



**Powerdigm**

Finding energy solutions  
funding energy savings

**Opportunities for Energy  
Efficiency**

# EXECUTIVE SUMMARY

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- For **three decades**, Tom Kiser, the founder of Professional Supply, Inc. (“PSI”), has developed cost-effective energy solutions for corporate and public entities throughout North America. Powerdigm was formed in 2010 to take PSI’s resume and capabilities to scale.
  - Portfolio includes Eaton, Emerson, GM, Ford, Goodyear and numerous other companies
- PSI, with its team of professionals, of energy systems to optimize project performance. **designs energy solutions, leverages select skilled local trades, manages system installation, and monitors and verifies the daily performance**
- The **results** have been to reduce energy usage, shrink carbon footprints and generate lower energy costs.
  - 30-60% reduction in energy usage is typical for most projects
- PSI **utilizes proven technology** which has been in existence for decades to generate the long term energy savings.
- **Powerdigm, an asset management company**, works with companies to develop strategy and concept design which reduce energy and greenhouse gas emissions, **owns the assets at no upfront cost to the Customer.**
- **PSI and Powerdigm remain with the Customer throughout the project’s life**, monitoring and verifying the project’s performance and guarantee the reduction in energy usage over the system’s life. Next generation projects continue with additional savings and productivity.



# CHANGING PERSEPECTIVES REGARDING ENERGY

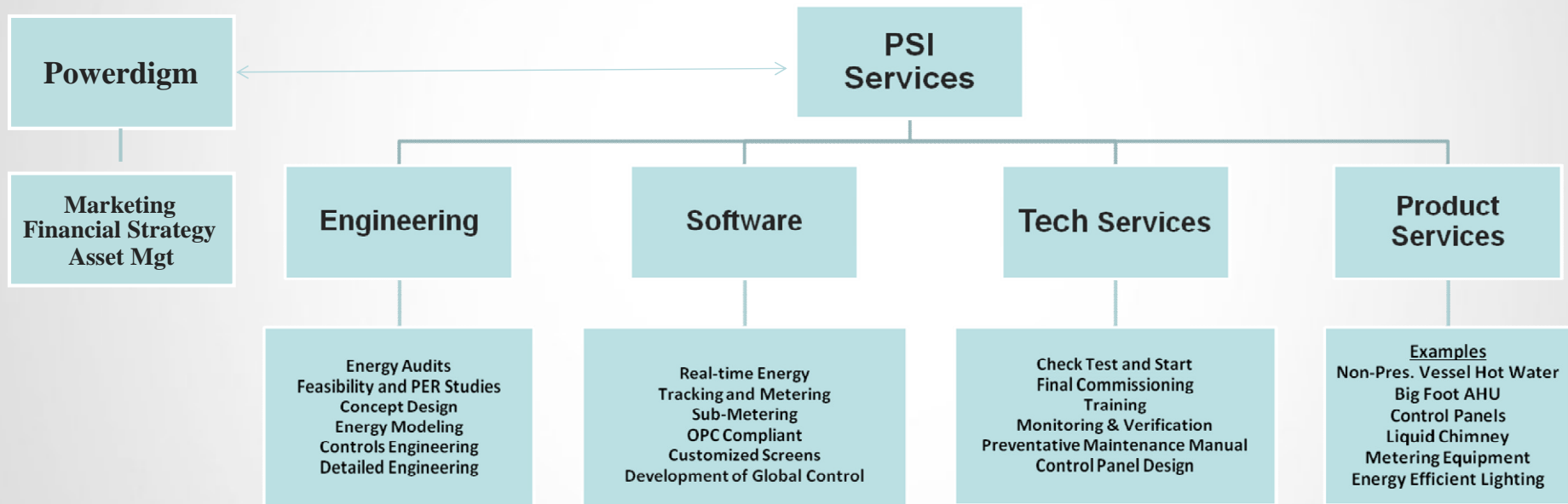
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## PSI educates customers about their true energy consumption.

- Traditionally people only measure the energy purchased, **not** the actual energy needed to operate their facility
- The assumption is that you use virtually all the energy you purchase
  - $$\text{Assumption} = \frac{\text{Energy Needed}}{\text{Energy Purchased}} = \frac{1}{1}$$
- In actuality energy purchased is far greater than what is needed
  - $$\text{Actual} = \frac{\text{Energy Needed}}{\text{Energy Purchased}} = \frac{1}{6}$$
- PSI **measures the energy actually needed** for every system and presents energy restructuring options as concept designs to reduce energy consumption thus lowering energy costs and carbon emissions

# SERVICES PROVIDED

PSI integrates engineering, software, tech services and product design while Powerdigm markets energy solutions, financial strategy and asset management.



# PRODUCT TECHNOLOGY

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**Proven product technology is utilized to generate energy savings.**

- Big Foot: 200,000 cfm Building Ventilator – Direct Fired Air House
- Ductless Distribution system –uses no diffusers
- Hot Water Station (Non-Pressure Vessel)
- Global Control / Energy Management System constantly tracking temp and automatically adjusting to maintain design temp +/- 2 degrees
- Energy Efficient Lighting Retrofits



“Bigfoot”



“Global Control”



“Liquid Chimney”

# PSI EXPERIENCE

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**In 1984, PSI's first large industrial plant was a Ford Motor plant in Sandusky, Ohio.**

- **PSI shut down** the coal-based power house which produced steam and **eliminated 7 miles of ductwork.**
- Changed the fuel source to Natural Gas from Coal when the price of coal was \$1.88/MM BTU and \$5.20/MM BTU for natural gas
- Generated \$1.7 million of annual savings creating a **2 year ROI**
- Also improved the **air quality** within the plant
  - ❑ Due to positive building pressure by monitoring ex-filtration
- Since 1986 and through the 1990s, PSI worked with companies such as GM, Goodyear, New Holland and developed 12 patents and 25 trade secrets.



# ENERGY EFFICIENCY TAKEN TO SCALE

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## **In 1998, PSI executed “energy efficiency taken to scale” with its first multiple plant project for Ford Motor Co validating business model of accountability.**

- Since 1986 and through the 1990s, PSI worked with companies such as GM, Goodyear, New Holland and developed 12 patents and 25 trade secrets.
- In 1998, PSI was contracted to design, manage installation and monitor an energy efficiency project for **12 Ford plants** representing **25 million square feet**
  - Plants were located in both Canada and the United States.
  - Many facilities had **large office facilities** attached to the **manufacturing plant**
- **PSI owned the equipment** and entered into a **performance contract** with Ford
  - 8 contracts guaranteeing \$15 million in annual energy savings **using locked-in utility rates**, with energy savings in excess of the guarantee being split evenly - **largest performance contract in Ford’s history**
- Savings generated by Ford from the performance contract were used to **finance the equipment owned by PSI**
  - The structure permitted Ford to keep the assets **off their balance sheet** and the payment was accounted for as a **utility payment for BTU reduction**
- The original project cost estimate of \$140 million was actually \$90 million due to the **efficiency of scale.**
- Environmental Benefits
  - **CO<sub>2</sub> annual reduction was 257,000 tons** and NOx reduction was 124 tons.

# LIQUID CHIMNEY HEAT RECOVERY

## PSI energy design - first LEED Platinum Designation food manufacturing plant

- In 2010, PSI designed an energy system for a Frito-Lay contract manufacturer. **Thermodynamics** of producing corn chips –what does it take and now how do we deliver that as close to 100% efficient as possible. **Optimize operations/processes. Recover heat** from those process loads. **Mass balance** – how much of that energy can we use.

### Results:

- ❑ 85% reduction in building heating because of waste heat recovery
- ❑ New operational cost produced 30% reduction in metered BTUs. Established BTU/ lb for each line.
- ❑ 30% less energy per lb of product.



- Powerdigm has been hired by other PepsiCo Co-packers /Suppliers to achieve productivity goals.



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# THE POWERDIGM APPROACH

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**Powerdigm’s objective is to generate energy reductions for the Customer translating into economic savings and reduction in carbon produced.**

- Powerdigm undertakes an **energy efficiency project** (“Project”) which will result in significant energy reduction for the Customer translating into lower energy costs (“Savings”)
- **Savings are guaranteed** by Powerdigm, based upon a baseline energy usage model agreed to by the Customer and Powerdigm
- The Project is **owned and financed by a subsidiary of Powerdigm (SPE)**
- **Savings are allocated** between the Customer and Powerdigm
- The transaction structure promotes **operational integrity, maximizes utilization** and generates guaranteed savings
- Energy Service Agreements establish the **relationship between Powerdigm and the Customer**

# ENERGY EVALUATION PROCESS

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**The Feasibility Study will evaluate the financial, environmental and energy reduction benefits.**

- Estimated cost of each feasibility study will differ by project
- Engineering component will describe 1) work to be performed, 2) mass balance energy model, 3) concept design recommendations, 4) timeline to implement, 5) economic savings generated and 6) environmental impact
- Financial analysis component will evaluate the optimal capital structure and investor appetite
- The feasibility study is presented to Customer for evaluation and timing of project implementation

## **Post Feasibility Study**

- Powerdigm provides the customer with an Energy Services Agreement term sheet documenting the relationship, the energy savings and the savings allocation

# PROJECT MANAGEMENT

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**Powerdigm and PSI are involved throughout the Project's life cycle.**

■ **Analysis Phase – Phase 1**

- ❑ Powerdigm works with PSI to develop a feasibility study to determine the projects' parameters and benefits
  - PSI Develops a comprehensive energy model
- ❑ PSI Builds a team to install the project – works with approved contractor
- ❑ PSI Develops the preliminary engineering report
- ❑ **Finance**
  - **Powerdigm** develops a structure that enables the Company to utilize the energy savings to **finance the project**

■ **Implementation Phase – Phase 2**

- ❑ PSI / Engineering firm(s) complete detail design drawings
- ❑ PSI provides construction oversight and management

■ **Monitoring Phase – Phase 3**

- ❑ PSI Checks/Tests/Starts new energy system, with final commissioning of system startup the responsibility of PSI
- ❑ PSI trains customer personnel to operate new energy system and perform preventative maintenance
- ❑ PSI performs ongoing daily monitoring and verification

# ENERGY SERVICE AGREEMENT

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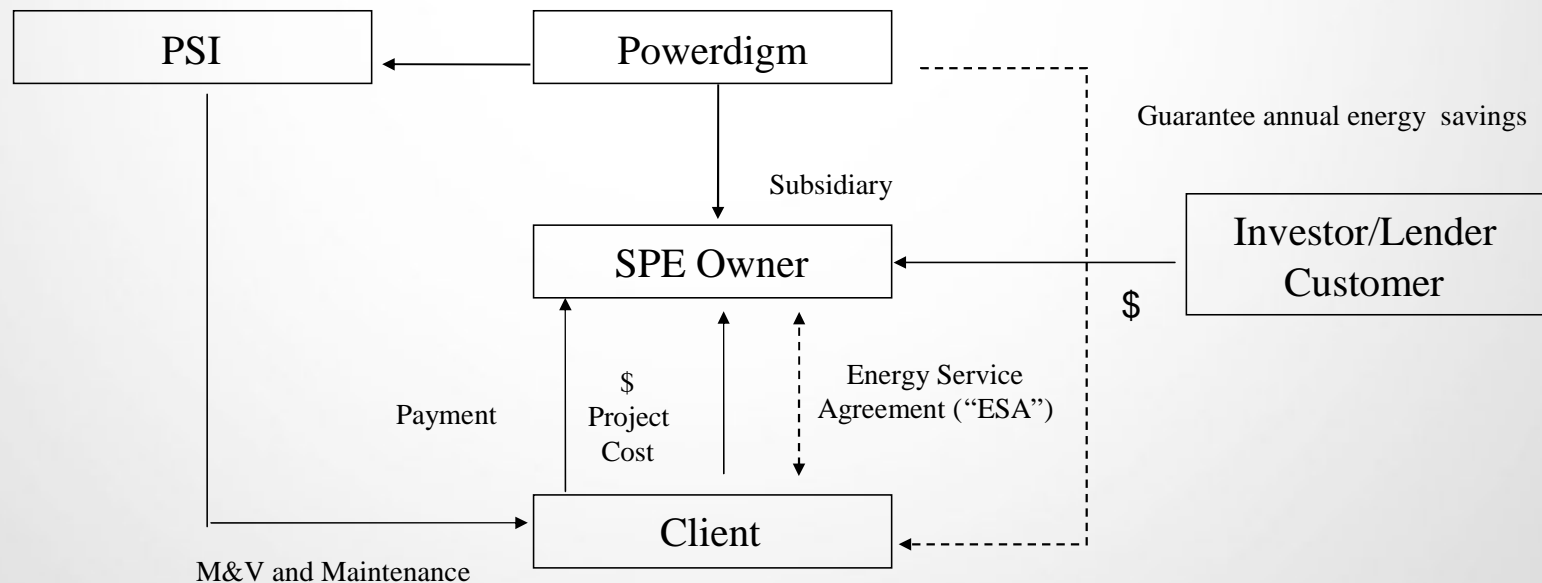
**Using an Energy Service Agreement (“ESA”), Powerdigm guarantees annual energy savings in return for a fixed annual payment for the term of the Agreement.**

- The ESA **allocates a percentage of the savings** to Powerdigm to pay for the following services:
  - ❑ Monitoring and verification services
  - ❑ Debt Service
  - ❑ Scheduled Maintenance /Guarantee Expense
- Payments have been treated as an expense much like a utility bill (money being used to pay back a loan instead of going to the utility company)
  - ❑ the customer is paying for BTU reduction
- **Equipment operation/performance are guaranteed by Powerdigm** for the term of the contract
- The **Company retains the operational control** of the plant and is responsible for performing preventative maintenance on the equipment
- **PSI teaches/trains** how to operate/maintain the system so that the customer can perform the required tasks
- Structural options are presented to the Customer which mitigate risks by contracting for Powerdigm and PSI continued involvement in exchange for a **guarantee of energy reduction**

# ENERGY SERVICE AGREEMENT

**Powerdigm utilizes the following structure when the project financing is provided by independent investors.**

- The financing is provided by an independent investor/lender (or the Customer, if they desire)
- The annual payment from the Customer to the SPE Owner for services performed
- Powerdigm provides a guarantee of annual savings to the Customer using baseline energy costs and usage
- PSI provides monitoring & verification (“M&V”) and maintenance services to the Customer



# ENERGY SAVINGS, MONITORING & VERIFICATION

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**Powerdigm contracts with PSI to provide ongoing Monitoring & Verification, optimizing system per design, guaranteeing actual energy savings over term of the ESA.**

- Monitoring & Verification
  - ❑ **On-site & remote monitoring** of system performance and energy usage
  - ❑ Monthly on-site verification of **preventative maintenance** activities
  - ❑ Third party partner **insuring new operating costs are achieved** in non-invasive yet effective manner
  
- **Sub Metering is used to calculate savings**
  - ❑ **PSI meters or has a metering strategy for every new piece of equipment** in the project
  - ❑ Helps to insulate project from other savings projects or changes at the site
  - ❑ Provides an **exact utility usage** moving forward
    - Studies have shown that just sub metering can help to reduce usage by 5-10%
  - ❑ Enables easy adjustments for changes by process or individual meter
    - Enables partial savings calculations at start up, if phased
    - Partial plant shutdown, renovations or overrides

# CONCLUSION

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## Business and Environmental Benefits - “Energy Service Agreement (ESA)”

### ■ Client Benefits

- ❑ Facilitates sustainability goals for Resource Conservation
- ❑ Reduces utility costs and GHG emissions
- ❑ Allows for integrating renewable and efficiency energy projects
- ❑ Increases cash flow with no capital investment
- ❑ Provides hedge against increases in utility costs
- ❑ Assures life cycle sustainability to optimize system performance
- ❑ Establishes infrastructure platform for continuous improvement