How a Custom Pump System Slayed an Energy Vampire

85% Reduced Energy Usage in First Year

The Problem
A client came to QuantumFlo needing a cost and energy-efficient pump pressure boosting system for a 24-story office building in Honolulu.

The nearly 30-year-old building was still equipped with three of the original constant-speed pumps. The current legacy system, labeled by QuantumFlo as an “energy vampire,” caused consistent issues, including:

- High energy bills
- Frequent maintenance visits
- Expensive repair costs

Challenges
- Deliver measurable energy optimization characteristics per Hawaii Energy requirements
- Establish existing baseline energy consumption and new system’s projected consumption
- Find an economical and efficient way to reduce energy costs
- Devise a solution with fast return on investment with low total cost for the client

Background
- 24-story office building
- Honolulu, Hawaii
- An energy vampire is a device that continually consumes power to serve a load which requires far less, rendering the user unaware of the losses
- Project between 2014-2015

QuantumFlo’s Custom Pump System Solution Improved Energy Efficiency, Resulting in:

- 85% Reduced Energy Usage in the First Year
- 9 Months = Full Return on Investment
- Nearly $22K Projected Annual Savings
The Solution
QuantumFlo assessed the client’s situation and needs to deliver a custom pump system solution comprised of software and hardware designed to increase energy efficiency and deliver maximum savings.

EINSTEIN, QuantumFlo’s intelligent sizing tool, was used to generate accurate load profiles, crucial in determining ROI and energy savings. This report fulfilled the Hawaii Energy requirements for energy optimization characteristics.

The Brain
Intelligent control and optimization software:
- iQFlo monitors and predicts water demand to reduce energy usage through intelligent pump staging and low flow detection
- GreenFlo reduces energy consumption by automatically decreasing pressure in low flow conditions

The Brawn
Genius V pump system featuring:
- Three 7.5 HP, 3-phase pumps and motors with individual frequency drives and all stainless-steel frames and headers
- Using three pumps enables load separation and optimization, allowing one pump to maintain building water pressure 80% of the time

The Result
The before and after energy audit showed the legacy constant speed booster pump system consuming 86,160 kWh per year. The QuantumFlo retrofit solution measured 13,560 kWh per year.

- Benefits from GENIUS V with variable frequency drive VFD technology produced 20% of the total energy savings
- Precise load profiles and system configurations generated by EINSTEIN delivered 60% of the total energy savings
- Benefits from the proprietary booster pump operating system iQFlo and GreenFlo generated 20% of the total energy savings

The 85% reduction in electricity consumption in combination with much lower electricity demand saves the building owner $329,651 (15-year product lifecycle) on the energy bill.

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<thead>
<tr>
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<th>Annual</th>
<th>15 Years</th>
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<tbody>
<tr>
<td>Electricity Use Savings</td>
<td>$20,553</td>
<td>$308,301</td>
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<tr>
<td>Electricity Demand Savings</td>
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<td>Total Savings</td>
<td>$21,977</td>
<td>$329,651</td>
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The payback period on the investment was 9 months for the building owner.

About Us
QuantumFlo was established to design, manufacture and deliver the best packaged technologies to the pump systems market.

Industries
- Engineering
- Construction
- Turf & Irrigation
- Hospitality
- Commercial & Retail
- Aerospace
- Residential & Light Commercial
- Government & Military
- Power Generation & Utilities