



Island Finance Forum 2023

A Quantitative Framework for doubling the Energy Efficiency
by 2030 on Small Island Nations

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Efficiency Starts with Building Data

A success history

Agenda

1. The Challenge
2. The Solution
3. Results
4. Under Development
5. Lessons Learned
6. Conclusions - Q&A

1. The Challenge

Hotel with new chiller plants for air conditioning. (449 rooms cooling demand) HVAC equipment not achieving proper energy savings with new and efficient mechanical equipment.

Main objective “maximum energy efficiency”.



PURfx Inc

Mechanical Engineering | Project Design
Main Contractor and Project Developer
USA Based company
<http://www.purfx.com>



Energinne Automation

Building Automation & Controls
Automation Division Only
<http://www.energinne.co>

2. The Solution

Building Automation System, with new controllers for data logging and analytics.

Mechanical optimization to achieve optimum performance from every equipment in the chiller plant.



2. The Solution



Analysis - Hot Water Generation Profile

2. The Solution



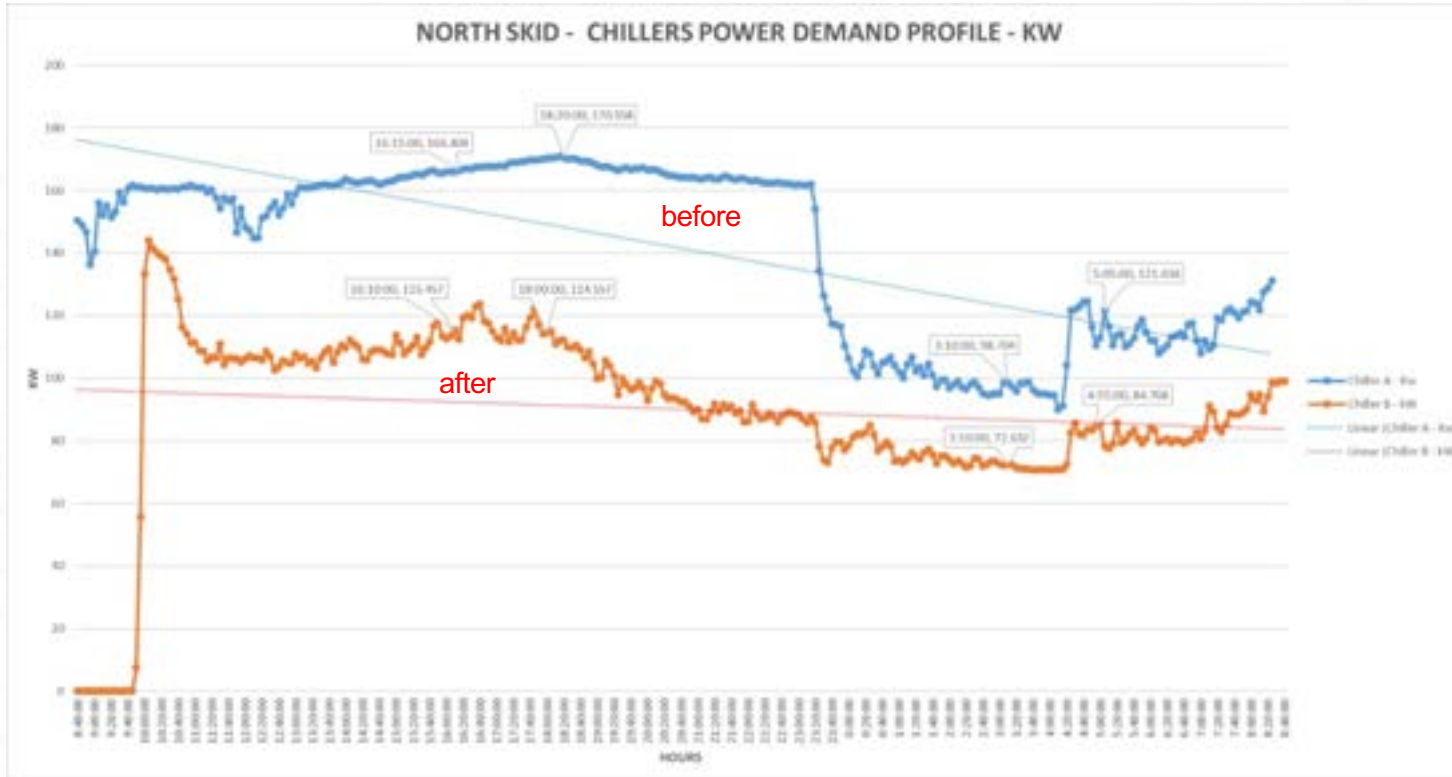
before



after

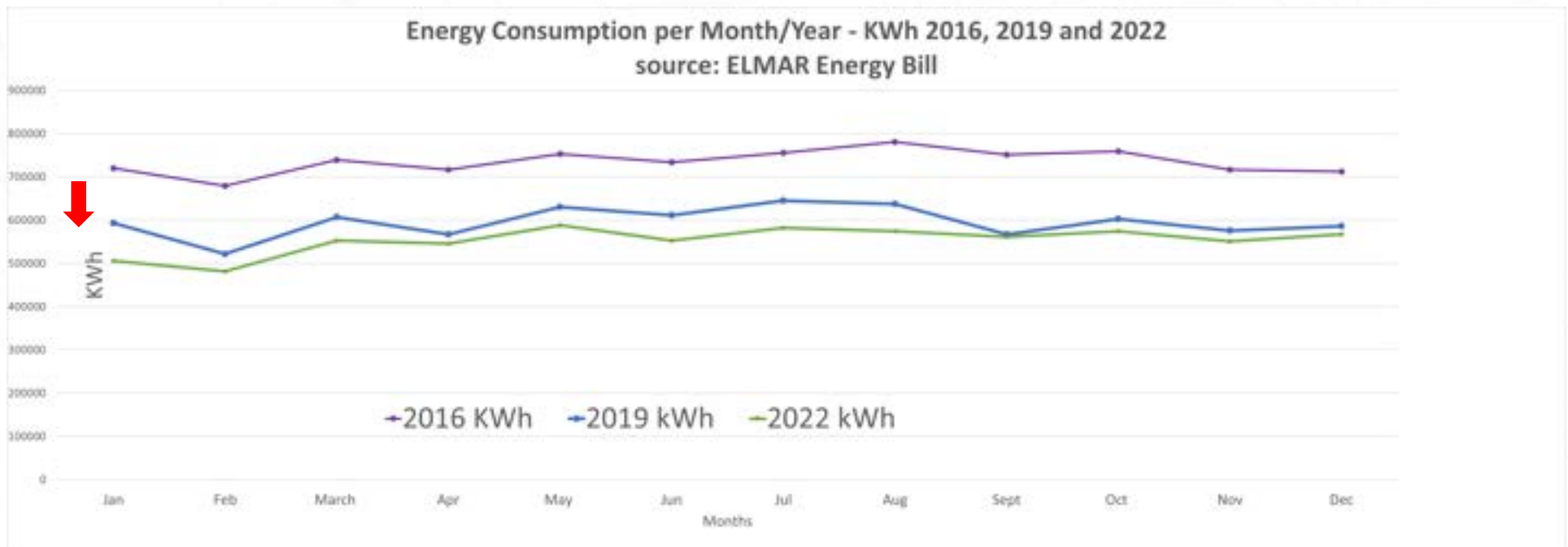
Analysis – Chillers Transition from Heating to Cooling mode

2. The Solution



Analysis – Chillers in cooling mode optimization on heat exchangers piping.

3. Results

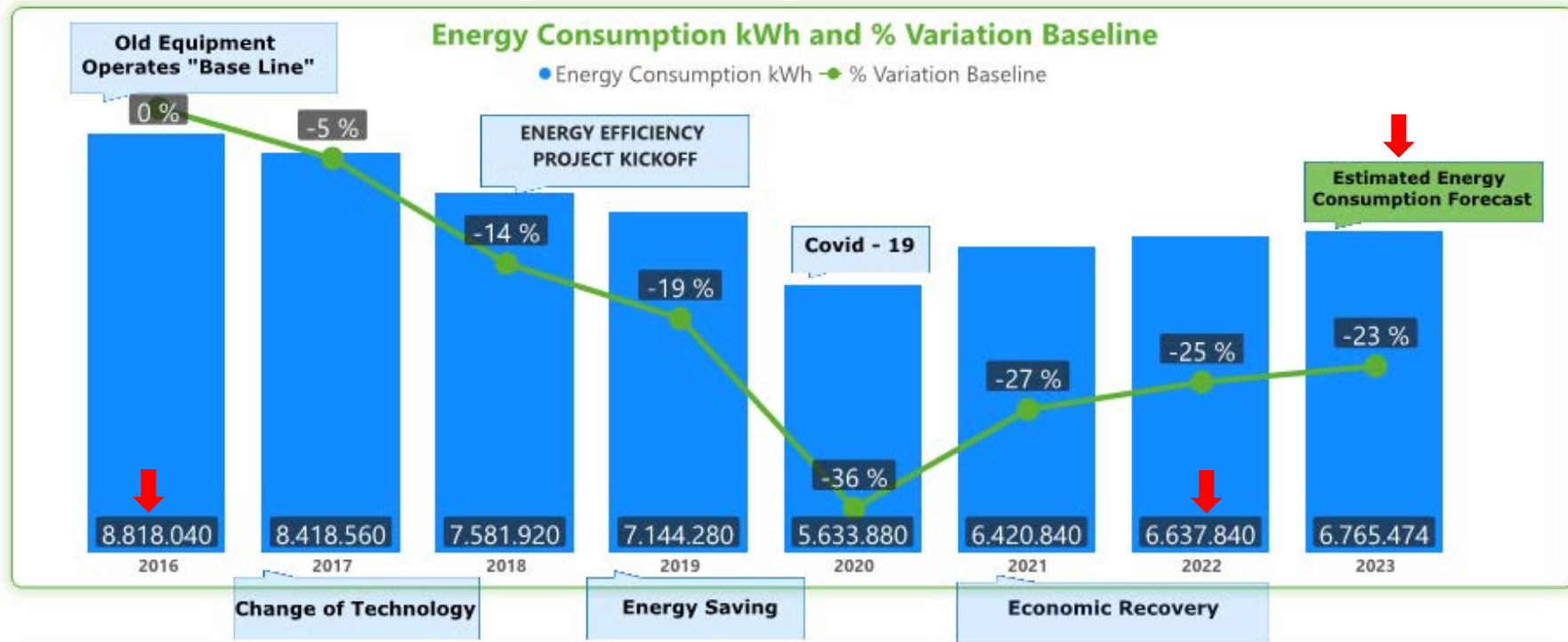


Analysis – New Energy Profile, lowest energy consumption since 2014. 2019 Profile before covid, 2022 profile economy recovery.

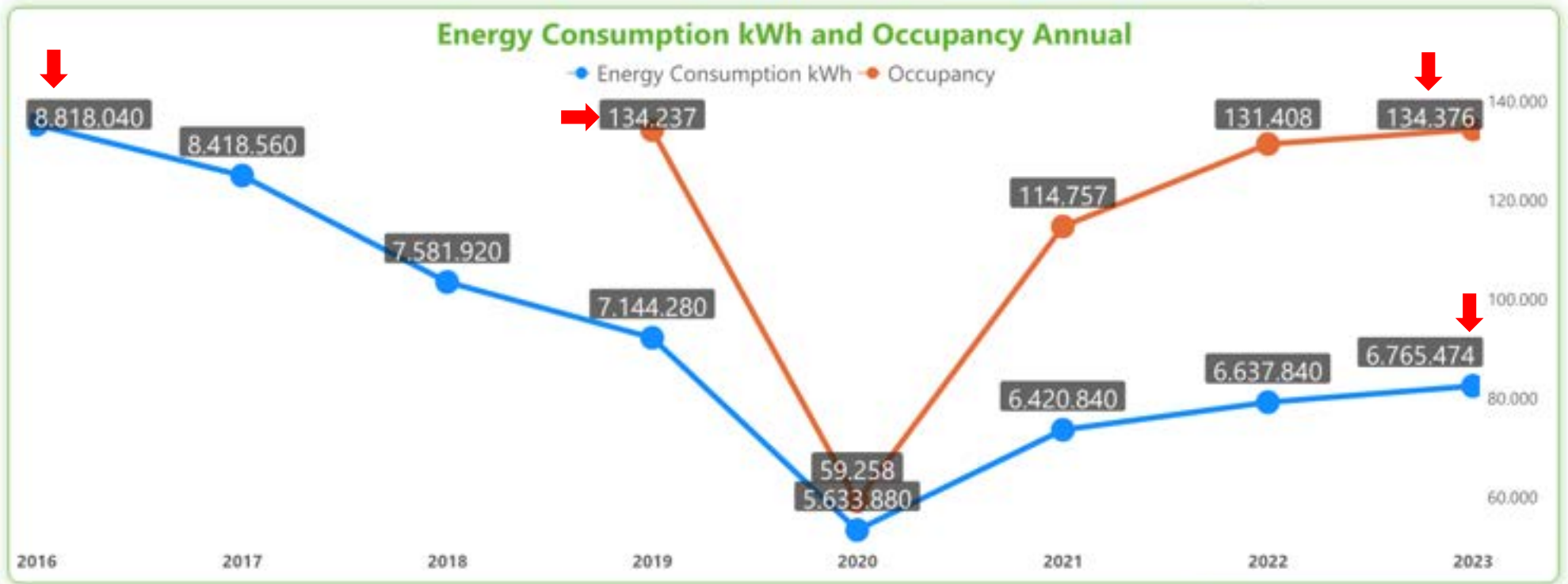
3. Results

Hotel Energy Analytics

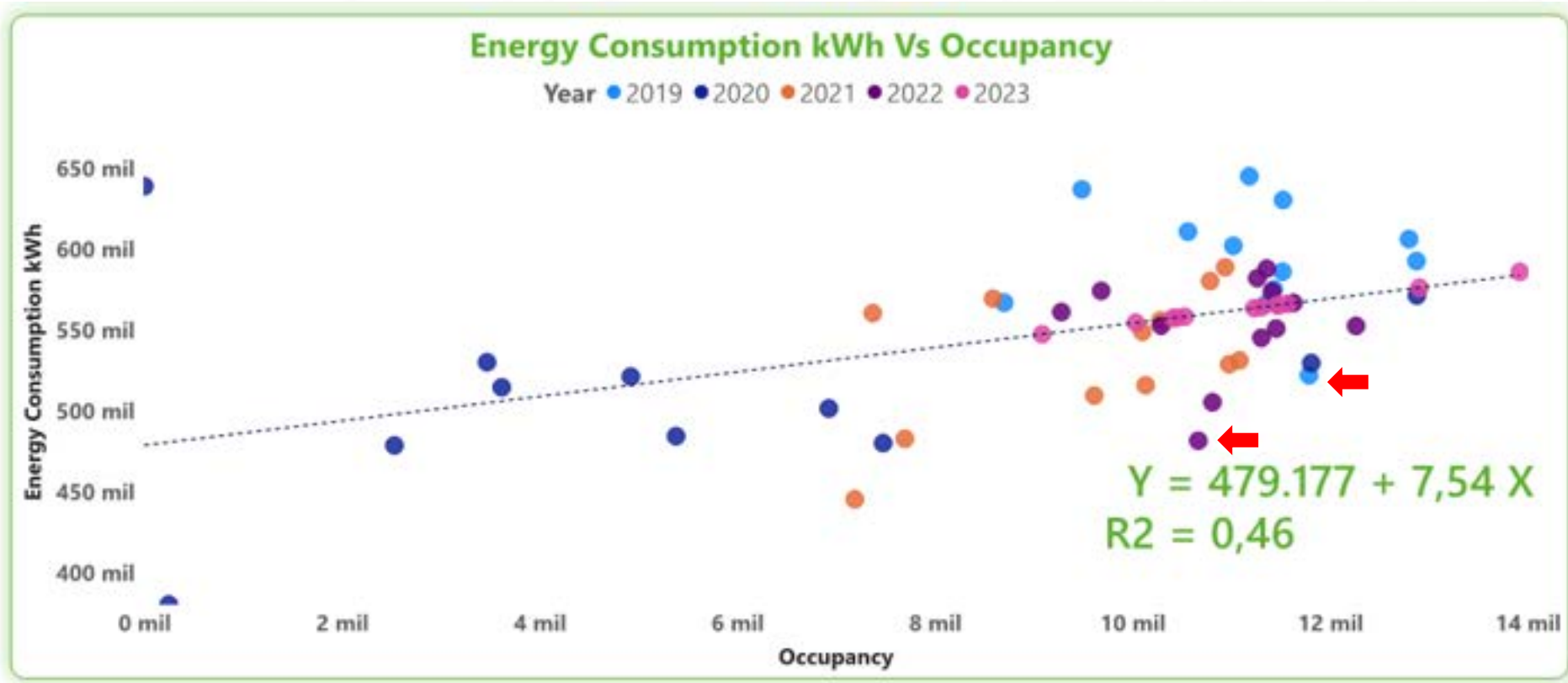
Total Energy kWh	Total Energy USD	Energy Saving kWh	Energy Saving USD	Energy Saving Rate kWh	Tons of CO2 Reduction
33.418.760	10.025.628	13.330.634	3.999.191	18,90 %	2.191



3. Results



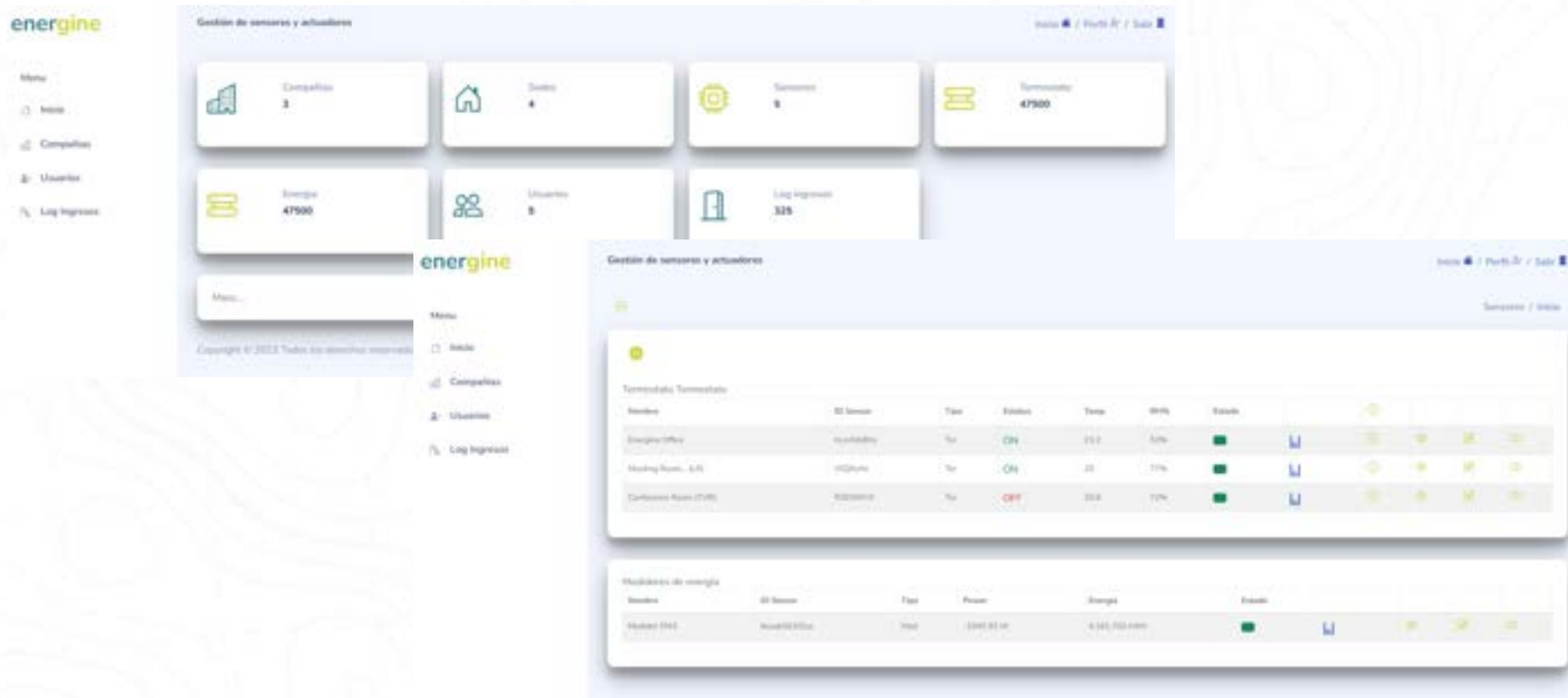
3. Results



3. Results

Principal Information									
Year	Energy kWh	Energy USD	Saving kWh	% Saving kWh	Saving USD	Occupancy	%Occ	Ton CO2	kWh / Night * Room
2018	7.581.920	2.274.576	-1.236.120	-14,02 %	-370.836			-203	
2019	7.144.280	2.143.284	-1.673.760	-18,98 %	-502.128	134.237	81,91 %	-275	53,22
2020	5.633.880	1.690.164	-3.184.160	-36,11 %	-955.248	59.258	36,06 %	-523	95,07
2021	6.420.840	1.926.252	-2.397.200	-27,19 %	-719.160	114.757	70,02 %	-394	55,95
2022	6.637.840	1.991.352	-2.180.200	-24,72 %	-654.060	131.408	80,18 %	-358	50,51
Total	33.418.760	10.025.628	13.330.634	18,90 %	3.999.191	439.660	53,63 %	2.191	76,01

4. Under Development – IoT - Internet of Things / AI Artificial Intelligence



Energine Automation is working in the development of a Web based IoT platform to monitor different sensors/actuators and energy meters.
 New pilot project for small business/boutique hotels to achieve proper energy management with cloud monitoring/analytics applied with the main goal to achieve maximum energy efficiency with a favorable cost for small business-like restaurants, laundry's, etc.

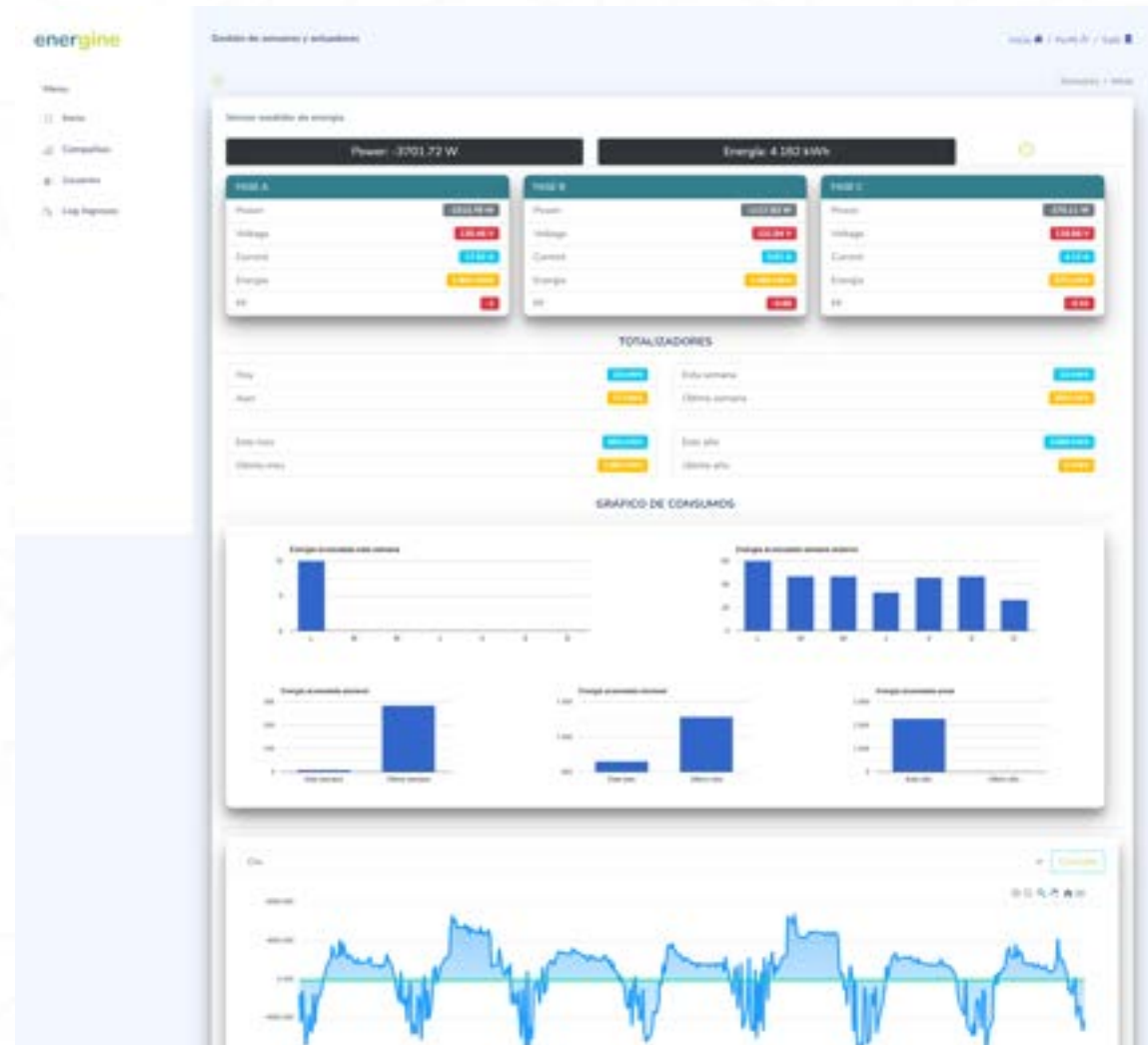
4. Under Development



The new platform still under development - beta process, for internal use only.

4. Under Development

- Realtime monitoring and smart submeters help to identify operations and performance, integration to new business KPI's Vs. Energy / kWh.
- Energy meters validate performance from other technologies like Solar and improve operations to shift loads during best solar production.
- Future integration with AI and ML for better decisions with Realtime data. Total assistance and support on site for alarming and notifications.



5. Lessons Learned

1. How controls helps to achieve substantial energy savings?
2. How Data analytics help facilities?
3. What is the positive impact of data analytics on the sustainability and corporate responsibility initiatives?
4. What are the challenges and roadblocks for proper implementation?

6. Conclusions – Q&A

1. Utilities in the Caribbean should create a framework to support the energy efficiency approach.
2. What is the social impact if a whole island is very efficient, what about energy cost increase?
3. Is there an education framework for the islands to create a new generation for the new technologies demand
4. Continues improvement and education for hotel staff about new technologies related to energy conservation.

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<https://bit.ly/energy-iff>

QR Code

