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Zero Point
FRONTIERS CORP.

" We're helping to engineer the future. We do this by accessing, integrating and improving the knowledge base from multiple technology disciplines.

– Zero Point

Energy Huntsville Forum
August 2013

What is a Zero Point, anyway?

In Physics – If you were to bring the temperature of the entire universe down to 0 Kelvin (-459° F or -273° C), theoretically all physical motion or kinetic energy would cease. And yet physicists have determined that energy still exists at that "zero point," which could be tapped.

In Engineering – Every engineering design starts from a point of origin—a zero point—from which all measurements begin. Once you know your zero point, you can begin to design.

At Zero Point Frontiers – We remove the "noise" from a complex system and get it down to its essence—its zero point—to ensure we are solving the correct problem. After that, we can tap the right ideas and build a system that meets the need.
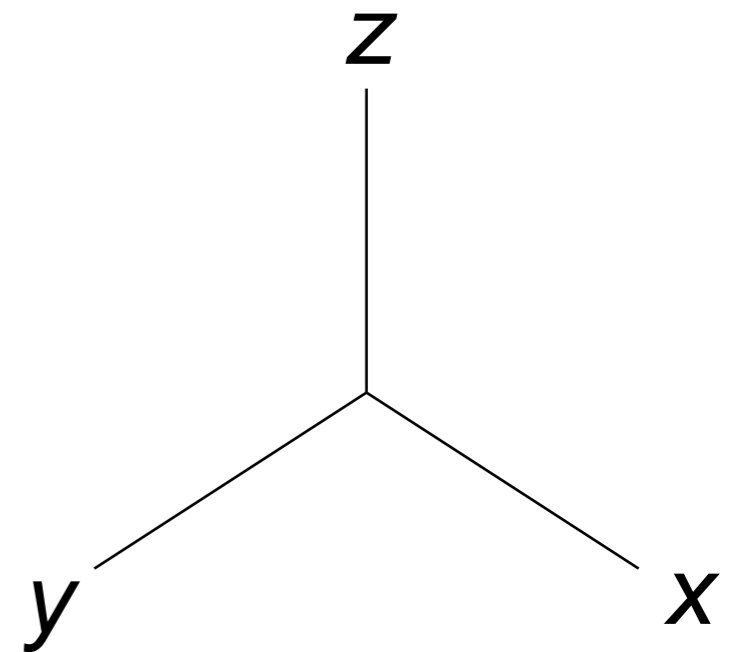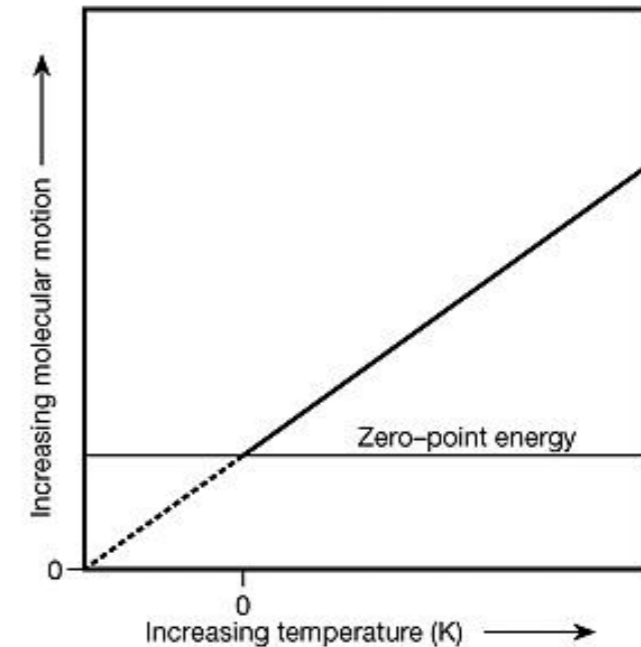
Who We Are

Small business with large-business capabilities

Shared, open workplace: no offices or cubicles

Apple office hardware (Mac, iPad, iPhone)

Project tracking via 37signals

In-house 3D printer

Science fiction fans

Community involvement
- Yuri's Night Sponsor
- NASA Great Moonbuggy Race Participants
- AIAA Board and Committee members

StarshipZero internal research project

Social Media presence
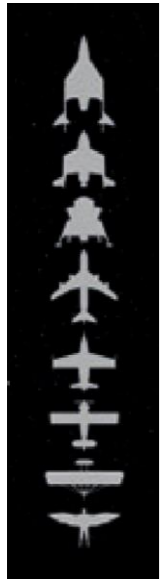
iTunes   Facebook   Twitter   Tumblr   Instarocket

Starship Zero

What We're Doing Now

Air-Launched Rockets: Zero Point Frontiers is partnering with Virgin Galactic to define a systems engineering approach for an air-launched small satellite launch vehicle under DARPA's Air Launch Assist Space Access (ALASA) program.

In-Space Architecture Tools: We are helping NASA develop automated tools that will help them calculate the mass of in-space transportation systems. Calculating the mass is the first step toward understanding how much the system will cost and how long it will take to build.

Space Launch System (SLS) Advanced Development: ZPFC began as a NASA contractor at Marshall Space Flight Center and continues to support the SLS Program Office's planning and advanced development for the nation's heavy-lift launch vehicle.

3D Printing: The future of industrial development will not be defined by the factory but by desktop product printing. ZPFC is conducting internal research and development with this technology to begin prototyping low-cost space hardware.

iOS Apps: Instarocket was just our first step into the app world. We are continuing to define new apps for iPad and other platforms. Expect other developments soon!

How this relates to Energy

Clarity from Complexity: Systems engineering applied to optimize & simplify

The ZPFC holistic approach to engineering has 3 steps:

1. Identifying and understanding the interactions of any technical system

2. Removing the "noise" from the system and getting it down to its essence—its zero point—to ensure we are solving the correct problem

3. Tapping the right ideas to build a system that meets the need.

This approach allows companies and organizations to **understand their environment, identify their key constraints**, and **make good decisions based on solid analysis**.

In the Near-term (Currently IR&D)

1.0 Utilities App (Phase 1)

Home	Understand Your Bill	Summary & Forecast

Electric **Gas** **Water**
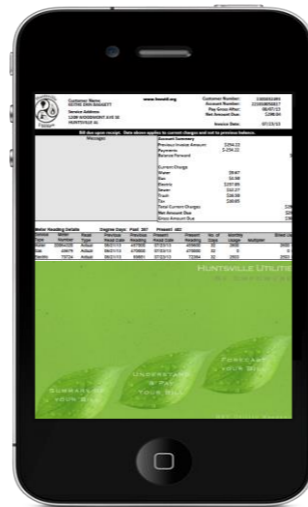
Take a picture of bill
Automated sync
Data populates app
Discover where to save

Comparison Capability
- Last Year/Next Year
- Last Month/Next Month, etc.

Trending Energy Data
- Neighborhood
- City
- State

2.0 The Power of Zero App

Energy Initiative Awareness/Education

Need some Energy?

Tram Charging Station

Wind Turbines

Solar Panels

Aeroponic Greenhouses

Satelite Prevision Farming Demo

Micro Turbine Facility

Biodeisel Manufacturing Facility

In the Mid-term

1.0 Output analysis & optimization

AMRDEC Energy Lab and decision analysis support for solar panel systems

2.0 Charger 1 (formerly DM-2)

UAH collaborative to design compact and mobile power station system with cost/safety benefit and performance analysis, and ultimate testing on Charger 1

3.0 m-SOLAR

Mobile **S**olar-powered **O**ptimized **L**ocation **A**pplication for **R**eal-time

Offer real-time, mobile energy decision-making software available to:

- · personnel at military installations
- · property owners investigating ROI
- · low-income housing initiatives (Nexus)

Incubation Stage

Early-stage thoughts to move into hardware

Leverage skillsets for multiple technology domains

Concept-to-Hardware Approach

Phase 1: Concept development

Phase 2: Concept deployment

Phase 3: Inexpensively build real-time monitoring device (3D print)
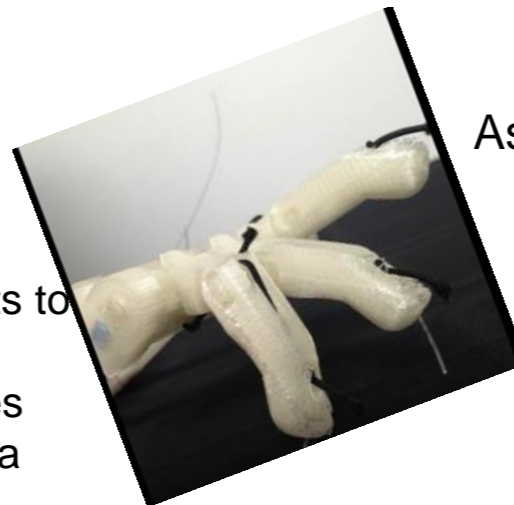
Phase 1

Phase 2
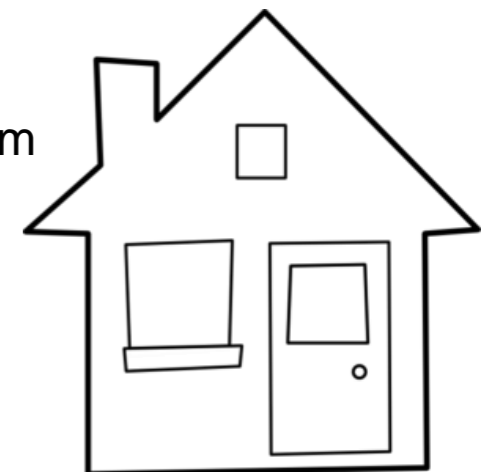
Phase 3

Built-in functionality for tiered usage

Tier 0.1: Average customer wants to understand bill and save money
Tier 0.2: Applicable to businesses
Tier 0.3: Detailed analysis of data

Assess energy usage per room
Detect potential for savings

Net - ZERO

- Long Term for ZPFC

- Quantify and Define Rules (Application Framework for Achieving Net-Zero)

- Use ZP Decision Framework for tailored ROI Investment tradeoffs (lease, buy, forego)

- Blend and evaluate technologies for achieving Net-Zero