HI-TECH
Low Carbon Solutions

centrica
Business Solutions

Improve Operating Margins and drive Sustainability with Centrica's IoT 4.0 Real-time Machine-level EMS

Centrica's **patented technology** driven by **wireless** sensors & advanced analytics from Power radar software enables **"Machine level"** actionable **intelligence**

Wireless Sensors - no wiring cost	Maintenance free
Self-powered	Granular "Machine level" Intelligence
Non-invasive	Real time data transmitted every 10 seconds
Stores data during power failure	Temperature & Fire safe (Flammability rating UL94 V-0)
Humidity safe Humidity range (5% – 95% non-condensing)	International certifications (USA, Europe, AUS, RUS, JAPAN
No Disruption in Production	Cost-effective
Miniature & Quick installation	Patented Technology with no Competition
Real-time alerts for equipment failure	Reports for Management review meetings

Centrica's **scalable** solution **consists of hardware, software and advisory services,** to enable you to leverage your energy usage as a strategic business asset

Wireless Sensors → Bridge → Energy Analytics software → Energy Advisory for Energy Management

- Data aggregation through self powered, wireless sensors
- Granular intelligence to reduce invisible power wastage
- Complete visibility into energy consumption & cost
- One time investment – Capex recovery through depreciation - No cost from "2nd Year"

- Robust and intuitive Enterprise level advanced energy analytics platform
- All Energy generation sources (electrical, solar, DG etc.) can be monitored
- Real time data monitoring & tracking of assets
- Real-time Equipment failure alerts & energy reports

- Actionable Recommendations for Implementation leading to significant annual savings
- Handholding to enable your firm to meet sustainability & net zero targets
- Customized quarterly reports for Management review meetings
- Detailed analysis of anomalies at a granular level

End to End coverage of Carbon footprint by Centrica's Wireless sensors across Energy sources

MAINS LT PANEL → PCC → MCC → DB → MACHINES


Power Sensor (PAN-42)


Power Sensor (PAN-42)


Power Sensor (PAN-42)


Power Sensor (PAN-42)


Machine level Energy Sensor (PAN-10,12,14)

Wireless communication of Electrical parameters

Wireless communication of Electrical parameters


Bridge/ Gateway (LAN, Wi-fi)

Heat, Gas, Steam, Air, Water parameters through pulse input


Power Radar Energy Analytics Platform

Centrica provides a **comprehensive** solution to **drive Net Zero & Energy productivity across your organization**

Plan

- Draw Net Zero Baseline – Granular view of existing Energy usage & Carbon emissions
- Enables Data driven Decision making for Net Zero

Measure & Monitor

- Enterprise wide granular Energy Monitoring & accounting – 24*7 from a single dashboard
- Monitor & Manage Carbon Footprint (CO2e)
- Energy Insights to reduce Carbon emissions

Cut Wastages & Emissions

- Improve energy efficiency through Smart Energy Management
- Reduce Scope 1 & 2 emissions through Granular / Machine-level Energy reduction
- Ensure transparent monit oring and reduction of Scope 3 emissions across the value chain
- Reduce & right-size the need for RE - Lower the Capex for RE projects for Net Zero

Improve Energy Productivity

- Reduce M/C breakdown through predictive maintenance
- Optimize preventive maintenance
- Improve Manpower productivity & drive behavioural change
- Real-time peak load demand estimation for Open access bidding

Report

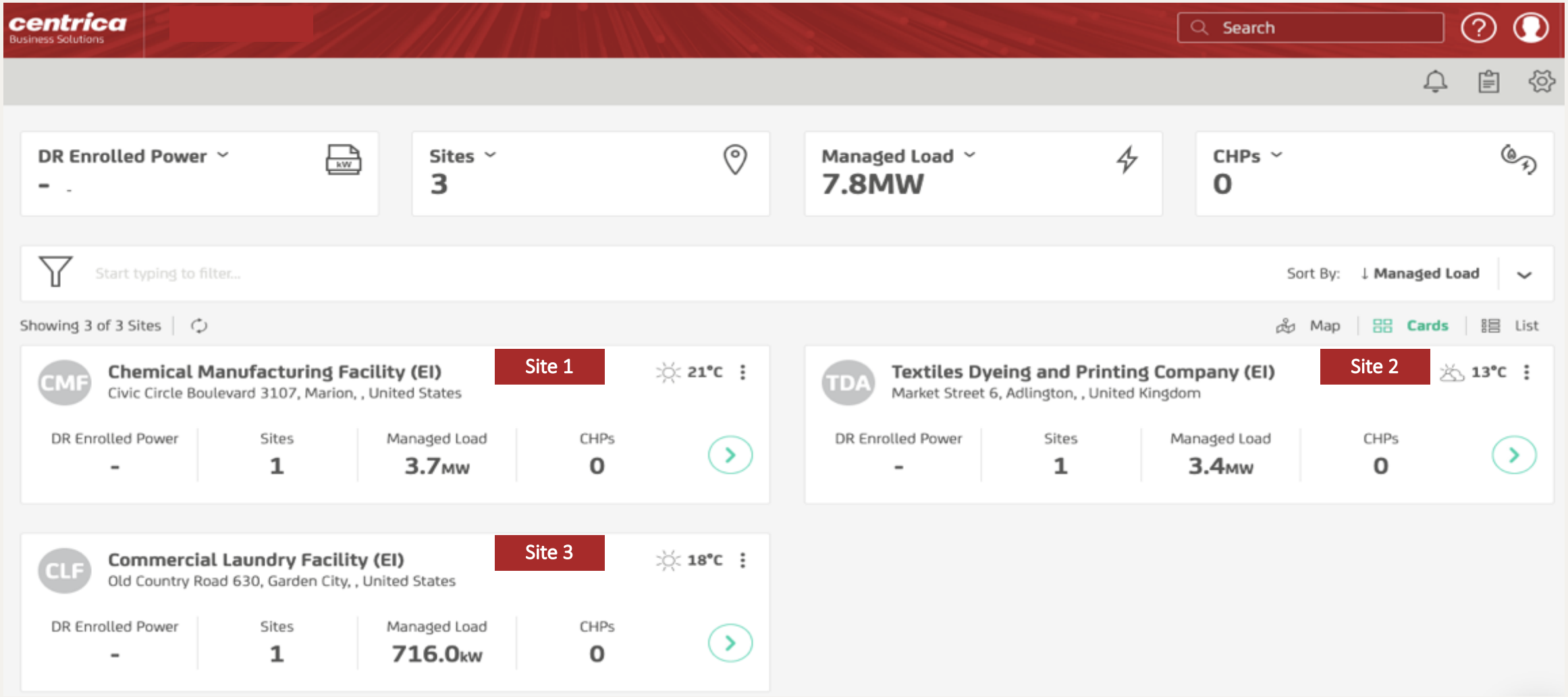
- Reporting: ISO 14001, ISO 50001, PAT, BRSR
- Measure & validate returns from capex investments

Industries leveraging data

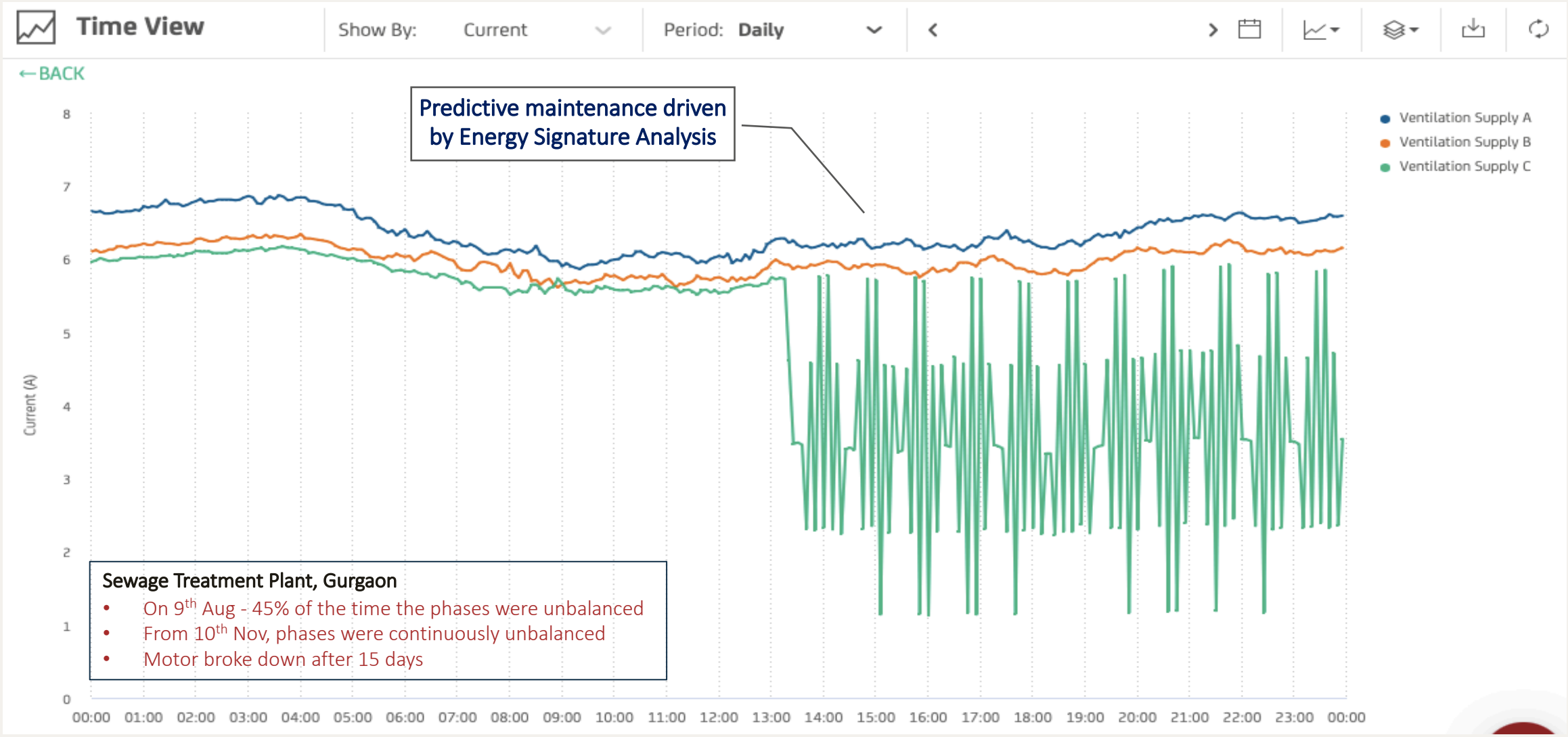
BioMar, Candiani DENIM, South Port NZ, PINCROFT DYEING AND PRINTING LTD, SAINT-GOBAIN, CEMEX, HOLCIM, SAINT-GOBAIN, HOLCIM, SAINT-GOBAIN, CEMEX, THE NORTH FACE, KONTOOR, altex, SAINT-GOBAIN, CEMEX, Candiani DENIM

Centrica's IoT solution **empowers enterprise-level** real time energy management **of all the sites and assets, 24*7,** from a single dashboard

Centrica's solution empowers the management with Real time data by giving comprehensive view – both at Macro and Micro level



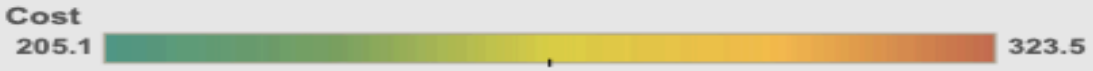
Centrica's **predictive maintenance** helps to minimize machine breakdown through early failure detection as well helps to optimize preventive maintenance



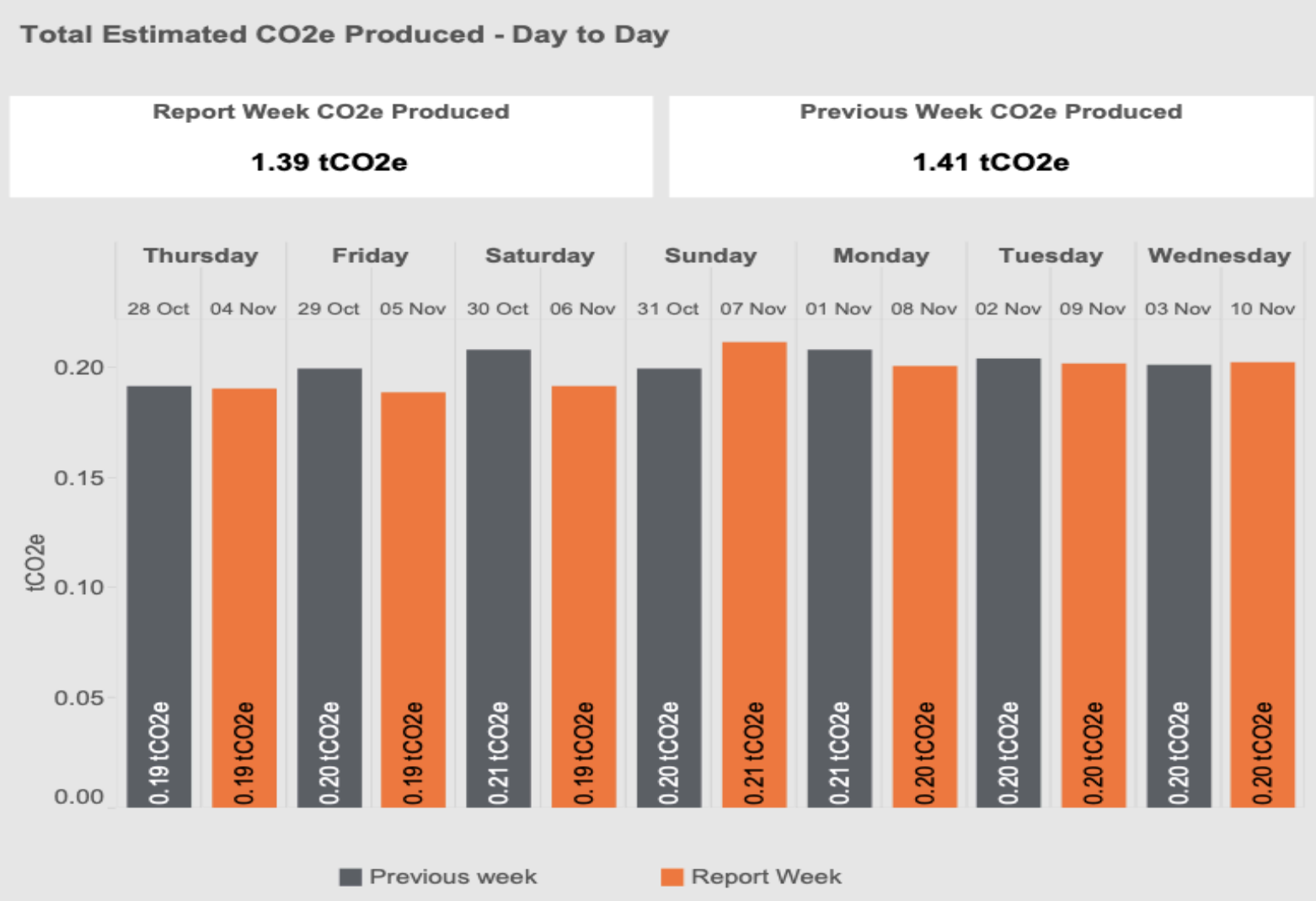
Centrica helps in **granular level identification** of **energy wastage and anomalies** through 24 Hr power consumption **Heat map**

What led to high energy consumption on Sunday and Tuesday?

Hours	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
0	₹275.74	₹259.52	₹262.01	₹272.46	₹252.04	₹264.11	₹242.05
1	₹275.12	₹250.50	₹262.77	₹267.84	₹261.34	₹245.34	₹223.91
2	₹272.52	₹261.68	₹266.73	₹275.27	₹243.68	₹243.48	₹218.03
3	₹262.71	₹259.65	₹255.84	₹273.75	₹246.41	₹233.45	₹226.09
4	₹273.39	₹245.23	₹263.55	₹277.52	₹239.09	₹208.57	₹233.86
5	₹263.43	₹262.36	₹265.05	₹276.64	₹246.60	₹226.22	₹256.71
6	₹266.64	₹266.69	₹243.35	₹266.14	₹248.90	₹206.38	₹241.12
7	₹251.95	₹256.25	₹250.73	₹264.16	₹261.11	₹205.07	₹242.61
8	₹265.78	₹265.94	₹263.59	₹262.33	₹248.05	₹249.84	₹239.65
9	₹264.80	₹266.15	₹257.60	₹268.17	₹250.12	₹261.37	₹242.21
10	₹316.45	₹266.67	₹253.25	₹265.47	₹237.24	₹252.17	₹261.20
11	₹320.51	₹262.30	₹258.07	₹268.41	₹217.48	₹258.75	₹265.73
12	₹311.87	₹274.86	₹257.01	₹267.72	₹231.83	₹285.24	₹249.77
13	₹270.62	₹265.69	₹247.28	₹263.54	₹255.74	₹266.07	₹264.44
14	₹289.73	₹261.16	₹260.84	₹265.21	₹261.57	₹236.89	₹258.62
15	₹319.23	₹261.88	₹323.52	₹269.48	₹257.88	₹238.19	₹275.01
16	₹302.56	₹272.33	₹313.33	₹254.53	₹268.84	₹270.15	₹280.27
17	₹269.65	₹262.72	₹265.82	₹269.97	₹248.22	₹252.85	₹260.78
18	₹261.20	₹259.89	₹258.02	₹268.30	₹260.54	₹263.70	₹266.22
19	₹268.79	₹265.75	₹259.34	₹248.21	₹256.73	₹263.04	₹245.07
20	₹274.97	₹272.59	₹275.98	₹261.26	₹262.25	₹255.76	₹260.26
21	₹266.99	₹268.73	₹265.91	₹264.27	₹245.68	₹264.53	₹271.97
22	₹273.27	₹278.78	₹276.47	₹265.00	₹270.02	₹262.12	₹272.36
23	₹281.25	₹274.06	₹273.99	₹264.39	₹259.23	₹252.96	₹257.56

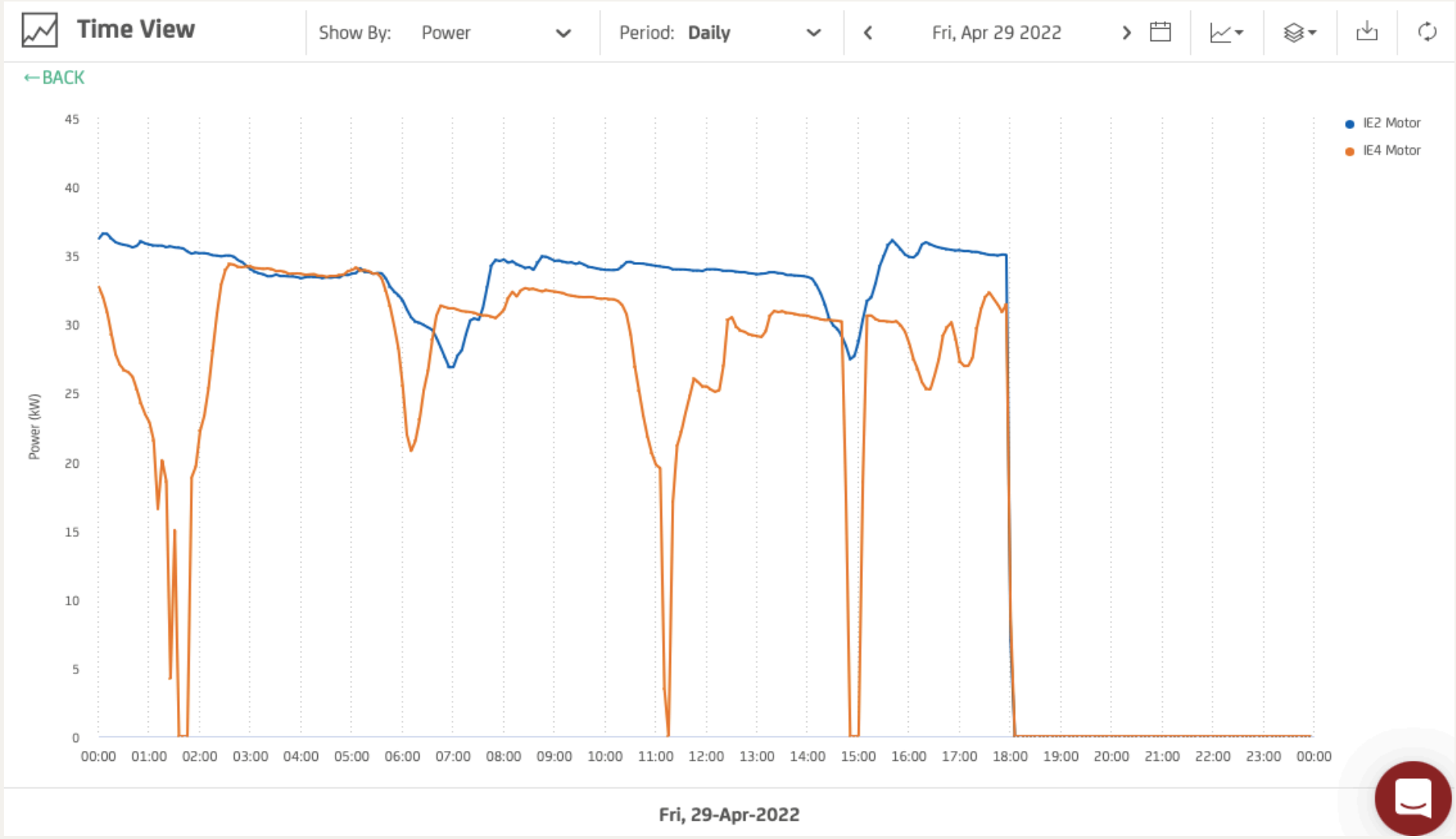


Carbon emissions tracking helps in managing the **Carbon footprint** of your facility to achieve your **Net Zero Target**



- India has introduced new Carbon reporting requirements for the top 1,000 listed companies in the country by market capitalization
- SEBI stipulates that the disclosure must be made through a new format, namely the Business Responsibility and Sustainability Report (BRSR) & is mandatory from FY 2022-23
- Investors increasingly expect organisations to report on sustainability. To raise funds and meeting the changing requirements of shareholders & investors, it is vital consideration for businesses.
- ESG reports will detail an organisation's commitment to sustainability and reducing its environmental impact with hard facts than mere words

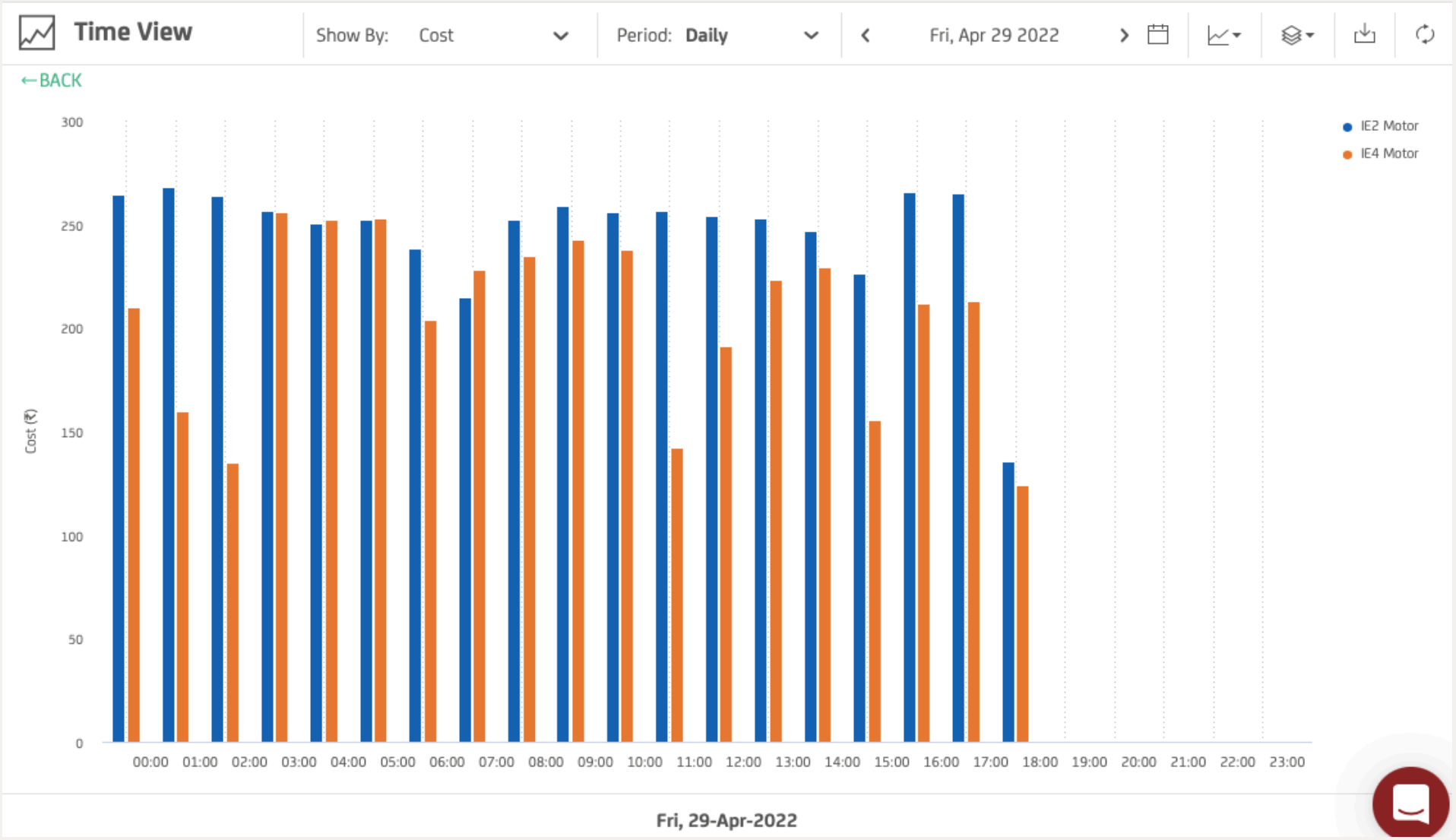
Centrica helps to identify production & manpower inefficiencies - M/c with IE2 motor found running continuously for 18 hrs; not stopped for knotting process



In Towel plant, Centrica sensors were applied on 2 TFO machines – one with IE4 motor and other with IE2 motor. After observing the trends on the two machines, following observations were made:

- Although, IE2 motor was expected to stop for knotting process, **it ran continuously for 18hrs**
- The trend analysis can also help in **capturing production loss and labour inefficiency on every machine** by finding when a machine is on/off or idle and thus **empowers the management to support it with data**

Validation of investment decision by Centrica's EMS - energy cost incurred on IE4 motor is 21% lesser than IE2 motor, hence payback on IE4 is less than 2 months



In Towel plant, Centrica sensors were applied on 2 TFO machines – one with IE4 motor and other with IE2 motor. After observing the trends on the two machines, following observations were made:

- IE2 Motor **incurred a cost of INR 4678** vs IE4 Motor which incurred a cost of **INR 3903** during **18 hrs** of observation.
- So, on a daily basis (24hrs), IE4 motor incurs **INR 1033** less than IE2. So, it leads to a saving of **INR 31,000/month** on a IE4 motor.
- Hence, incremental cost of IE4 which is at 50K premium to IE2 **can be recovered in less than 2 months**

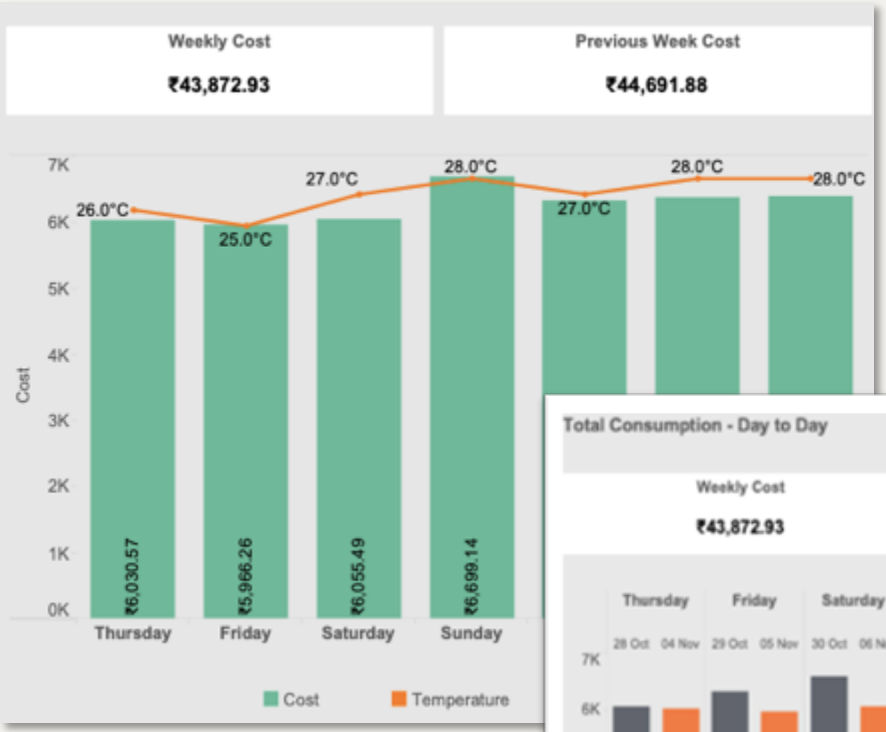
Validation of new technology's ROI - "Motor with VFD" consumed 20% less power than "Motor without VFD" - a saving of INR 46,000 / year/ VFD motor

In Yarn plant #5, Centrica sensors were applied to compare "motor with VFD" and "motor without VFD". After observing the trends on the two machines, following observations were made

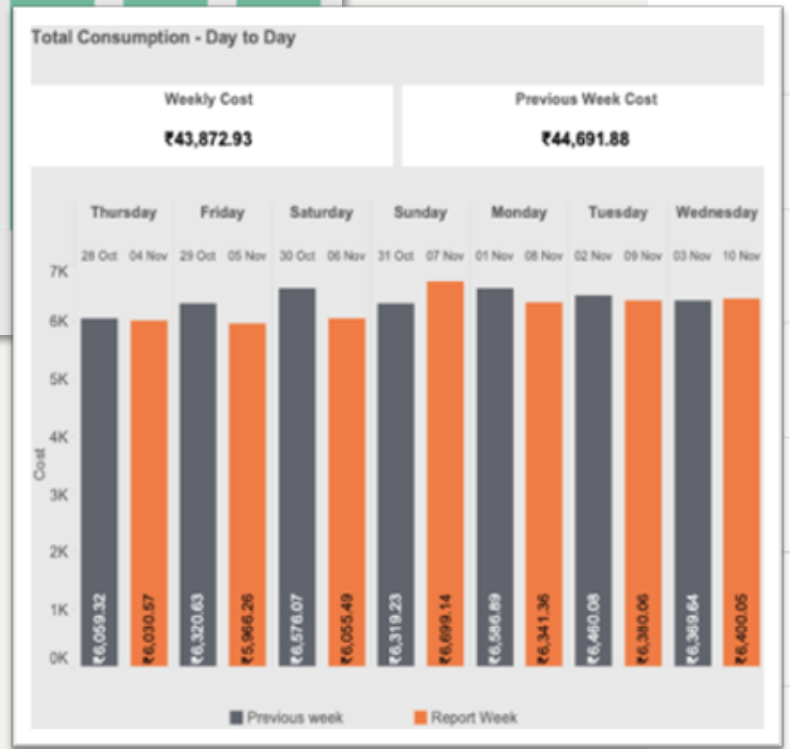
- While "Motor without VFD" consumes **3.5 KW** power, "Motor with VFD" consumes **2.8 KW** power **(20% less)**
- This would lead to a **saving of INR ~46,000/ year on a motor with VFD**

Centrica's **advanced energy analytics** detect invisible cost-reduction opportunities, **offering higher ROI**

Daily Energy cost vs. External Temperature

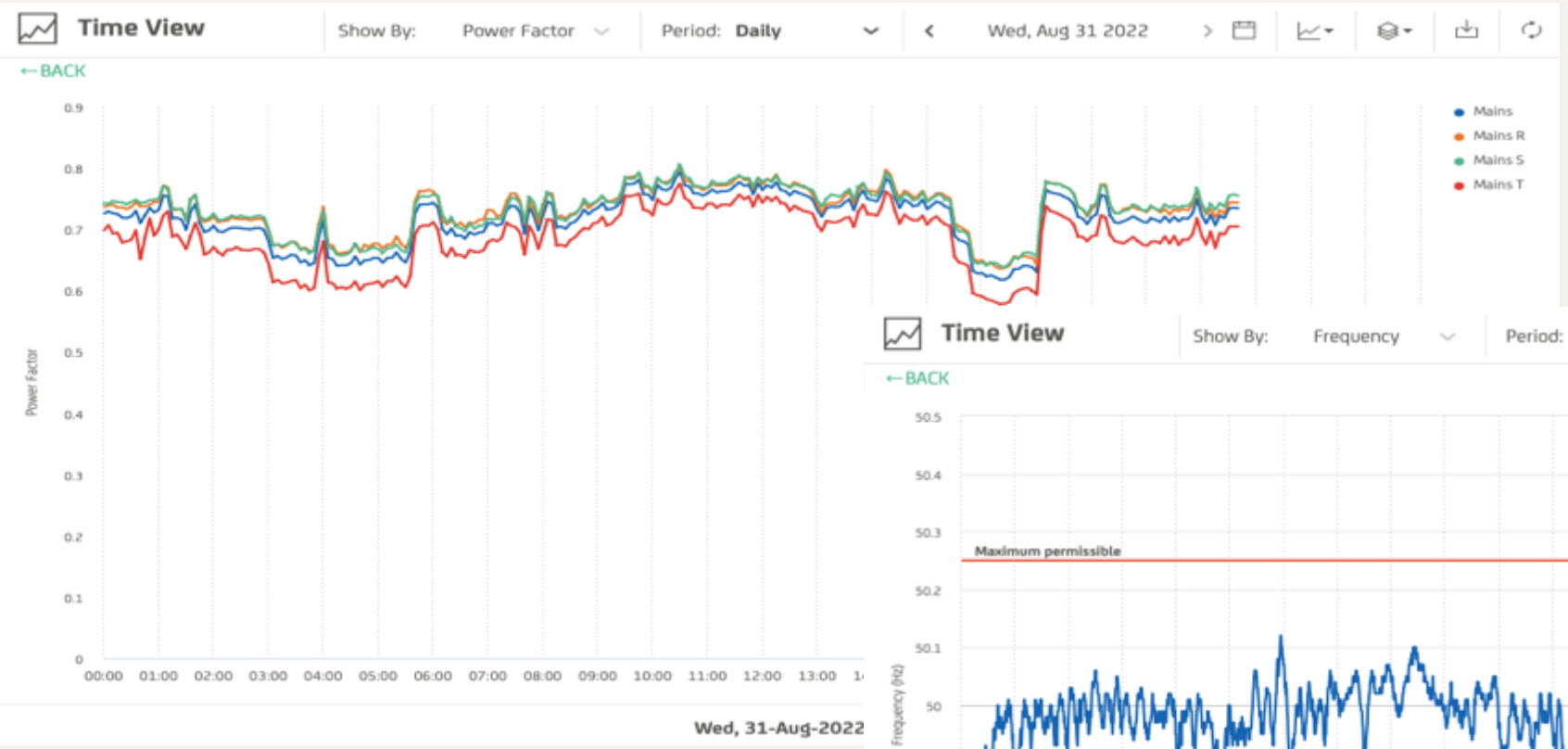


Energy comparison - Hourly/ Daily/ Weekly/ Monthly

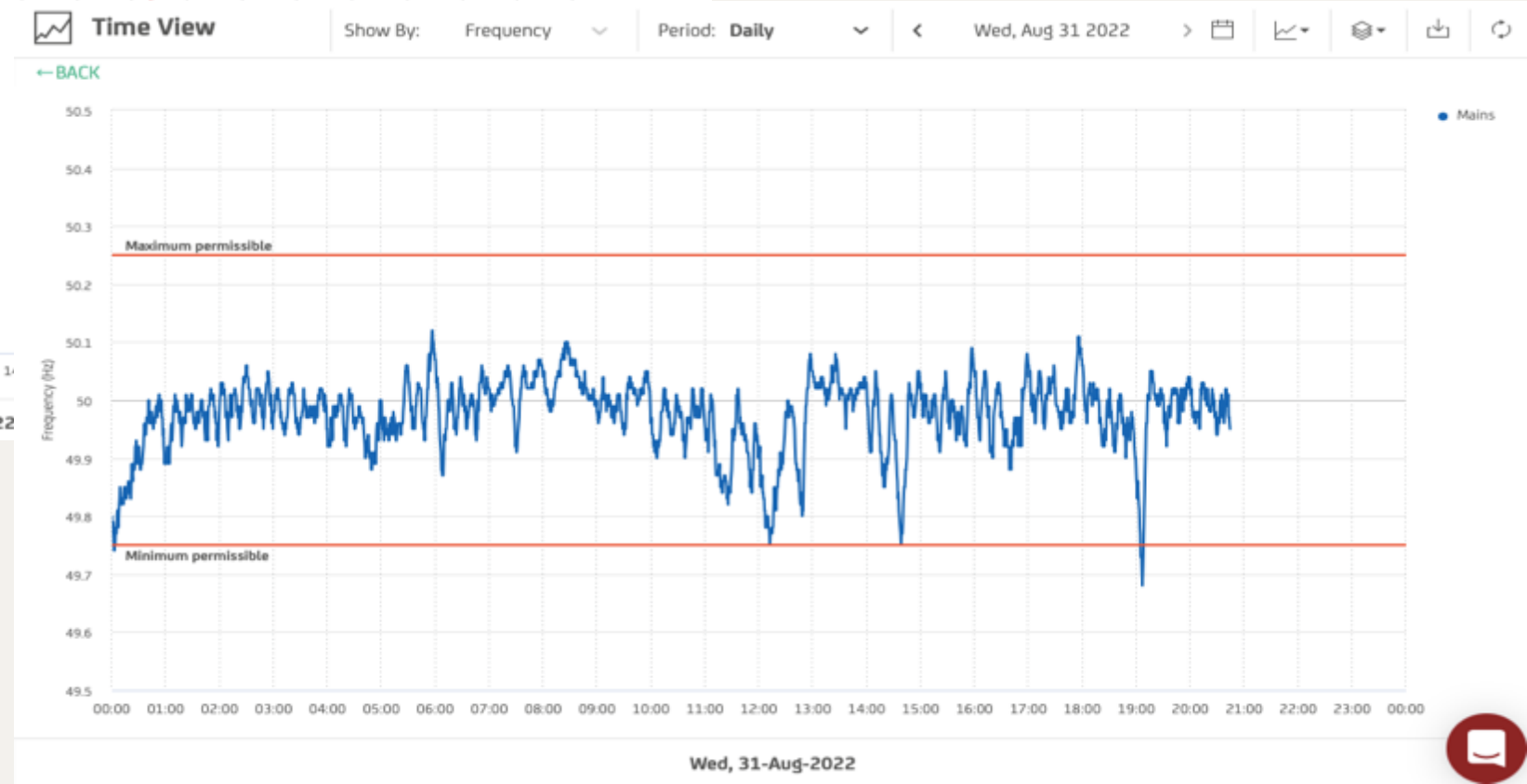


Benchmarking Energy performance by Machine type

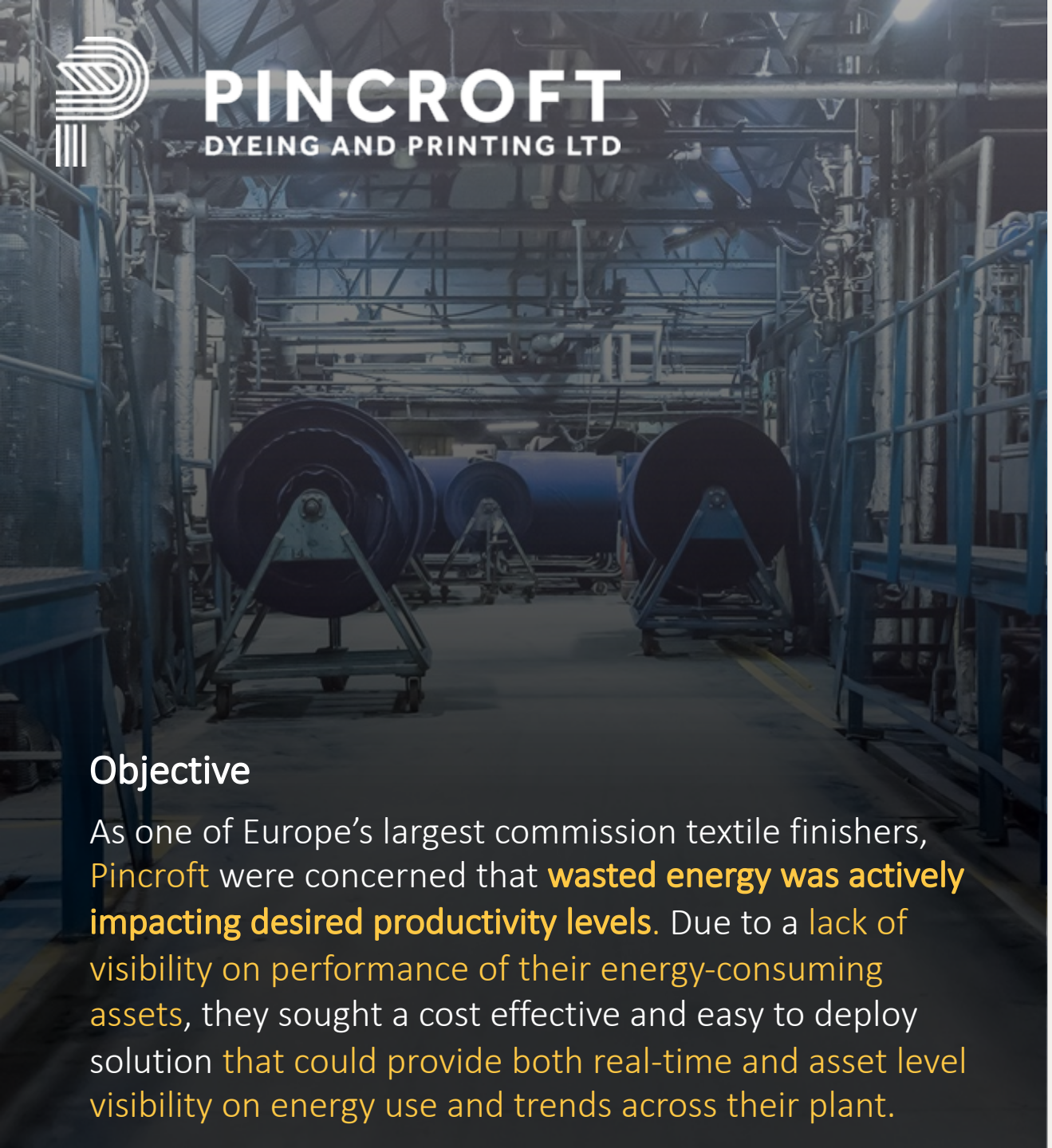
Centrica's **advanced energy analytics** detect invisible cost-reduction opportunities, **offering higher ROI**



Power Factor, Frequency, Reactive Power



CASE-STUDIES



Objective

As one of Europe's largest commission textile finishers, Pincroft were concerned that **wasted energy was actively impacting desired productivity levels**. Due to a lack of visibility on performance of their energy-consuming assets, they sought a cost effective and easy to deploy solution that could provide both real-time and asset level visibility on energy use and trends across their plant.

94%

reduction in weekend energy costs

29%

reduction in weekday energy costs

3

months payback period

Solution

Centrica's sensors were deployed to monitor all HVAC, lighting and production equipment. Pincroft now has a comprehensive visibility into energy consumption of critical equipment enabling them to identify opportunities to improve efficiencies and reduce waste, all in real time.

With a **payback of just 3 months**, Pincroft has reduced their weekend energy spend by 94% and weekday energy spend by 29%. Furthermore, Pincroft is **saving 0.84 kWh per metre of fabric** produced – a significant carbon and cost saving for a company that produces **20 million metres of fabric each year**.

9.6
MWE

Power monitored

100%
COVERAGE

Total Consumption Coverage

12
DAYS

To complete the project

- Candiani needed a **quick and non-invasive way to monitor the energy consumption at its production plants** to comply with Italian Legislative Decree 102/14.
- Candiani's two facilities in the Metropolitan City of Milan employ around 650 workers and produce approximately 25 million metres of denim fabric per year.
- In December 2017, in order to comply with Italian Legislative Decree 102/14, Candiani decided to implement Centrica Business Solutions' Panoramic Power solution, installing **230 wireless sensors** and **25 grid bridges**, harnessing the power and flexibility of PowerRadar software to monitor consumption in real time. The solution was implemented in just 12 days, monitoring a total of 9.6 MWe of power.

- The system enabled Candiani to comfortably surpass the minimum coverage percentages outlined in ENEA (Italian national agency for new technologies, energy and sustainable economic development) guidelines on monitoring systems for industrial sites — it ensured 100% of consumption related to general operations and auxiliary services was covered, with 145 measurements in the first facility and 53 in the second.
- The solution enables the energy carriers at both production sites to be monitored, reported and understood from a single platform, controlling consumption in real time and better managing energy to establish saving strategies.

Case study

Net Zero target is no longer mission impossible

centrica
Business Solutions

TARGET –

- **BioMar** is one of the world's **top aquaculture companies**. They have announced their intention to set science-based targets in line with the stricter 1.5°C standard on emission reduction and to achieve Net Zero within their own operations no later than 2050.
- Using 2020 figures as a baseline, they also plan to reduce the carbon footprint per tonne of feed produced by one-third by 2030.

SOLUTION –

- **Centrica was asked to deliver a science-based pathway to Net Zero** within BioMar's own operations for Scope 1 and 2 that would allow BioMar to align to SBTi and do that as cost effectively as possible
- Centrica **used their Energy management and Monitoring solution to obtain a granular view of existing energy usage and carbon emissions**
- It then **used science-based targets to define various glide paths to Net Zero** within BioMar's own operations, **outlining the Technologies** that could be used and the **financial implications** of each.

Centrica's sensors enabled global building materials giant CEMEX to make direct cost savings and efficiency improvements at sites across the UK

Looking for a solution to build on

CEMEX is one of the world's biggest producers of building materials, with operations in more than 50 countries. Its industrial-scale plants and equipment consume large quantities of electricity at hundreds of production facilities, quarries, distribution centres and marine terminals.

Savings on an industrial scale

Centrica initially deployed its energy insights solutions at three CEMEX locations in the UK. The deployment involved applying wireless, self-powered sensors **to monitor a range of essential machinery, including pumps, conveyors and crushers.** Managers could see immediately that the granular data and accompanying reports to fix under-performing or faulty equipment and to organise its maintenance programmes more efficiently.

The results

Detailed analysis showed that an aggregate conveyor motor at one of CEMEX's quarries was overloading and tripping out, creating a bottleneck in the process. Fixing it immediately increased production. When added to further energy saving measures made possible by the PowerRadar analysis, the solution delivered significant annual savings.

As a result, CEMEX rapidly expanded the use of energy insights with more than 1,600 sensors now monitoring equipment at 42 of its UK quarries.

Saint-Gobain Nor Pro site in Soddy-Daisy, Tennessee, USA

Objective:

Decrease peak demand, which accounted for almost 30% of the annual electrical energy costs in 2016

Case Studies and Identified projects

- Device Analyzer KPI tool for more predictive equipment maintenance
- Identical equipment with different electrical loads
- Batch process cycling longer than needed
- Dryer fans left on continuously

Results:

Centrica's solution resulted in 14% savings of 2017 electrical spend.

This was driven by the following:

- **2% savings -** Identical equipment with different electrical loads. Most efficient compressor was selected as the lead, leaving the least efficient as a back up.
- **7% savings -** Batch process cycling longer than needed
- **5% savings -** Dryer fans left on continuously

Thank You

"Where companies once saw energy as a cost, now they are seeing it as a source of value and competitive advantage"

centrica
Business Solutions

Hi-Tech Facility Engineers
Authorised Partner of Centrica
consultancy@hitechfe.in
+91-9717988990