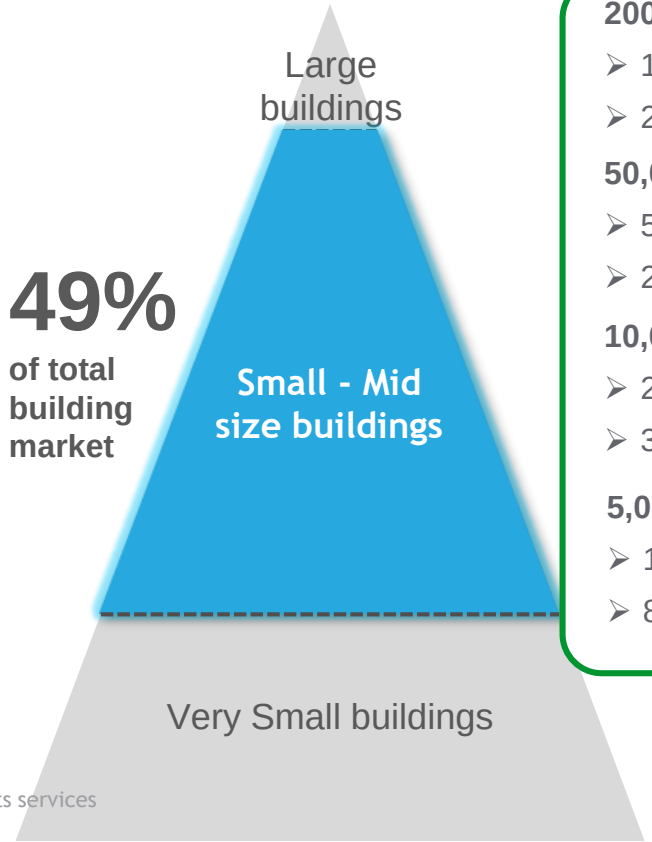
Facility Insights services

Services to improve facility performance and operations

How do we make facility optimization affordable for small and medium buildings?

> 49%

of total building market



200,000+ sqft

- 1.1% of total buildings in Canada
- 24.3% of total floor space in Canada

50,001 - 200,000 sqft

- 5.3% of total buildings in Canada
- 27.2% of total floor space in Canada

10,001 - 50,000 sqft

- 25.6% of total buildings in Canada
- 32.95% of total floor space in Canada

5,001 – 10,000 sqft

- 19% of total buildings in Canada
- 8.1% of total floor space in Canada

How do we address these main challenges?

Maintenance efficiency

- Reduce maintenance costs
- Keeps lights on
- Fix it when it breaks
- Be more proactive than reactive
- Track maintenance

Operational efficiency

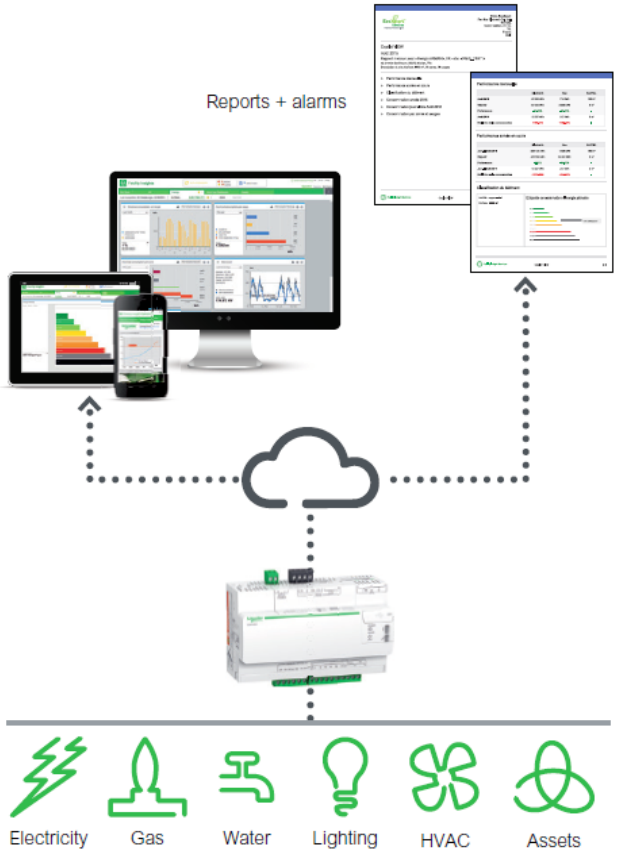
- Cope with limited resources
- Quickly recover from power failure
- Keep occupants happy and working
- Better manage contractors

Energy savings

- Improve sustainability
- Optimize Operational expenses and productivity
- Follow new regulations (ISO50001, LEED, EE directives…)

Facility Insights

- Comprehensive cloud based software platform
- Manage water, gas, and energy data
- Mobile alerts and alarms
- Asset level monitoring
- Monthly and semi-annual reports
- Expert analysis, recommendations, action plans

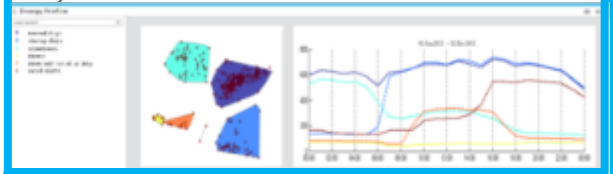


Analytics and services for actionable information

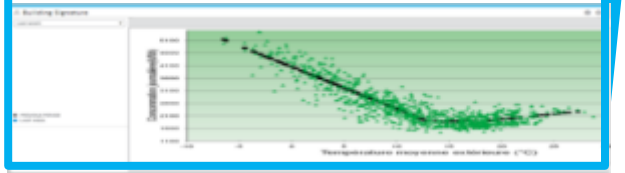
Detect abnormal consumption during nights & week ends

Benchmark energy consumptions versus standard, best potential performance

Detect abnormal consumption during daytime



Detect abnormal operating point during heating & air conditioning periods



Intelligent Alarms

Reporting

Smart Diagnostics

Facility Insights

Schneider Electric

Service Advisor

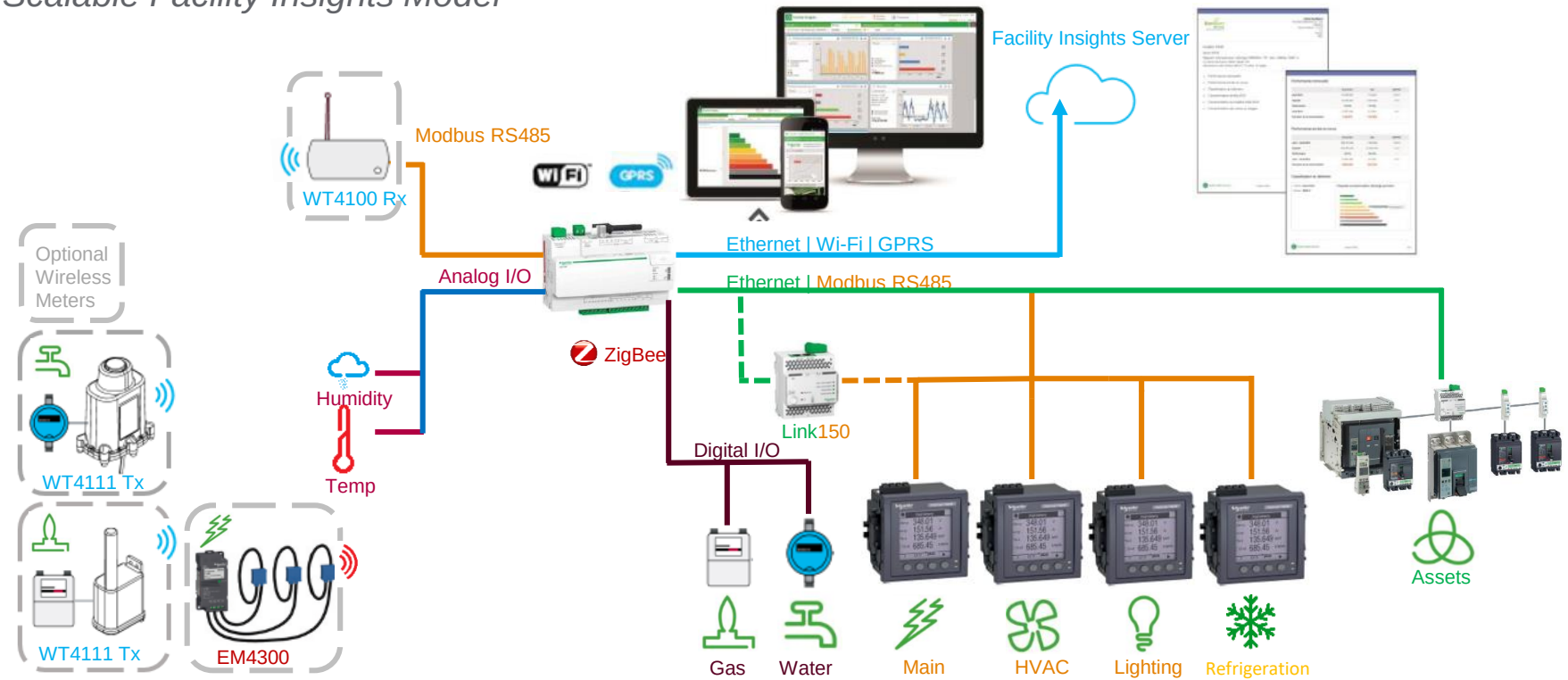
End User customer

Our 2 Levels of Facility Insights Services

Facility Insight Features	Standard	Pro
Energy		
Visualization of energy consumption trends and targets	◊	◊
View energy consumptions per zone, usage, and metering device	◊	◊
Mobile alerts on over target and abnormal consumptions	◊	◊
Monthly performance reports	◊	◊
Multi-site comparison and focus on poor performers	◊	◊
Get consumptions related to weather and business figures	◊	◊
Consumption and cost analysis	◊	◊
Proactive support by certified experts	◊	◊
Semi annual reports (recommendations and action plan)	◊	◊
Operation and Maintenance		
Facilities view: Assets and comfort parameters visualization		◊
Mobile alarms on threshold and status change of connected equipment		◊
Power quality analysis		◊
Task mangement logbook		◊
Mobile maintenance reminders on assets and scheduled tasks		◊
Service Options		
GPRS option	◊	◊
Additional 5 meter or asset option	◊	◊
Historical data for 1 additional year	◊	◊
Recover historical data archive	◊	◊
Energy Kiosk	◊	◊
Develop and schedule an optimized maintenance plan		◊

How do we keep installation costs down?

Scalable Facility Insights Model



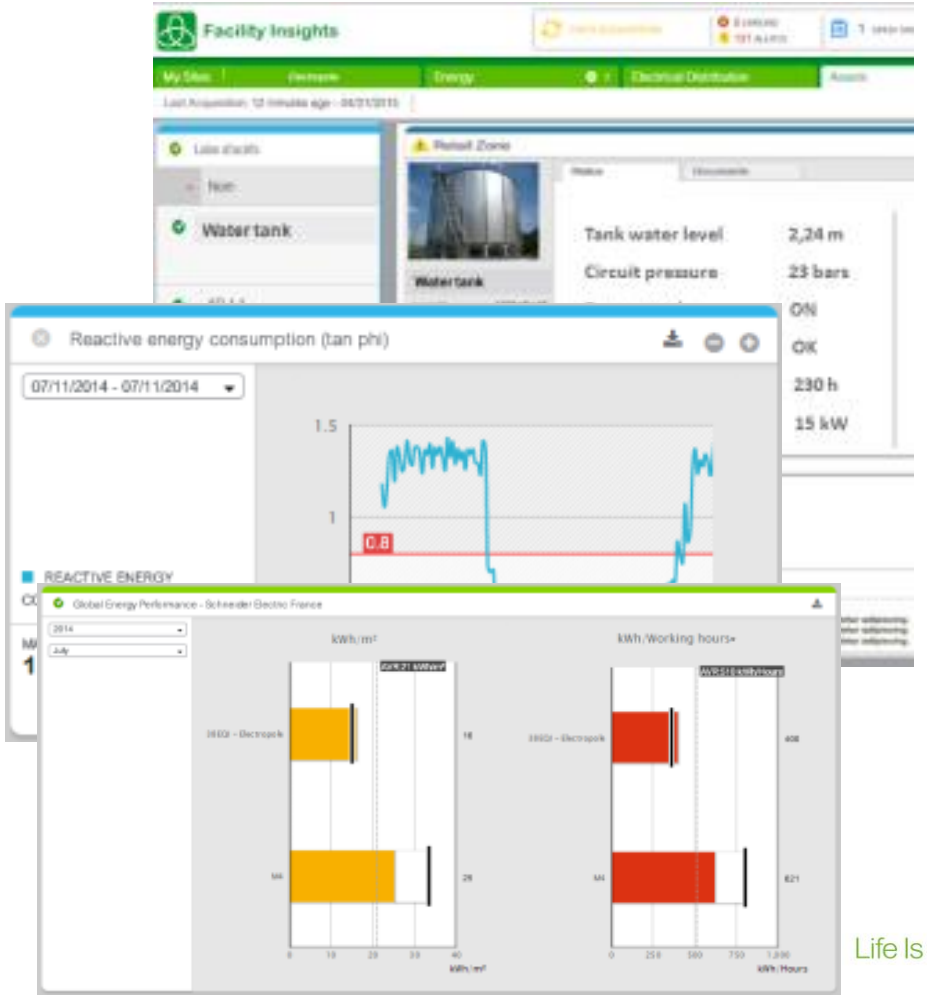
Real Time Monitoring

Mobile Alarms

- Asset defaults to detect equipment failures
- Out of range parameter detection to anticipate maintenance and improve uptime
- Abnormal consumption to avoid unnecessary penalties and leakages

Dashboards

- Monitor energy trends and follow targets
- Multisite benchmark to identify poorly performing sites
- Energy cost for electricity, gas, and fluid tariffs
- Energy consumption against business figures (KPIs)
- Monitor any of your connected equipment to improve maintenance and uptime



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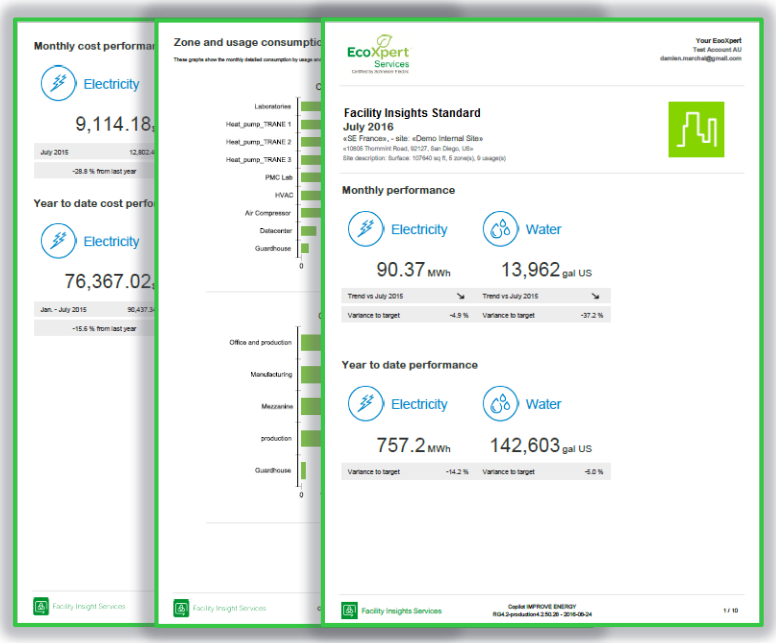
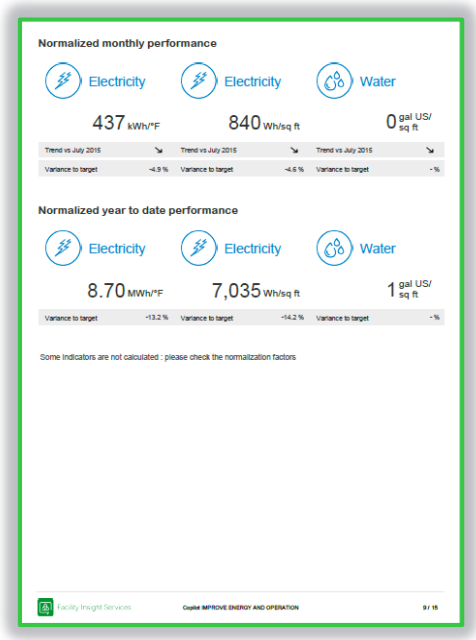
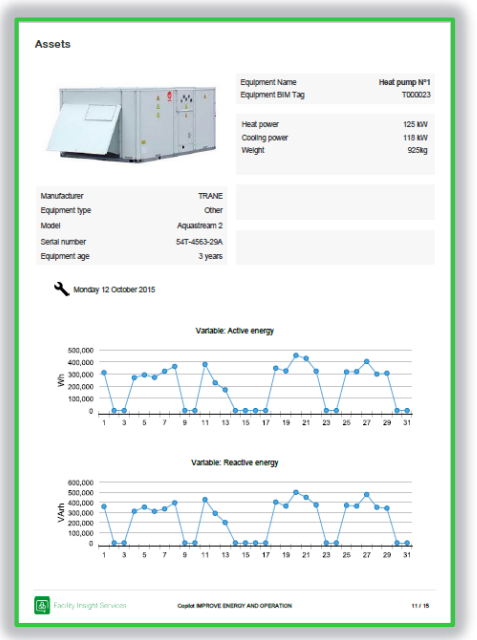
Monthly reports





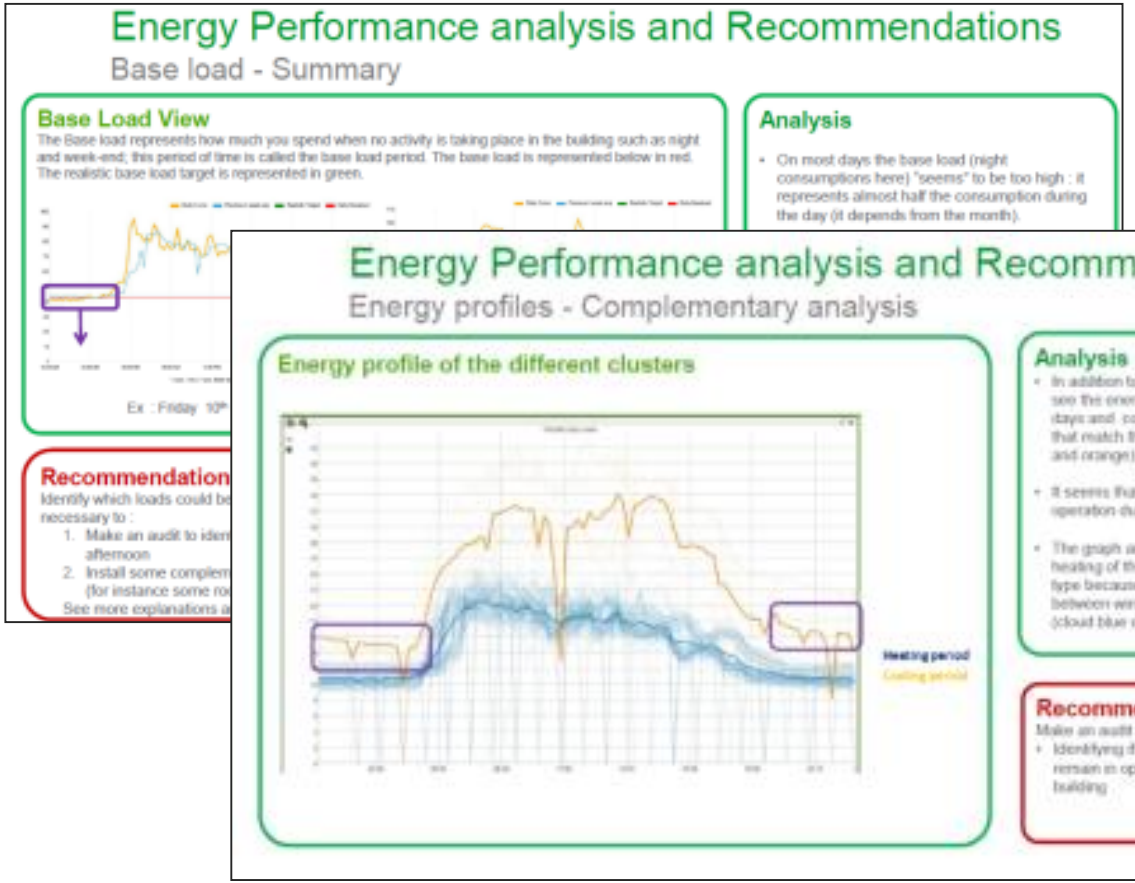


- Consumption and cost performance by zone and usage
- Normalized performance
- Asset Performance

Semi annual reports

The 3 Main Components

- Period Summary
- Energy Performance analysis and Recommendations
- Action Plan Review



Energy Performance Analysis and Recommendations

Base load - Summary

Base Load View

The Base load represents how much you spend when no activity is taking place in the building such as night and week-end; this period of time is called the base load period. The base load is represented below in red. The realistic base load target is represented in green.

Ex : Friday, 12th February

Ex : Friday, 19th March

Analysis

- Most days, the base load energy is too high.
- If the best value is produced every day, a potential savings of 2% on annual consumption is possible.

Recommendations

- Identify energy usages can be stopped or remaining in operation unnecessarily to obtain a better baseload

KPI tracking

- Monthly potential savings **2 %**
- Monthly duration in baseload period **20 hours**

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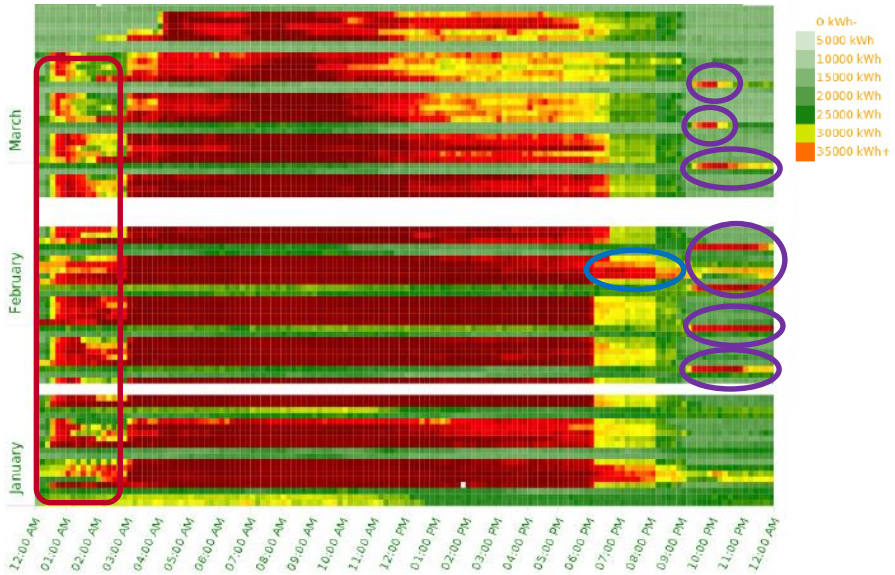
Energy Performance Analysis and Recommendations

Energy Intensity Map

Energy Intensity Map View – 1Q

The following energy intensity map view represents the consumption with colors from green for low consumption to red for high consumption. It is a visualization of one quarter consumption day by day and hour per hour. It is easy to visualize repetitive patterns, vertically when it is a daily pattern or horizontally if it corresponds to specific day types.



Analysis and recommendations

- Night consumptions during the winter (heating probably) were identified in red : potential savings 10% in January to 3% in March.
- An usage is restarting each Sunday evening from 21:00 (probably heating) identified in purple: see next page
- In February we also observed consumptions between 18:00 to 21:00 which are identified in blue : are they some consumptions related to the production?
- Additional measurements and investigations are to be carried out to confirm that the heating is the application concerned by these night consumptions.

KPI tracking

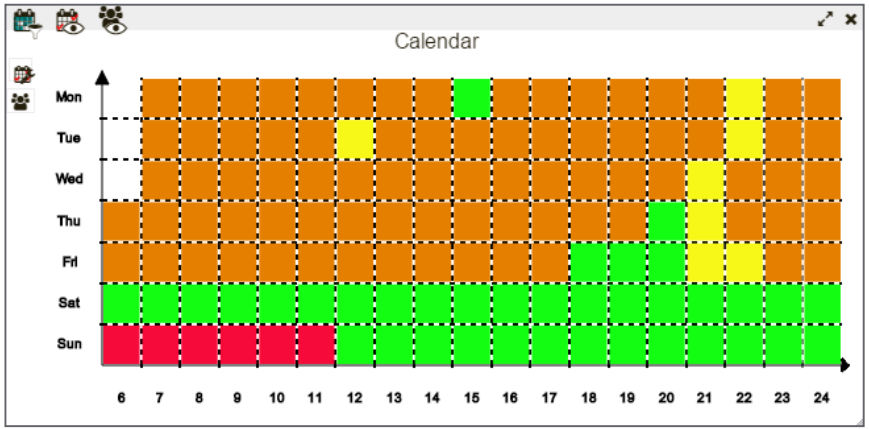
Night consumption / Total consumption	20 %
Night consumption / Day consumption	25 %

Energy Performance Analysis and Recommendations

Energy profiles - Summary

Clusters Calendar View

The following year calendar shows the same color for the days with the same behavior. These groups of days are called cluster : week days, week end or Sunday, specific closed days or holiday are generally visible



Analysis

- The calendar shows a regular consumption for this this site, mainly divided between weekdays (opened days) and closed days (weekends and bank holidays).
- The bank holidays (Easter Monday, 1st and 8th of May and Ascension Thursday) have the same profile as the closed days.
- Atypical or abnormal days (in red and yellow on the calendar) were detected, which require a more thorough investigation to identify possible improvements.

Recommendations

- Check the actual behavior of the site for six Sundays identified in red (heating restarting in the end of days a priori) and for weekdays identified in yellow.

KPI tracking

- Abnormal opened days 7
- Abnormal closed days 5

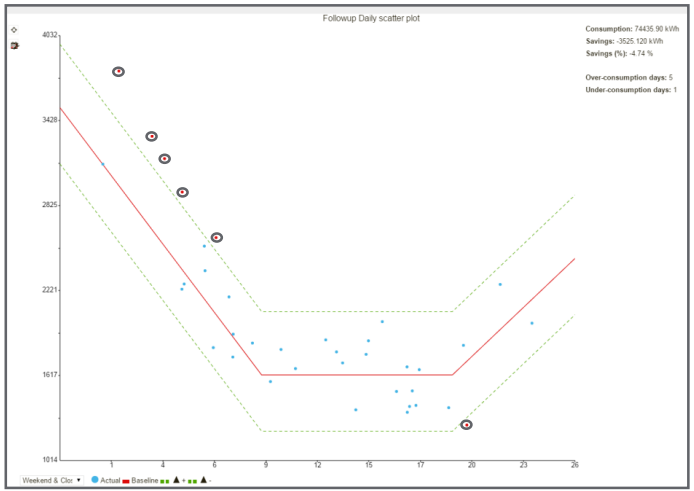
Energy Performance Analysis and Recommendations

Building signature view

Building Signature View – Closed days

On the diagram below we have plotted the energy consumption versus the external temperature obtained from a meteorological database :

- The correlation established (red line) defines a base-line with a certain tolerance : thresholds are defined out of which consumption is considered as abnormal for a given outside temperature (dotted lines).
- Abnormal or atypical days with overconsumption are purple circled on the chart.
- Other atypical days (other red points) have an abnormal profile compared to all other similar days, but without generating excessive consumption.



Analysis

- The correlation is clear : we can see the external temperature effect on the site's energy consumption according to three well identified periods : winter - mid-season and summer.
- 5 days (circled in violet on the diagram) show overconsumption (see details on next page)
- 1 abnormal consumption day was also identified.

Recommendations

- Abnormal days circled in purple require investigations to identify potential improvements.

KPI tracking

- Over consumption days 5
- Less consumption days

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Action plan review

Performance review

Proposed action plan for next period July – December 2015

This section reminds the main potential savings identification and corresponding recommendations ranked for the next period.

Type of analysis	Pertinence indicator	Site behavior	Priority
Baseload	2% of the consumption on the period	Identify the relevant usages	**
Energy profiles	11 overconsumption peaks detected	Analyze abnormal days	**
Energy intensity map	5% of the consumption on the period	Confirm HVAC optimization opportunities	***
Building signature	6 overconsumption days 12 under consumption days	Identify the causes of overconsumption days	***

Points of attention by priority

Energy Intensity Map

- Consumption peaks in the morning that were detected require investigations to identify the source (HVAC, process?) and correct the situation if necessary.

Building signature view

- Atypical energy consumptions during night and weekend periods (HVAC, process, other?) are to be identified

Energy profile

- Subscribed power overruns (consumption peaks) and possible financial penalties (electricity providor invoices)

Baseload analysis

- Atypical energy consumptions during night and weekend periods (HVAC, process, other?)

Summary: Facility Insights Benefits

Facility Insights

Identify energy improvements

- Permanently actionable information to make proper decisions
- Deep understanding of site energy performance
- Understand pending issues
- Be informed on potential improvements on a regular basis
- Expert analysis with our service advisor energy experts

Facility Insights Pro

Improve energy, operation and maintenance

- Prioritize maintenance actions
- Reduce unnecessary travels for multi site
- Anticipate potential failures
- Extend equipment life time
- Save time identifying root cause on event
- Reduce downtime
- Improve management of sub contractors


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