



# ICE

*Innovative Cold Storage Enterprises, Inc.*



Photo by: Ted Walton Photography

*Project Overview*

- Size:**  
Building: 61.5' high;  
134,511 square feet
- Location:**  
San Diego
- Completion Date:**  
2009
- Building type:**  
Refrigerated Storage  
Warehouse
- Energy Savings:**  
62% better than baseline  
storage facility
- Green Rating:**  
Seeking LEED Gold

*Team*

- Owner/Developer:**  
Jeff and Gregg Hamann, Principles  
Innovative Oil and Gas Development &  
Trading Co., Inc.
- Architect:**  
Paul Giese, R.A. - Hamann Construction
- Refrigeration Designer/Contractor:**  
Tom Dosch, PE - C&L Refrigeration Corp.
- Energy Analyst:**  
Doug Scott - VaCom Technologies
- Civil Engineer:**  
Erik Sattler, P.E. - Spear & Associates
- LEED® Consultant:**  
Phoebe Hamann - Hamann Construction
- General Contractor:**  
Hamann Construction
- Utility Incentives:**  
Savings by Design - \$150,000  
Emerging Technologies - \$79,773



*Annual Energy Saved*

**Electricity: 3,409,639 kWh    Water: 1,000,000 gallons**



Photo Courtesy of SunPower Corporation

“The new facility can hold four times more product than the old facility, yet it will take half as much energy to operate.”

- PHOEBE HAMANN, LEED AP, HAMANN CONSTRUCTION



### About ICE

Innovative Cold Storage Enterprises, Inc. (ICE) committed to construct and operate a refrigerated warehouse that minimized environmental impacts. The project optimizes energy efficiency, making this facility 62% more energy efficient than a baseline storage facility. The sustainable design incorporates a jointly owned rooftop photovoltaic (PV) system totaling over 1 MW. The first 504 kW system owned by ICE, provides 36% of the electricity needs for the building. The second 504 kW system owned by SDG&E®, provides renewable energy back to the community. Together, the systems will produce approximately 1,493,124 kWh per year, or 72% of on-site needs.

### Lessons Learned

Continue encouraging city stakeholders to acknowledge the importance of sustainability. Verify that materials are in line with LEED requirements before installation. Apply for Design Review with the U. S. Green Building Council (USGBC) as soon as possible.

### Sustainable Features

- Minimal site disturbance; minimized building footprint
- Cool roof (R-42)
- Onsite bicycle storage and shower facilities
- Reduced parking capacity

### Sustainable Sites

### Water Efficiency

- 75% reduction in water used for landscaping water; 65% reduction in non-process water
- 150,000 gallon underground storm water storage used for evaporative condenser; refrigeration condensate used for toilet flushing
- Water from chemical-less cooling tower used for landscaping
- Pervious paving; drip irrigation; drought tolerant landscaping
- Waterless urinals; low flow toilets, sinks and showers

### Energy & Atmosphere

- Motion-detecting LED light fixtures in freezer
- Three high-efficiency ammonia screw compressors
- Variable speed drives on all components of the refrigeration system with computerized controls to optimize energy use
- Tight-fitting dock doors and high-speed freezer doors that reduce infiltration
- High levels of insulation: R-39 freezer walls
- Over 1 MW of rooftop photovoltaic panels

### Materials & Resources

- Extensive use of recycled materials
- 10% locally extracted, manufactured and processed materials
- Onsite recycling
- 65% construction debris diverted from landfill

### Indoor Environmental Quality

- 90% natural lighting in all offices
- Increased ventilation; carbon dioxide monitors
- Low or no VOC emitting carpeting, sealants, woods and paints on interior

### Innovation & Design

- A single PV contractor and identical PV systems were used to obtain economies of scale
- Energy Dashboard used to balance electrical demand between grid power and onsite renewable energy, allowing significant power savings
- Maximized storage space through narrow aisle racking/radio frequency inventory control
- Battery-electric forklifts that recharge with energy generated by the weight of the product being lowered from the racks

For more information about the Sustainable Communities Program, go to [www.sdge.com/sustainable](http://www.sdge.com/sustainable)



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