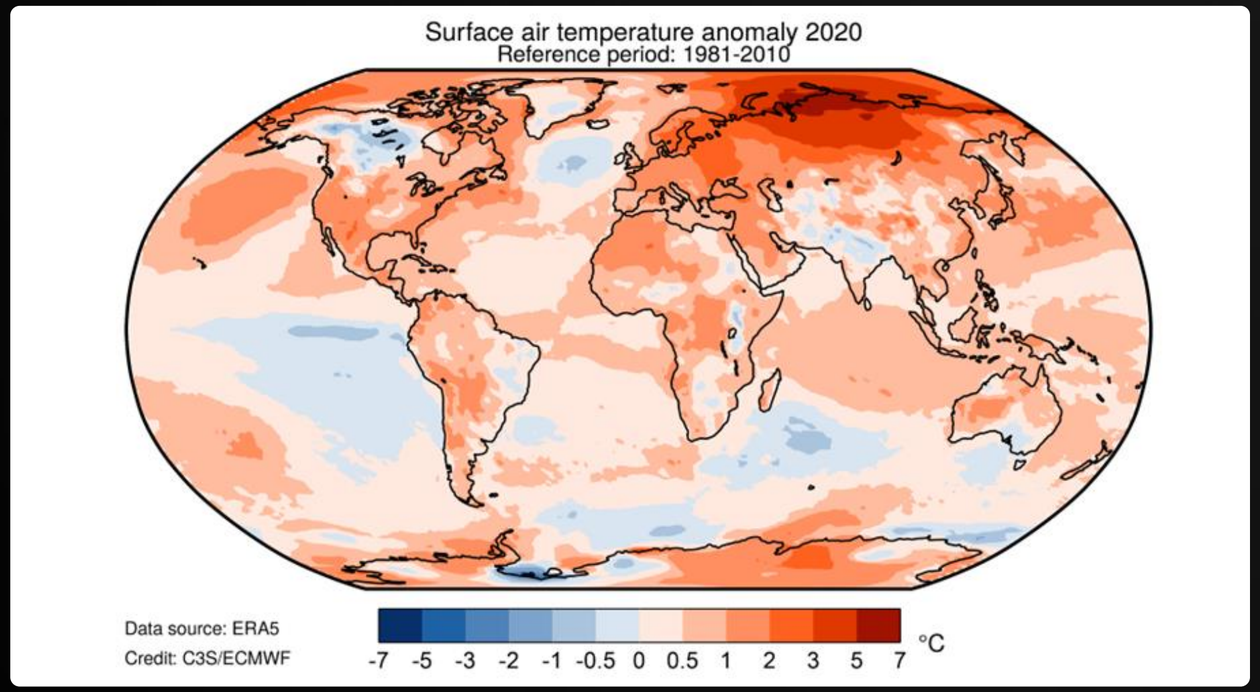
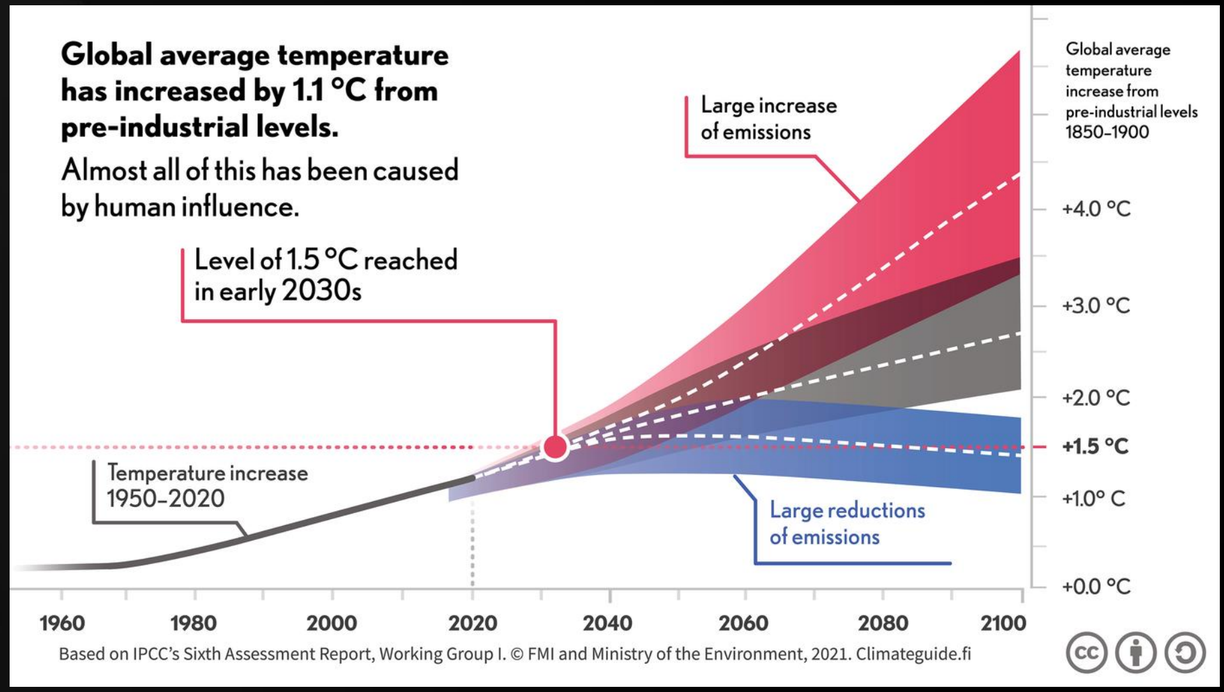
ZEROWATT
Take Charge

ENERGY INTELLIGENCE SYSTEMS

# Harnessing the power of IoT and AI for Enhanced Energy Efficiency

# CLIMATE CRISIS



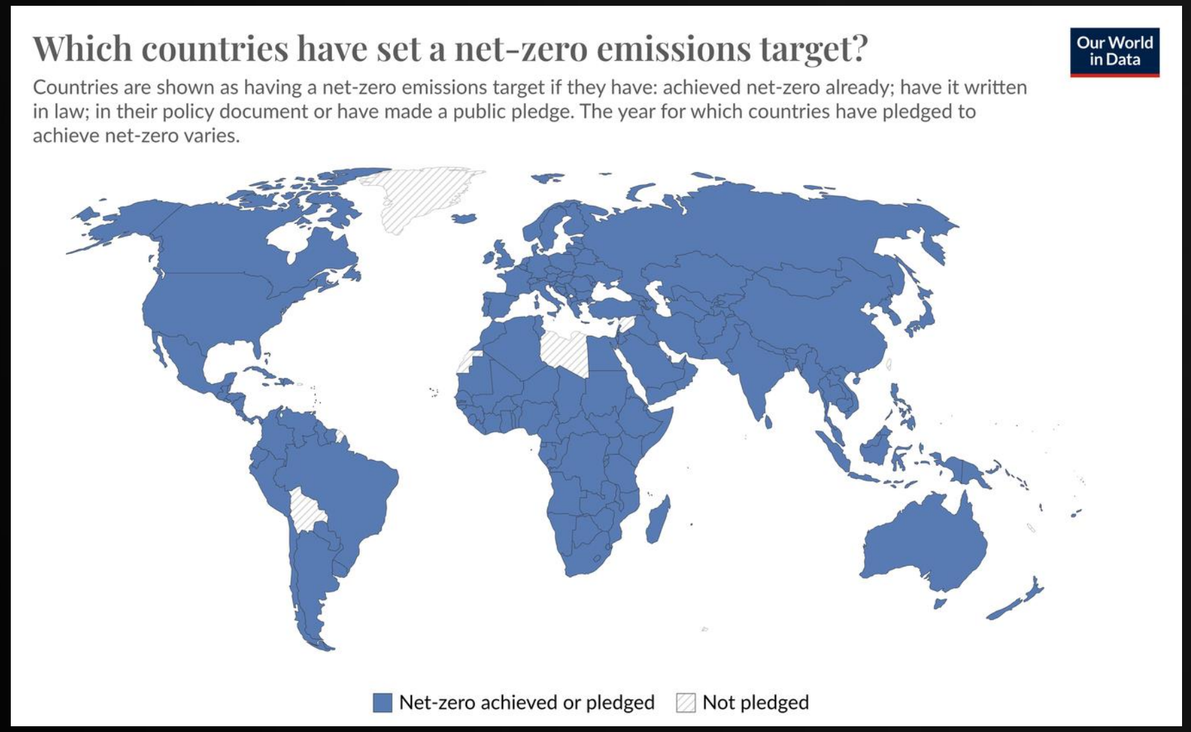

“

We are the first generation to feel the effect of climate change and the last generation who can do something about it.” - Barack Obama

“

If we are not able to limit global temperature rise, its very unlikely that our next generation will have a livable planet.

# THE WORLD IS SERIOUS ABOUT NET ZERO




All Major countries have declared their Net Zero Targets

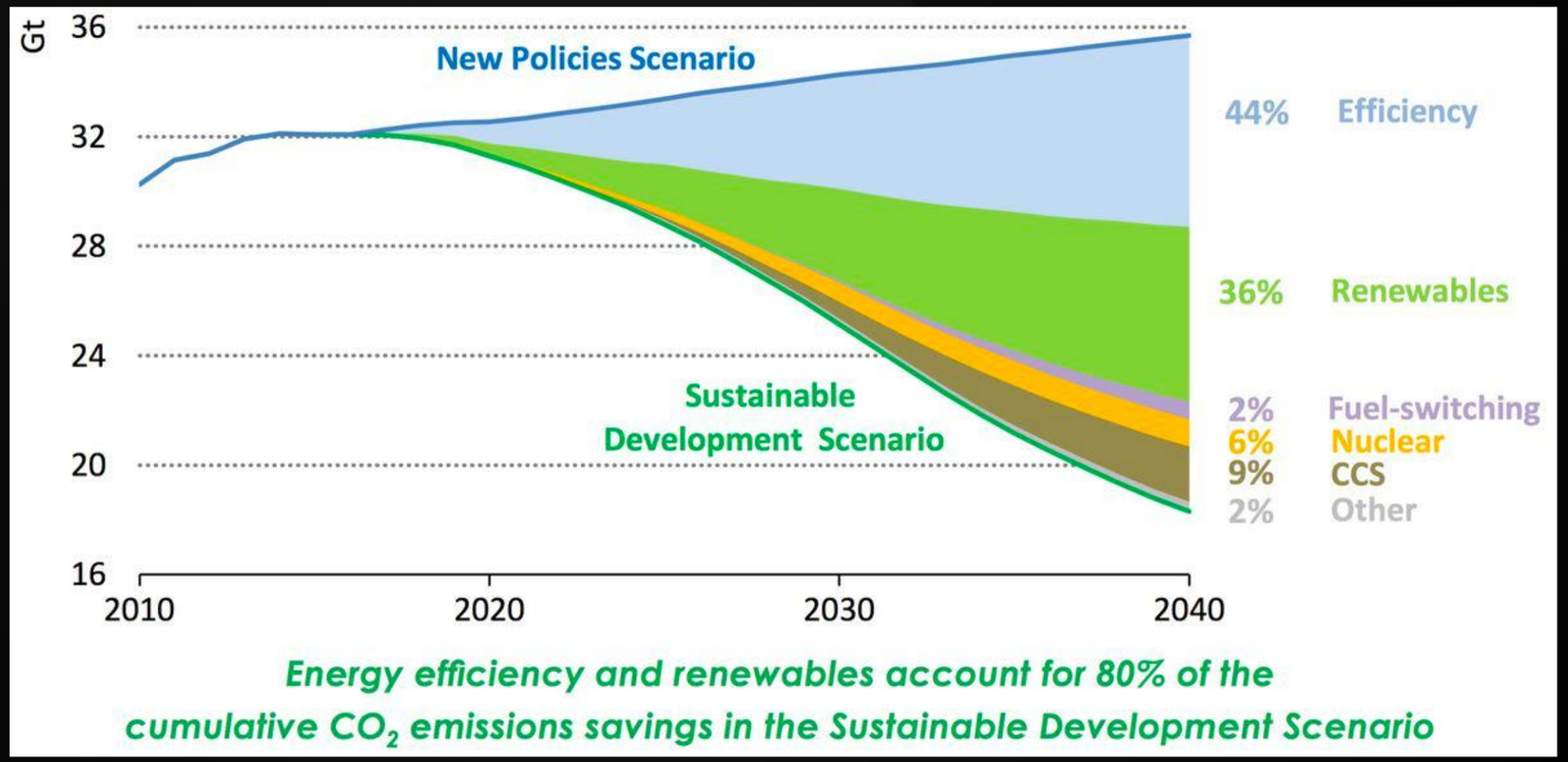
Several Global and Indian companies have announced Net Zero. And its increasing everyday

**Net Zero: Its not simple, Everything Must Change**

- Scope 1, Scope 2, Scope 3 Emissions should be Zero for an organization to achieve Net Zero
- Requires transforming all operations and supply chains.
- Every industry, from hotels to manufacturing, must overhaul processes and logistics.
- These changes will profoundly impact every product and service.

**NEAR FUTURE - CARBON FOOTPRINT OF A PRODUCT/SERVICE WILL BECOME MORE IMPORTANT THAN COST**

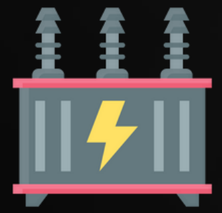
# ROLE OF ENERGY EFFICIENCY



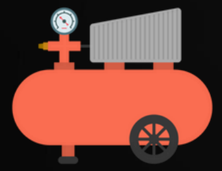

Energy Efficiency is the REAL LOW HANGING FRUIT in our fight against climate change

In Every Global Net Zero Future scenario, Energy Efficiency will play largest role

# ENERGY WASTAGE IS MASSIVE

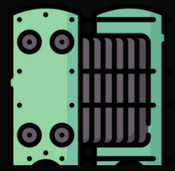


Underloaded transformers lose 5-10% energy. Older designs add 5-10% more.
Inefficiency > 60% of the time.



Unloaded compressors waste 15-35% power. Leaks account for 20-30% of output. Over-operating adds 10-15%.
Inefficient operation > 50% of the time.

Idle motors consume 5-10% power. Over-sized motors add 10-20% inefficiency. Excess motors add 5-10%.
Inefficiency > 25% of the time.



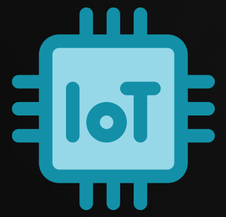
Oversized systems waste 15-30% energy. Inefficient heat exchangers add 5-15%.
Inefficiency > 40% of the time.

Throttling wastes 10-20% energy. Over-pumping adds 5-10%.
Inefficiency > 50% of the time.

Charge optimization and melt handling reduce SEC by 10-14%.
Continuous monitoring and benchmarking needed.

and lot more.....

# ITS SO EVIDENT !!! WHY CANT WE JUST DO IT ?



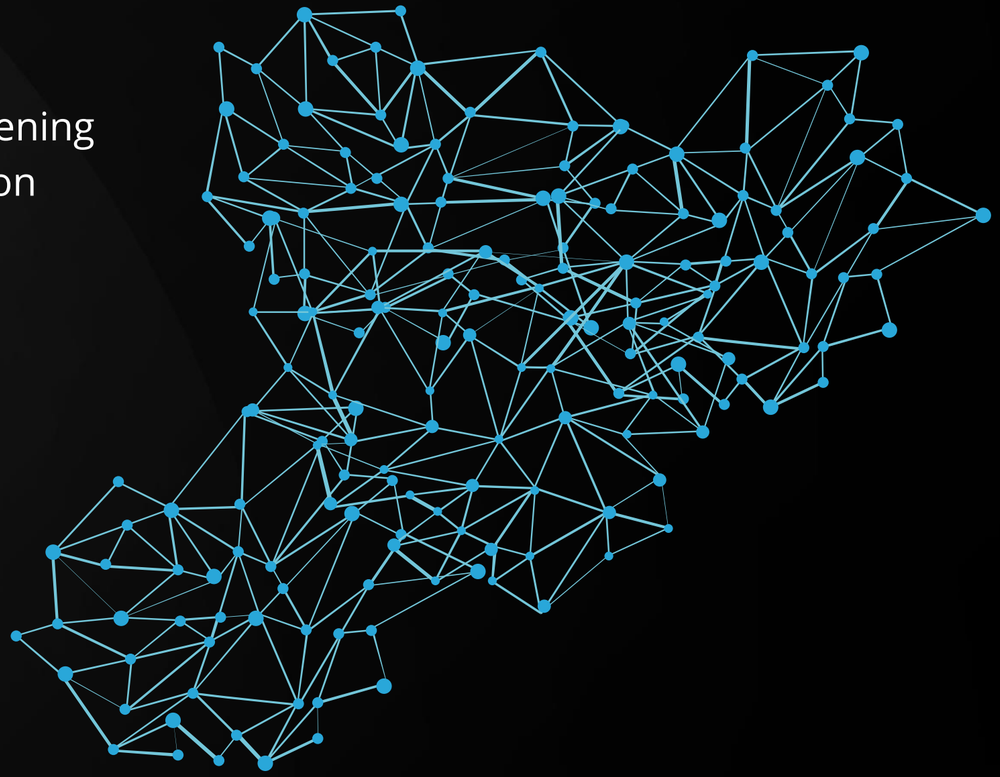

- Energy Usage is distributed across several equipments & people
- Energy usage keeps on changing with several factors
- Without continuous data, nobody can understand when where how energy wastage is happening

- Most Employees lack the technical expertise to
  - Understand data and analyse
  - Identify actionable points & Implement
  - Communicate to the management on what is required to avoid Energy Wastage

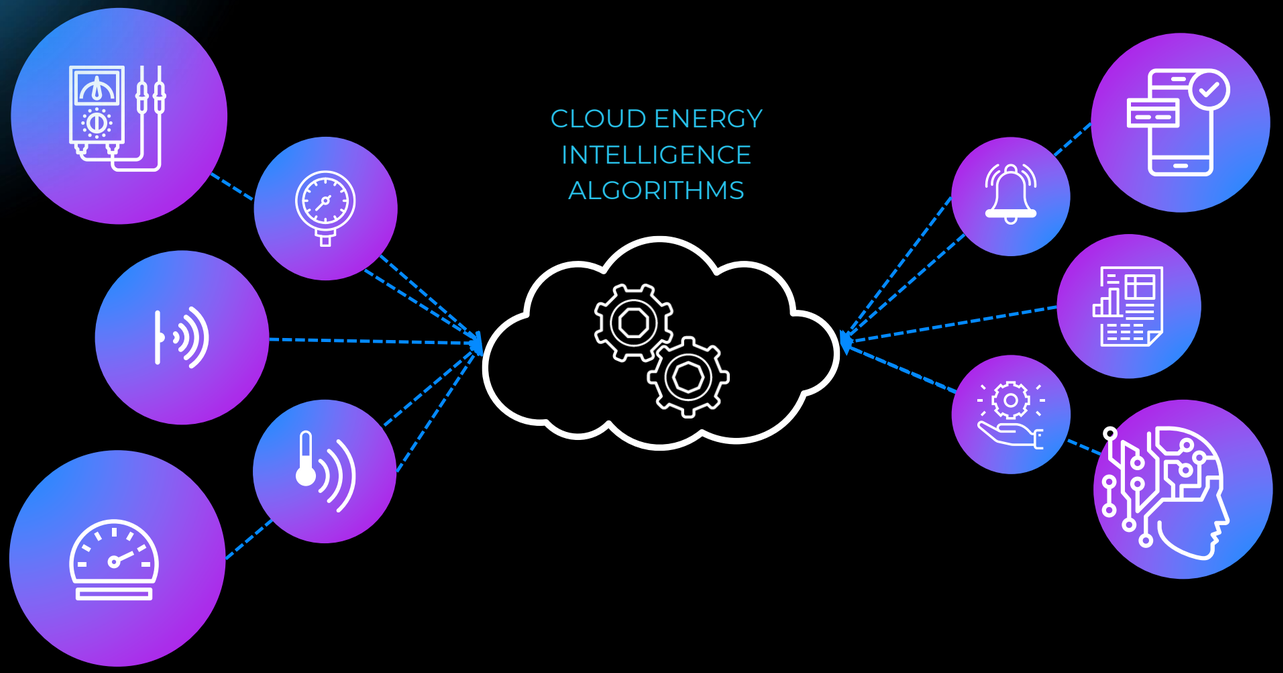
# WHAT IF THERE IS AN INTELLIGENT SYSTEM

## WHICH CAN

- Measure relevant parameters continuously at LOW COST
- Processes data and make it available to the entire team on what is happening with energy usage REAL TIME - in a way they can understand and act upon
- Give ACTIONABLE INSIGHTS to the team on
  - Where and How Energy Wastage is happening
  - What they can do to prevent energy wastage
- Forms the basis of every operational and capital investment decision
- Detects  equipment failures early
- Monitors carbon footprint of entire facility
- Automates the entire energy usage & ESG Reporting



# ZEROWATT ENERGY INTELLIGENCE



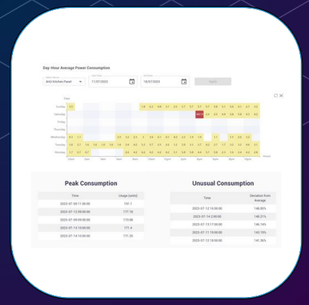

SENSORS → DATA & ANALYTICS → ACTIONABLE INSIGHTS

EXISTING SOLUTIONS

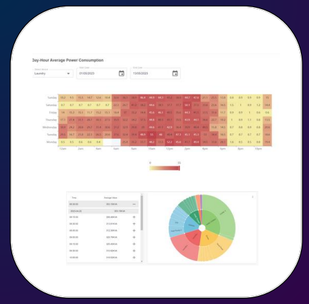
ZEROWATT

Historical & Real-Time Energy Monitoring

AI-Powered Analytics



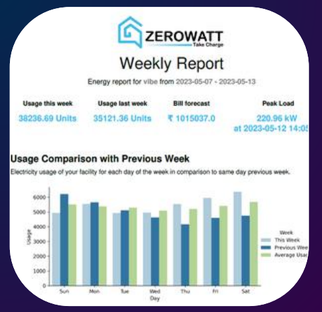
Custom Alerts & Notifications



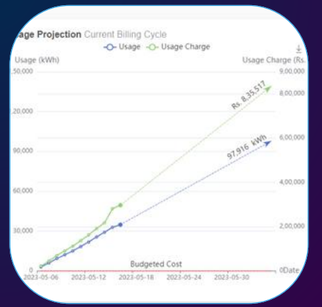
Abnormality Detection

Predictive Maintenance

Maximum Demand Optimization



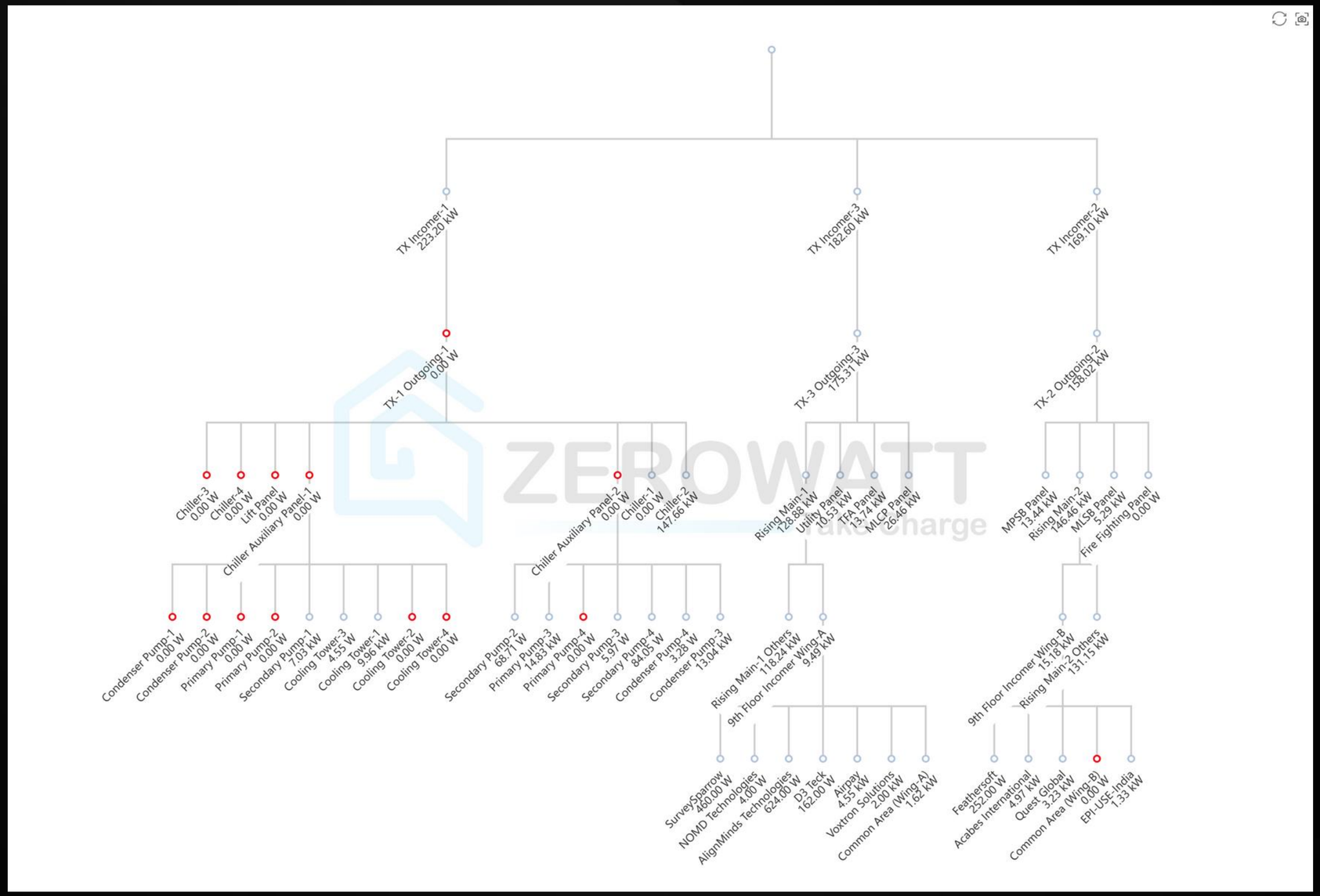

Energy Reports



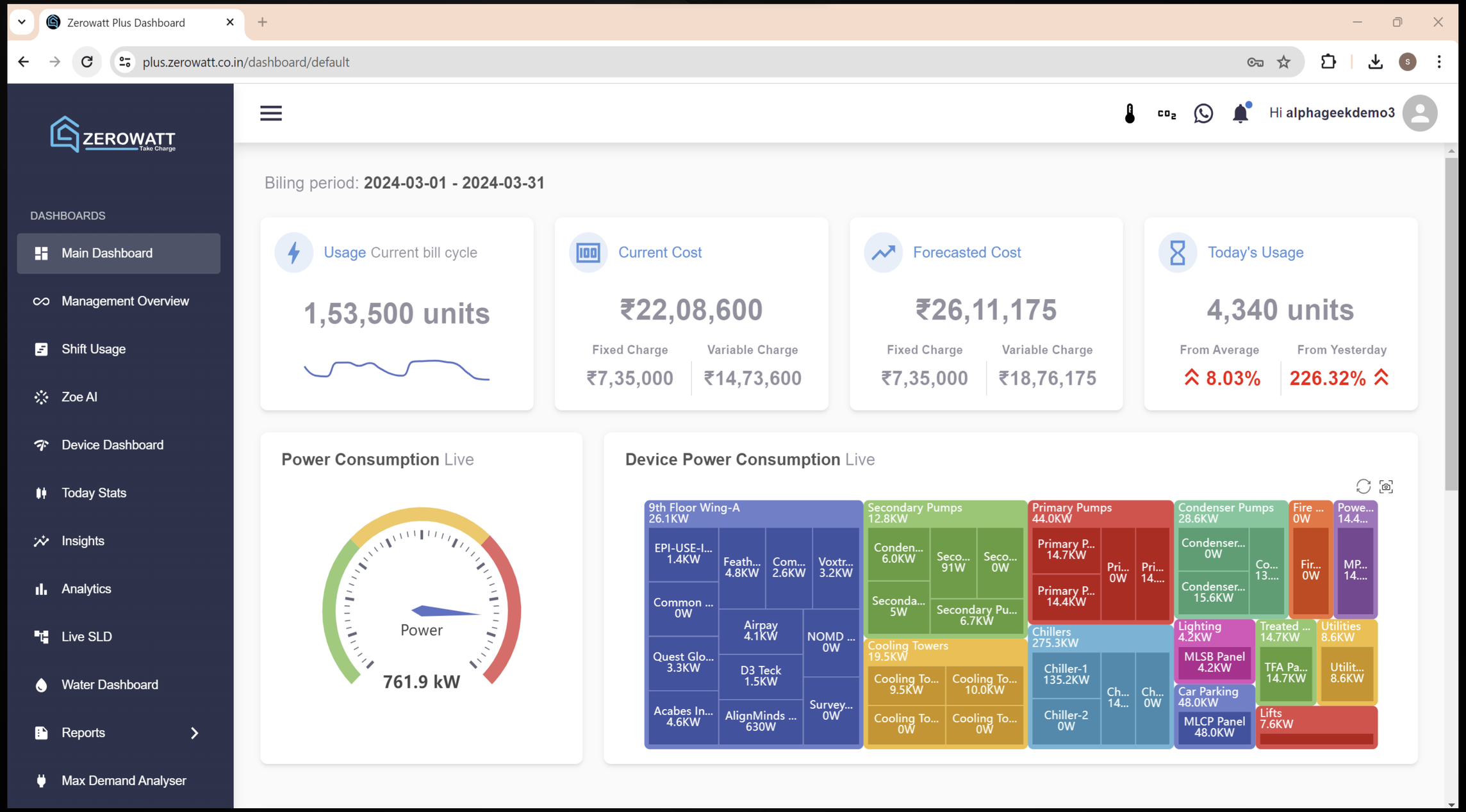

Corporate Dashboards

Equipment Benchmarking

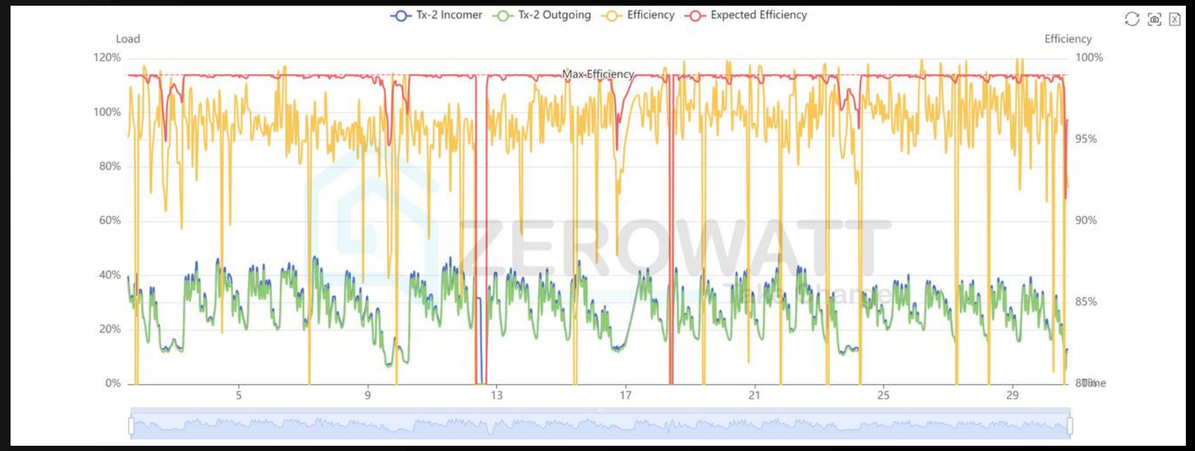
# LIVE SINGLE LINE DIAGRAM

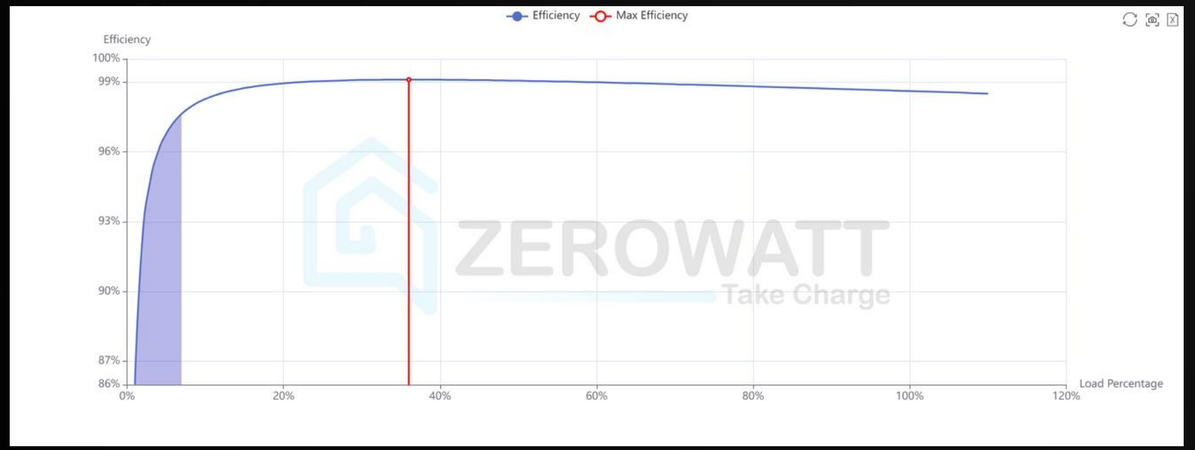


# CONTINUOUS MONITORING



# AUTOMATED ANALYSIS

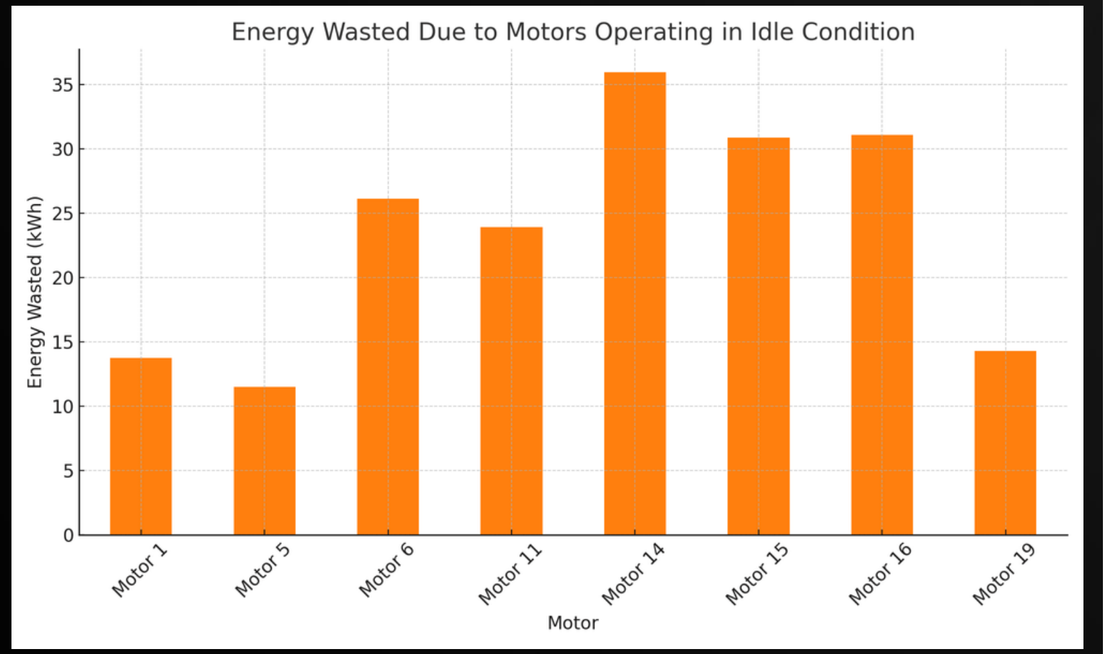



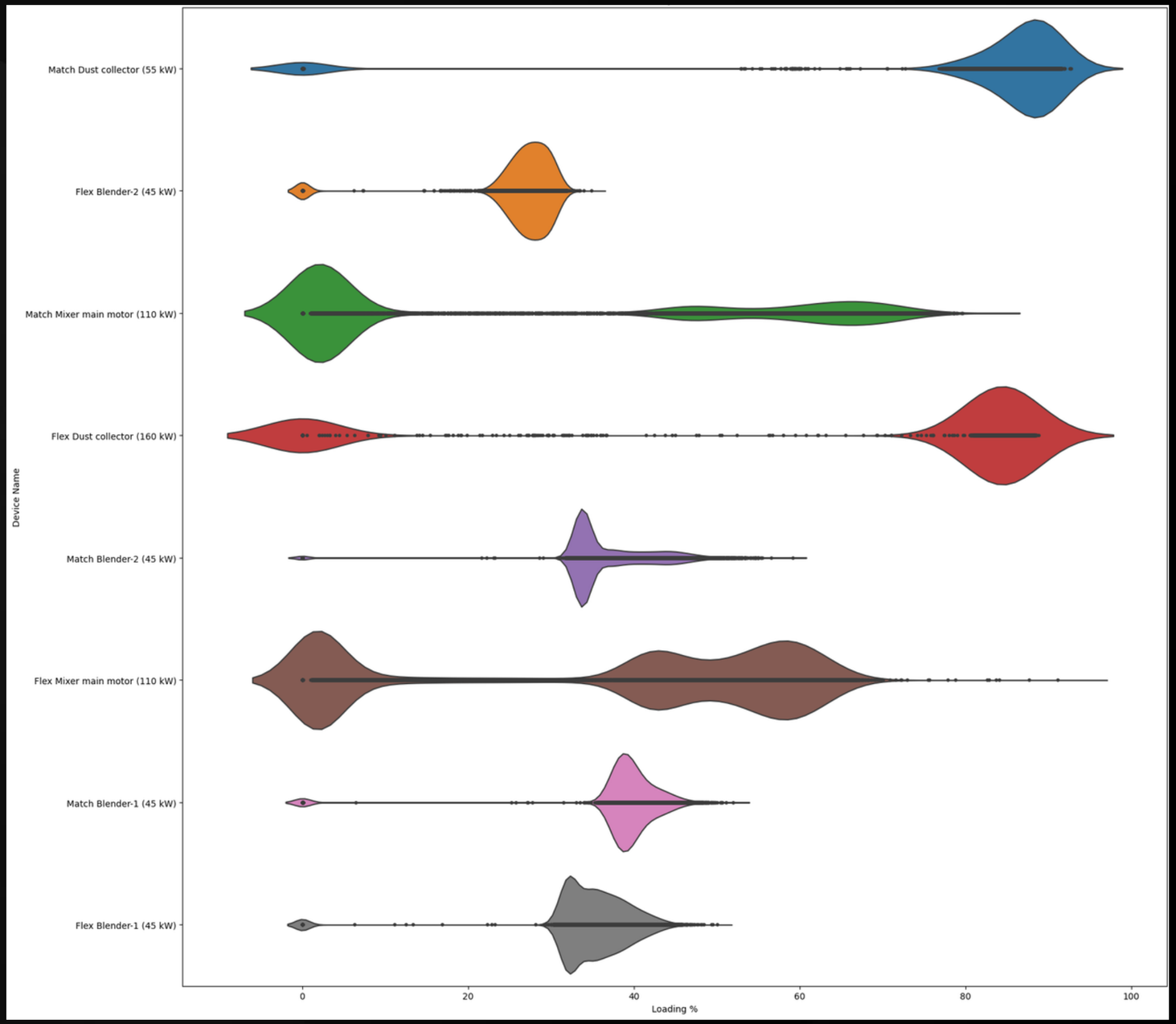


Transformers

# AUTOMATED ANALYSIS

AI processes this data to identify patterns and detect inefficiencies.

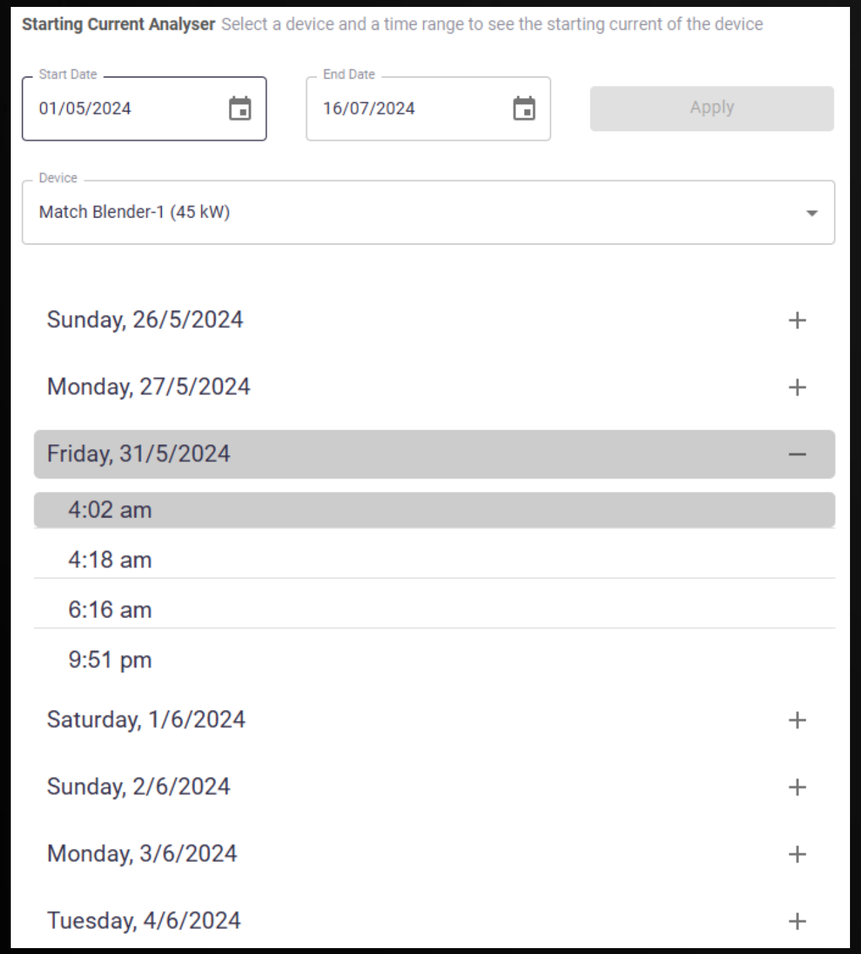


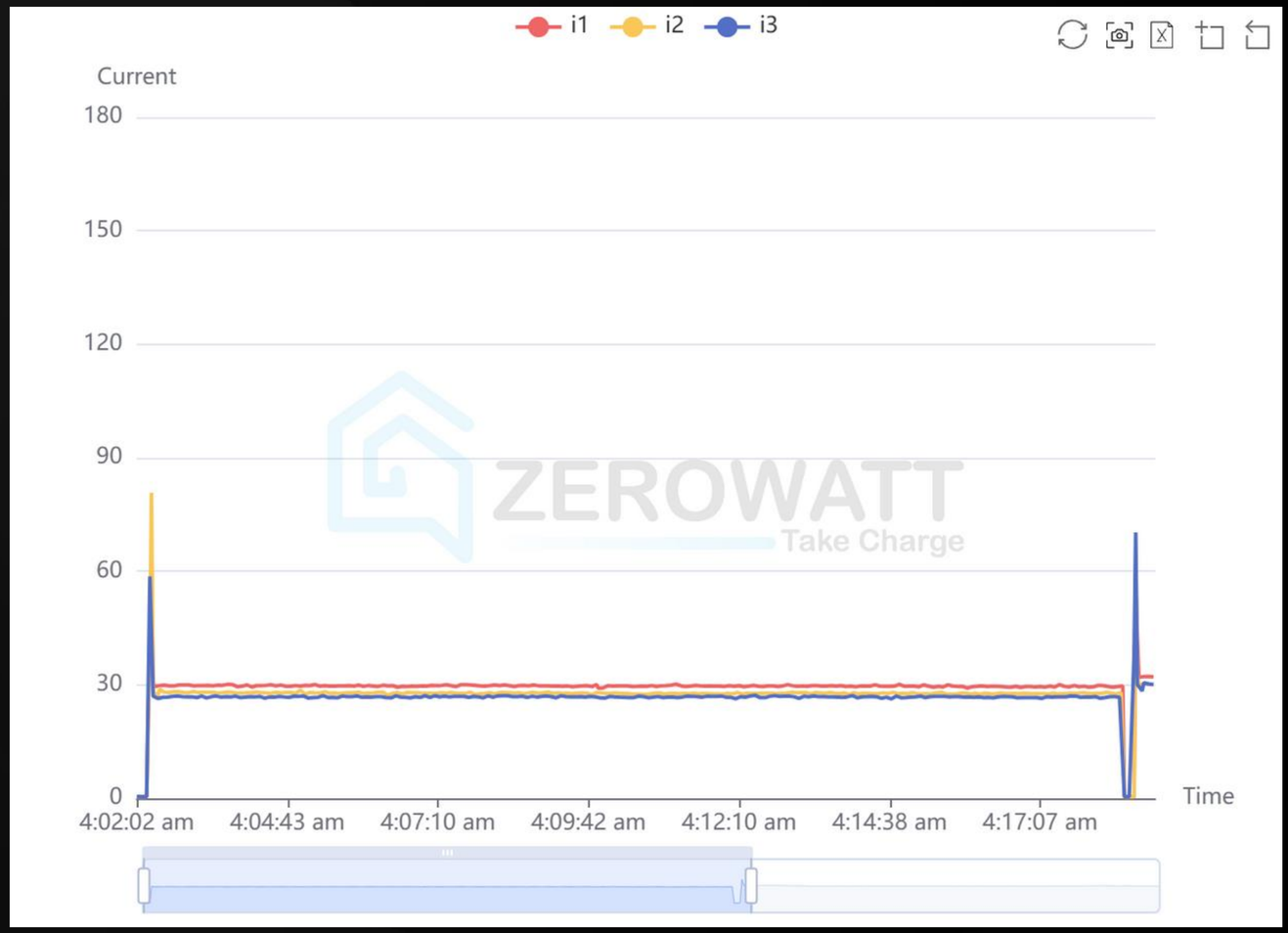




Motor Loading

# MONITORING NUMBER OF START-STOPS

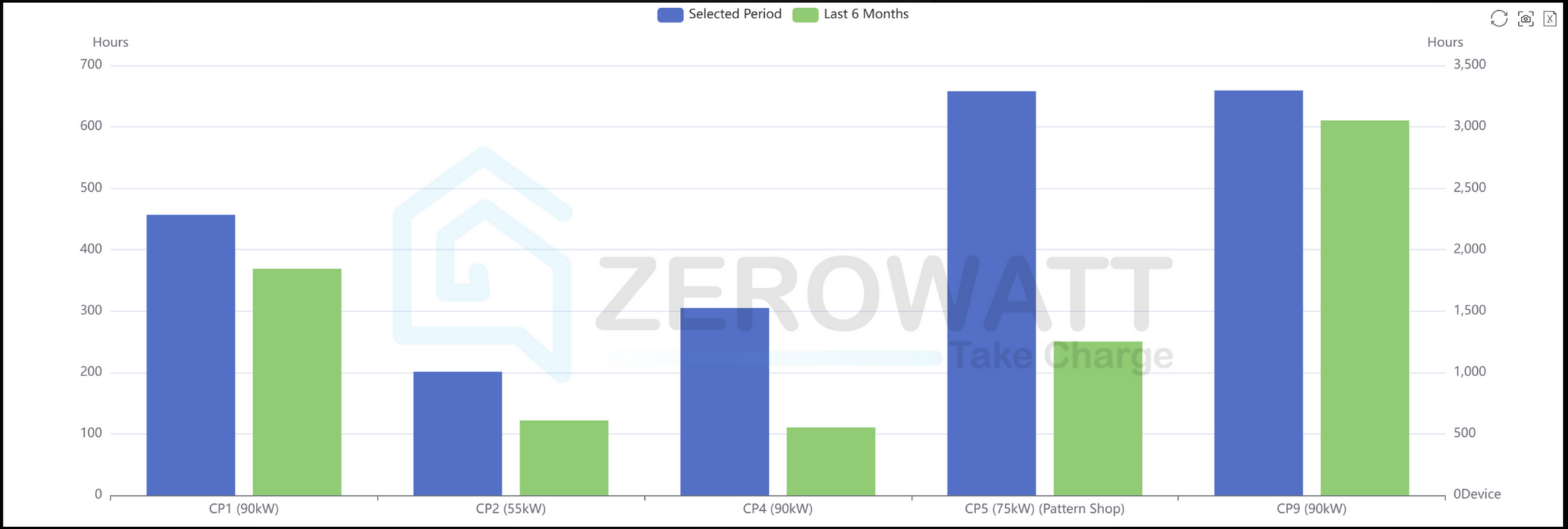
Users receive immediate notifications about energy wastage, enabling swift corrective actions.



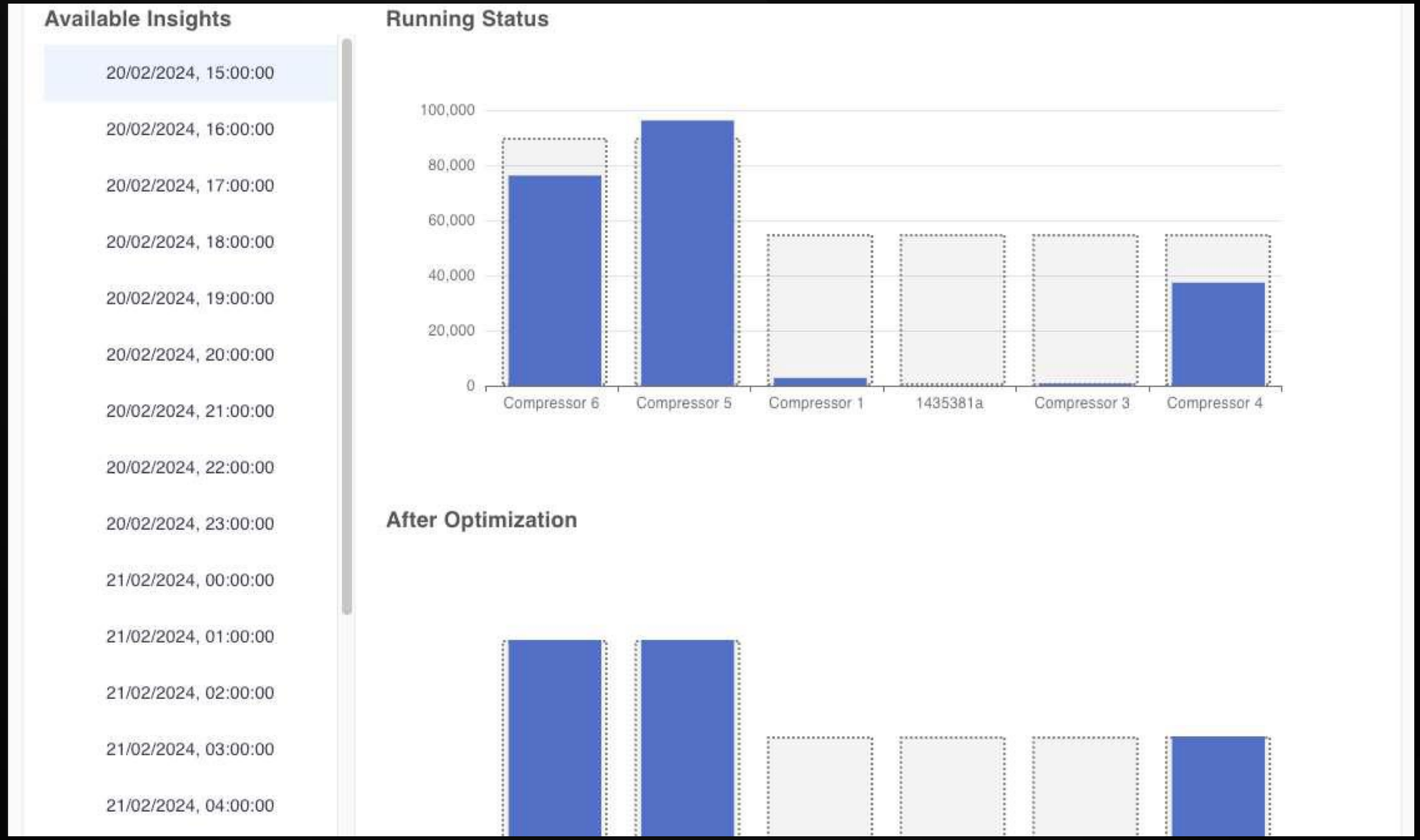



# RUNNING HOURS OF VARIOUS SYSTEMS

Users receive immediate notifications about energy wastage, enabling swift corrective actions.



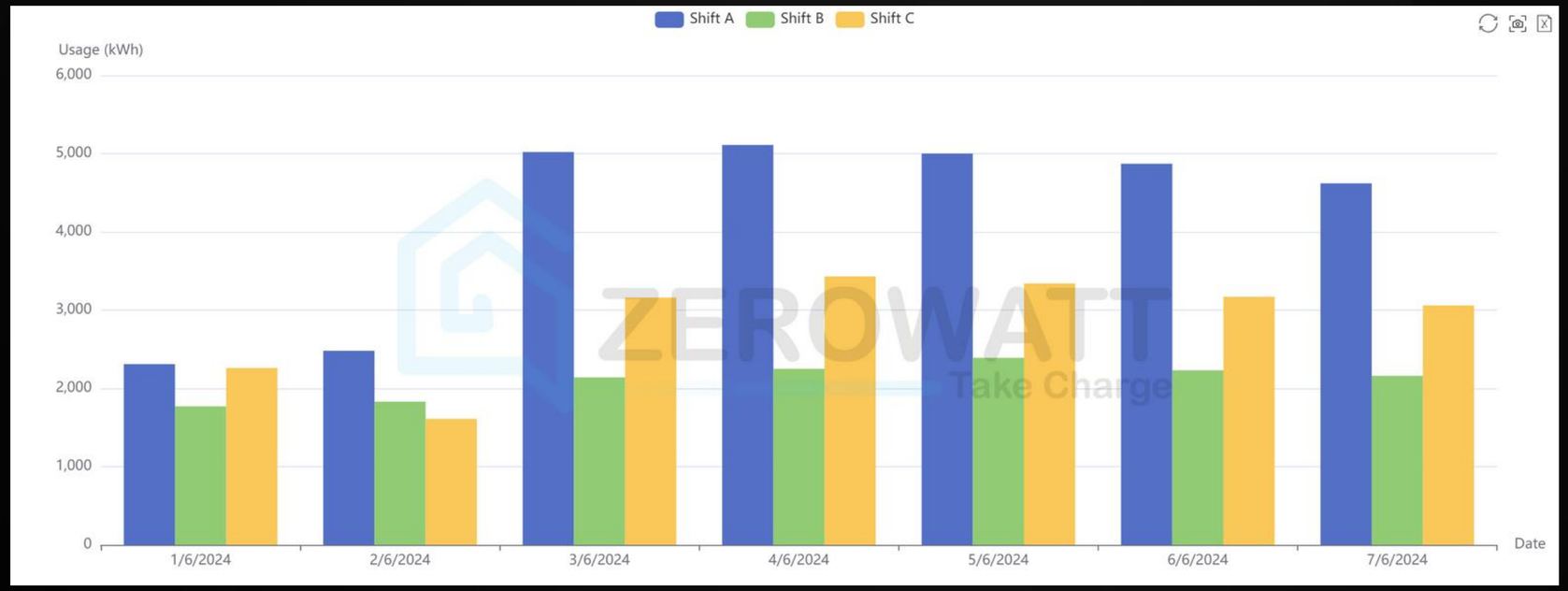
# RUNNING HOURS OPTIMIZATION



# DEMAND MANAGEMENT

**Max Demand Breakdown**: Contributions of each device to the max demand.

Alerts will be triggered if the Max Demand is going to exceed.




Shift wise usage can be monitored

**Max Demand** Top 25 fifteen-minute blocks with highest KVA

| Date | Time | KVA ↓ | View Breakdown |
|---|---|---|---|
| 2024-07-15 | 11:30:00 | 2250.91 KVA | |
| 2024-07-15 | 11:15:00 | 2235.01 KVA | |
| 2024-07-15 | 14:00:00 | 2214.00 KVA | |
| 2024-07-15 | 13:30:00 | 2160.27 KVA | |
| 2024-07-15 | 11:45:00 | 2158.88 KVA | |
| 2024-07-15 | 15:15:00 | 2124.48 KVA | |
| 2024-07-15 | 15:45:00 | 2121.76 KVA | |

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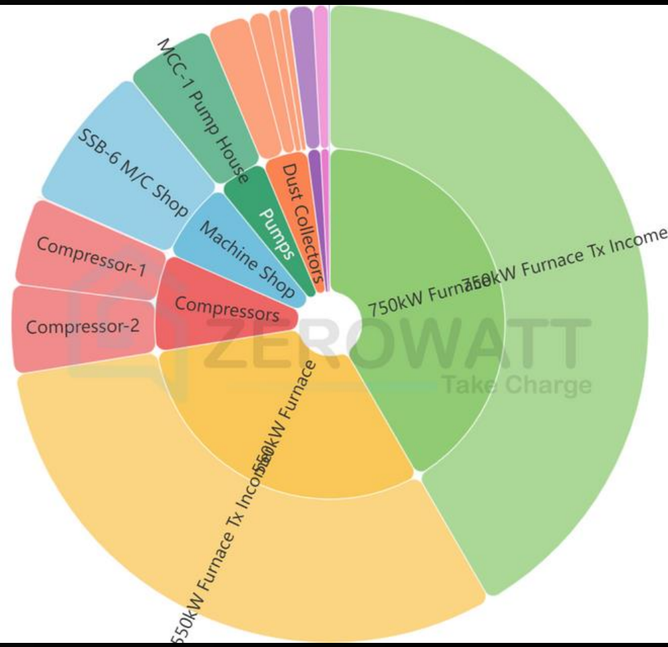
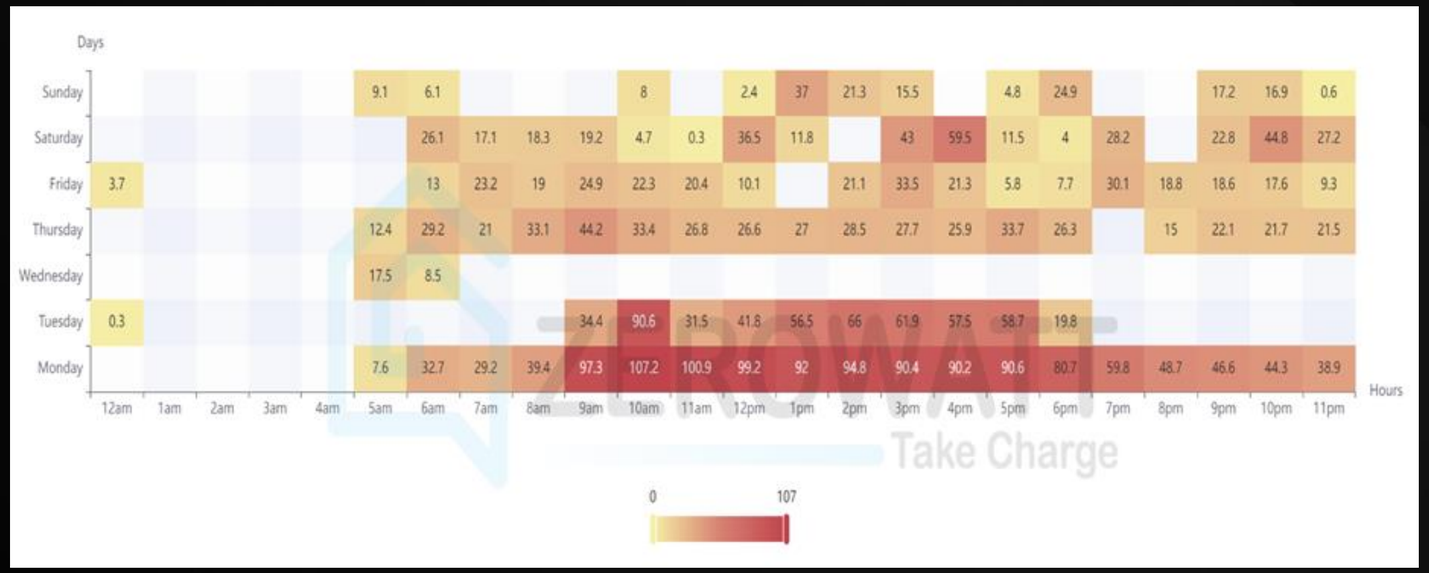


# ACTIONABLE INSIGHTS FOR CHILLERS

IT park: Chiller utilization




| | | Chiller 1 | Chiller 2 | Chiller 3 | Chiller 4 | |
|---|---|---|---|---|---|---|
| Powert aken | MIN | 80.31 | 16.53 | 134.46 | 43.62 | kW |
| | MAX | 209.26 | 214.53 | 205.36 | 213.42 | kW |
| | AVG | 114.48 | 130.65 | 150.09 | 127.56 | kW |

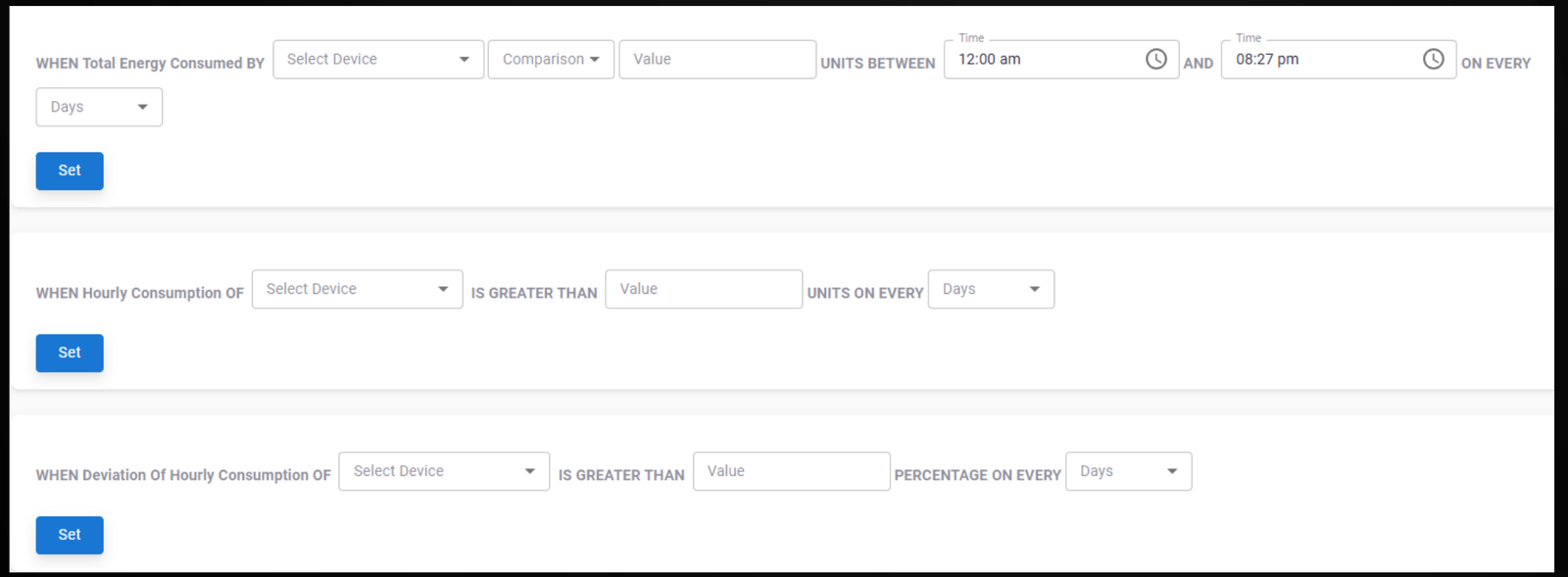

These chillers are suitable candidates for VFD retrofit (A single VFD with control system capable of handling transitions between chillers smoothly)

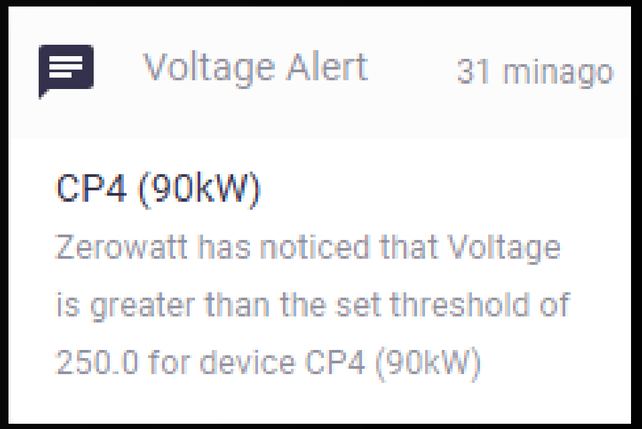
Anticipated annual energy savings = 155504 kWh
Annual cost savings = Rs. 1317123/-
Approximate investment required = Rs. 2000000/-
Payback period = 1.6 years

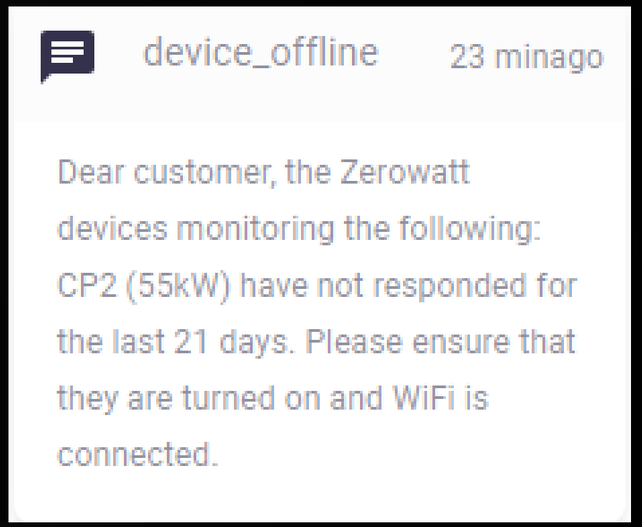
# REAL-TIME ALERTS

Users receive immediate notifications about energy wastage, enabling swift corrective actions.

- Motor 1 is Overload for more than 1 hour, Preventive maintenance should be carried out and reduce the risk of equipment failure.
- There is a 10% decrease in pump efficiency from the rated efficiency for this pump
- Motor 1 is taking vampire power for more than 1 hour, Switch it OFF if possible
- 4 number of compressors are working in unload condition for more than 15 Minutes. Switch OFF the smaller capacity compressor
- Custom made alerts: Voltage, Current, Power etc.



# TAILORED INSIGHTS

## Actionable insights for facility Managers

- Realtime Equipment Running Status
- High voltage/current/power Alerts
- Extra Equipment Running Alerts
- Running Hours Comparison
- Idling Equipment Alerts
- Unscheduled Equipment Operation Alerts
- Equipment health tracking
- Breakdown Alerts
- Shift-wise Electricity Consumption Tracking
- Pre- and Post-Maintenance Performance Comparison

## Strategic perspective for Higher Management

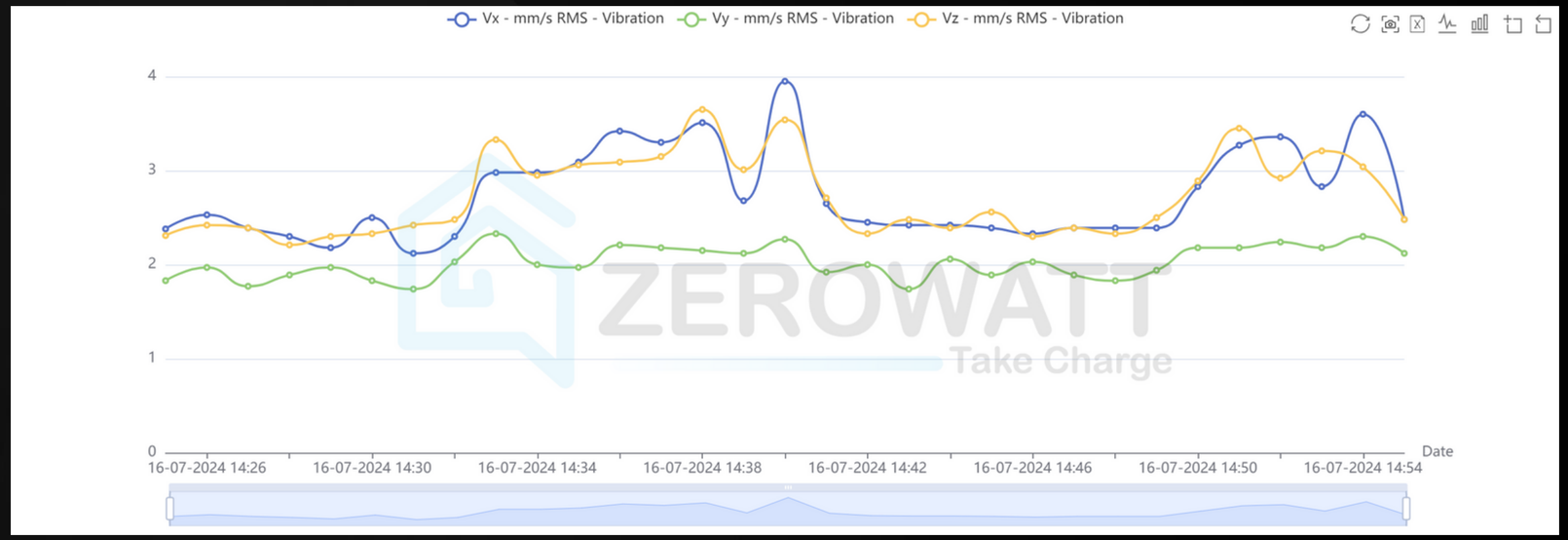
- Corporate Energy Intelligence Dashboard
- Real-Time Cost Tracking of Operations
- Automated MIS Reports
- Remote Process Monitoring and Management
- Electricity Bill Forecasting
- Month-over-Month Performance Comparison
- Industry Benchmarking
- Energy Efficiency Upgrade Recommendations
- Corporate Sustainability Reporting

# ALL-IN-ONE PLATFORM


ZeroWatt Analytics Platform

# CONTINUOUS MONITORING OF MOTOR HEALTH

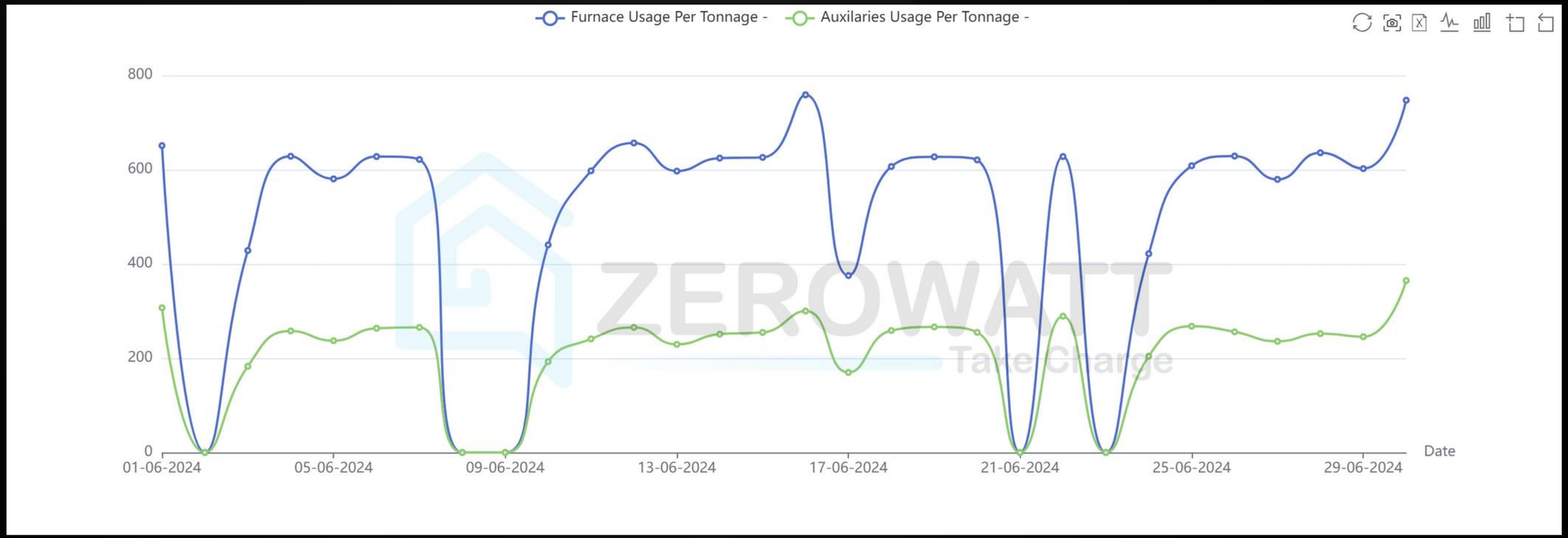
Vibration Monitoring




Temperature Monitoring

# CONTINUOUS MONITORING OF FURNACE PERFORMANCE

Specific Energy Consumption of Furnaces can be compared with the Industrial Standards



# WATER MONITORING

Water or any fuels such as diesel, natural gas etc can also be monitored on a continous basis

## Optimizes Electricity Cost

High electricity costs hinder profitability of businesses. 10% to 30% of electricity is wasted due to inefficiencies. Zerowatt helps to identify and avoid energy wastage.

## Prevent Unplanned Outages

Equipment breakdowns result in huge productivity loss to businesses. Zerowatt can monitor equipment health and help to prevent breakdowns.

## Empower Sustainability

Reducing carbon footprint is crucial for sustainability of businesses. Zerowatt provides a platform for monitoring and reporting carbon emissions.

Zerowatt is the embodiment of our unwavering conviction:

‘ Sustainability isn't an expense, it's an investment that pays dividends - for your business, for our shared future ’

# Thank you for giving us the opportunity to build a sustainable future together

## Contact Us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