Pulse Energy Energy Visualization for portfolios of buildings

CONTRACTOR OF CO

E E E E I

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www.PulseEnergy.com

Energy Visualization for large portfolios

1. Introduction

- 2. Who is Pulse Energy?
- 3. Who cares about portfolio energy management?
- 4. Conclusions

Portfolios: Why are they important?

- Big footprint, high energy costs
- Energy management is taken seriously
- Common metering and sub-metering infrastructure across buildings

Energy Visualization for large portfolios

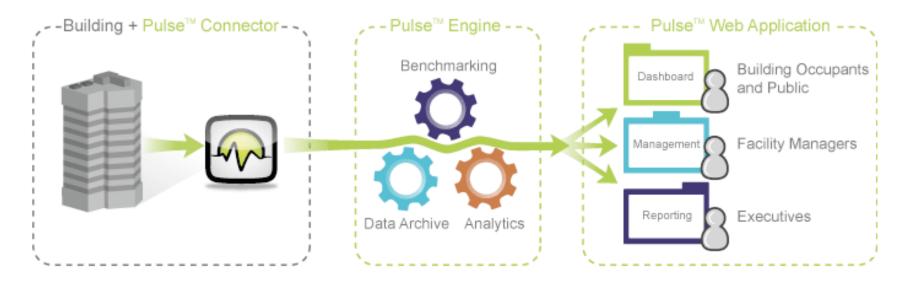
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About Pulse Energy

- Co-founders from the energy and software industries
- Making energy managers into heroes
 - Energy Productivity
 - Measurement & Verification



How it works: Pulse architecture



- Acquisition device reads from meter or BAS • Collect:
- Algorithms process historical data and correlate • Analyze: it to real-time climatic and temporal variables
- Communicate: Web-based views for occupants, operations, and management / reporting



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Organizations are interested in energy management for a number of reasons

- Energy reduction
 - from operations
 - from behaviour change
- Measurement & Verification
- Communicating results & impact

Energy visualization is necessary for a number of things

- Improved Productivity & Analysis
 - Energy Managers
 - Operations Managers
- Reporting
 - Finance
 - Utilities & regulators
- Engagement & Communication
 - Building occupants
 - General Public



Energy Productivity

- Identify a few valuable actions from a large volume of data
- Increased productivity for energy managers





Productivity: Energy and Operations managers need a way to set priorities

			Thresh	nold Alerts
gregate Consumptio	n ▼ → Add a building Show bu	ildings 😚 📃	Active 13	Inactive 96 Acknowledged 130 🤹
11-03-12 to 2011-0			10% Brimaco	020 kW-2' above 'AMPEL-020 kW-2 Typ' by 🖄
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Geography (401)	5,492 kWh		402) 215 —	
Pulp & Paper (747)	6,207 kWh	Lwr Mall Chem Bio M	edA DH Food	6:00pm 12:00am 6:00am
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9. Chem – Centre (132)	67,341 kWh	Research (461) CUR TOO Hall Fact (652) ABC 901 Brimaco	mbe (020) 2 days ago)
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L. Chem Physics (447)	69,409 kWh	Anthropology (048) Chem - (557) (316	LL SCAR Hebt Asia	562 kW' above 'FORW-562 kW Typ' by 6.3% 🔯
2. Michael Smith (083)	90,860 kWh	South Chem - Brim		days ago)
	AREA OCCUPANT	USAGE AREA	'CEME-3	106 kW' above 'CEME-306 kW Typ' by 6%

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Financial and environmental reporting

- Demonstrating ROI
- Carbon and environmental impacts
- Evaluating new projects

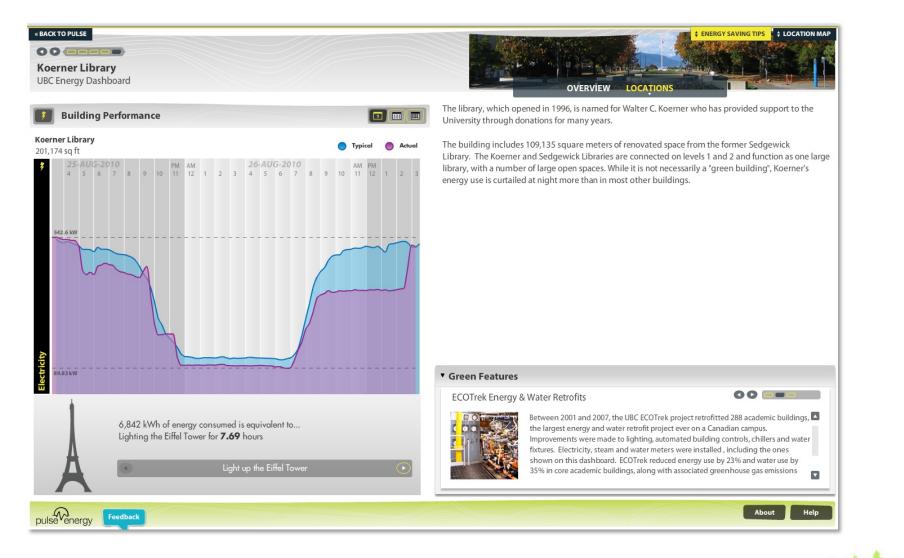
Reporting: Know what works and what doesn't

ortfolio Perform	ance o							_	:select -a (
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	NEGALINE AL		(building.03.name)			8.0			
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US8-6-41		4.7%	{building.065.mame}			2.3	4. (building 04		8.0%
New Building		4.6%	(building.07.name)			1.2	5. (building 05		4.0%
2. LASS-028		0.5%	(building.088.mame)			1_1	16. (building.0		0.3%
3. SCAR:-232		0.5%	(building.059.name)			0_7	17. (building.0		2.3%
KLINK-308		0.3%	(building.10.name)			0.2	18. (building.0		6.0%
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23.6%	+ 3.4%	/	+ 23.6%		+ 3.4%		♦ 23.6	· · ·	+ 3.4%

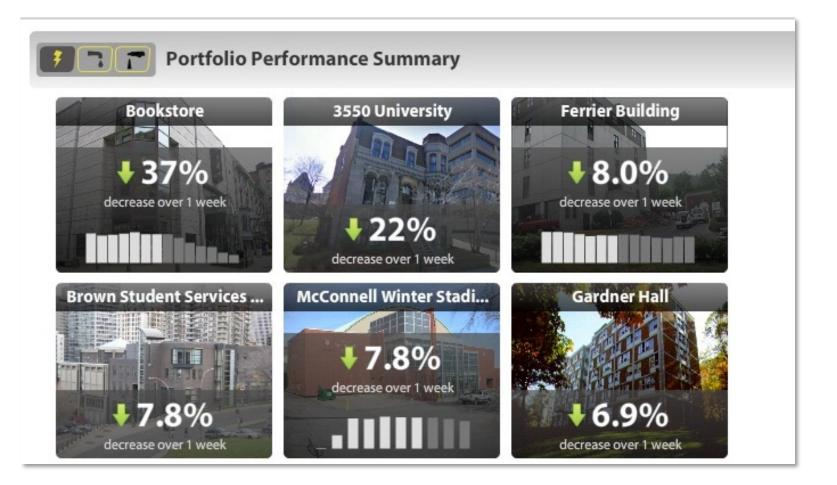
Threshold Alerts

Total Electrical Power above 600 kW	[building.n.ame.01]	16 Days Ago (II-12:33pm	82	8	0
Total Electrical Power above 600 kW	[building.name.01]	16 Days Ago (it 12 33pm	100	8	0

Engagement: Know your audience



Engagement: Getting people on board





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Engagement: Competitions win every time

« BACK TO PULSE

Perkins Will

Perkins+Will Energy Cup Finals

Update: The race is over! In a photo finish, Seattle and Vancouver tied.

The four winners of last week's qualifying round have advanced on to the Energy Cup Finals. This race has headed over to Europe with the teams competing to save enough energy to drive their electric cars **800 miles** from **Paris** to **Madrid**.

The winner will be determined by whichever car has travelled farthest by Friday

What action did you take today?

Turned off overhead lights and encouraged people to turn on their mo desk lamps instead	re efficient
Select your team	Share
I wore kneel-hide boots to keep legs warm. Also became fashion diva at the same time!	1 did this
🗐 Vancouver (3 weeks ago)	+1
I walked around the office more often to talk to colleagues rather than emailing burn more calories & generate positive relationships!	2 did this
🕼 Vancouver (3 weeks ago)	+1



The pace car shows how far an electric car has traveled in order to meet the target energy savings of 800 mi by the end of the competition.

1 kWh of electricity saved will propel an electric car 3.88 mi towards the finish line.

