



LUMEnergi

Lighting Managed

About LUMenergi

CEO Michael D'Amour

SVP SALES (FOUNDER) William R.(Bill) Alling

CTO (FOUNDER) C.R. (Steve) Stevens

SVP OPERATIONS,
ENGINEERING,
MANUFACTURING
Albert Lam

- Pioneers in dimming electronic ballasts
- Team with over 30 years of experience
- Over 28 patents in ballast and controls

The LUMEnergi Proposition

LUMEnergi's lighting control systems can save you 50-70% on your lighting expenditure!



Replacing existing ballasts

- Obsolete magnetic ballasts
- Inefficient non-dimming electronic ballasts



Implementing control strategies

- Daylight harvesting, scheduling
- Task tuning, lumen maintenance



Enabling demand response

- Shed load on-demand to earn rebates

The Need for Intelligent Lighting



Rising energy costs with no immediate capacity adds



Regulatory environment and society demanding "Green"



No significant lighting innovation in last 20 years

... yet 23% of U.S. commercial electrical spend is on lighting

Managing Fluorescent Lighting

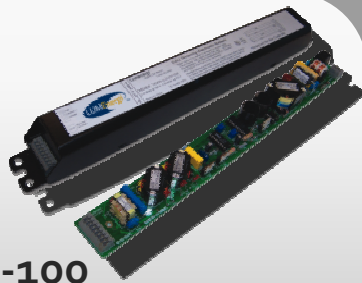
Fluorescent is
Important...

- 85% of California's commercial lighting
- 30-50% of commercial buildings' electric load
- Prevalent and dominant technology for immediate future

But Today's
Technology is Lagging

- Magnetic ballasts wastes energy
- Legacy electronic ballasts inefficient
- Today's dimming systems expensive and provide inadequate controls

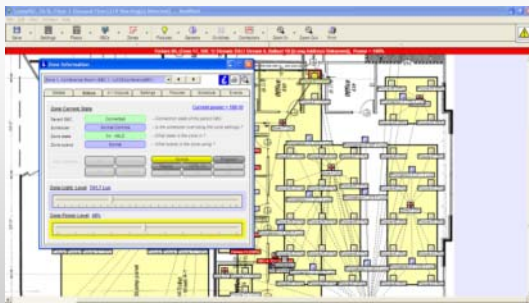
The LUMEnergi Breakthrough



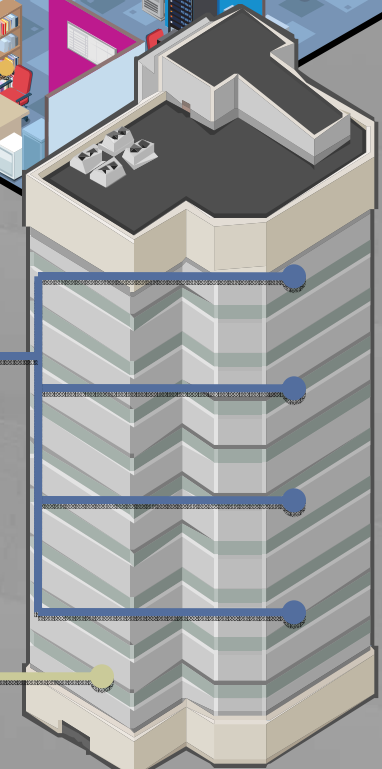
**iB-100
Dimming
Electronic Ballast**



LMCS Control Unit



LMCS Remote Server



The LUMenergi Difference

Proprietary Ballast Technology

- Use of ASIC and embedded technologies enables more functionality with no cost increase
- Patented breakthrough design reduces number of SKUs by factor of 10, lowers management overhead and maximizes interoperability
 - 2 SKUs handle 1,2 or 3 T5, T5HO, T8 lamps at 105 V to 305V!

Industry-Leading Control Technology

- Single remote server manages million square foot installations
- Collaboration with Lawrence Berkeley National Labs and other lighting experts provides industry-leading features with easy-to-use interface
- Support for all lighting control strategies from scheduling, daylighting to task lighting and lumen maintenance
- Advanced Demand Response and support for open interfaces ensures maximum dollar savings today and in the future as new energy programs are created

World-Class Team

- LUMenergi founders have over 30 years of lighting industry experience, with 28 patents issued and filed
- Development team with deep expertise in electronics, hardware and software design

LUMEnergi's Significant Benefits



Benefits to owner:

- Tangible savings, increased productivity
- Payback in 2 years or less excluding rebates
- Lays foundation for future energy management initiatives – intelligent buildings for smart grids, avoids technology cul-de-sacs



Benefits to utilities:

- Improved control, monitoring of energy savings during Demand Response
- Assistance with base load reduction
- Collaborative platform for integrated energy management- visibility into customer environments

Control Strategies = Cost Savings



Daylighting



Task Tuning



Scheduling



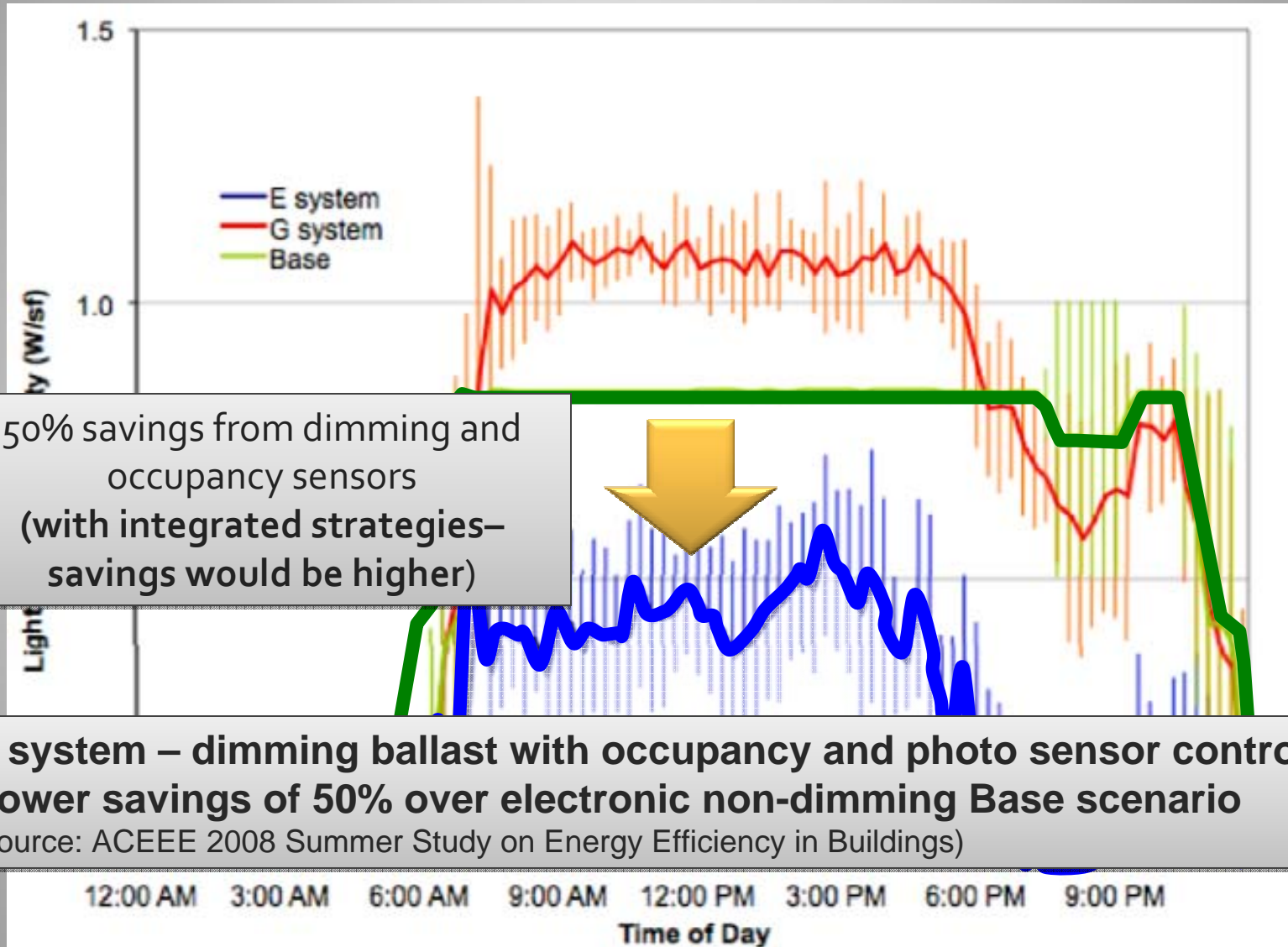
Lumen
Maintenance



Demand
Response

**50-70% Total Savings with
Integrated Strategies**

Proven Savings from Dimming



Productivity and Safety Benefits



Right-lighting



Intelligent Shedding



Smart Scheduling



Emergency Capabilities



Improved Aesthetics

More comfortable employees = increased productivity

Typical Payback Example

Legacy Electronic Ballasts to LUMEnergi System

40,000 sq. ft. 2-storey commercial office building
Retrofit existing T12 with new ballasts and T8

Details

- 700 non-dimming electronic ballasts (350 fixtures) - 2 F34T12 lamps each
- \$23K/year electric bill @ \$0.12/KWh - 4,000 operating hours
- Overlighting in some areas, underlighting in others
- No ability to handle scheduling, demand response

After Installation

- Installed 350 dimming electronic ballasts with 3 F32T8 lamps each and control system
- Integrated strategies provide savings of 50-70% versus previous installation (\$12-14K/year)
- Installation and systems cost \$25-30K

Two Year Payback on Retrofit! (Before PUC Rebates)
plus increased comfort, potential rebates from demand response...

Typical Payback Example

Legacy Electronic Ballasts to LUMEnergi System

40,000 sq. ft. 2-storey commercial office building
Retrofit existing T12 with new ballasts and T8

Details

After Installation

What will YOUR savings be?

- No ability to handle scheduling, demand response

\$25-30K

Two Year Payback on Retrofit! (Before PUC Rebates)
plus increased comfort, potential rebates from demand response...

Benefits At-A-Glance

Unique LUMEnergi Technologies and Expertise

- New functionality at lower cost - affordable dimming on every ballast
- Improved manageability and scalability – simplest commissioning in the marketplace and best-in-class ongoing management

Best-in-class Lighting Management Solutions

- Tangible and measurable savings from integrated control strategies: daylighting, scheduling, task-tuning, demand response
- Improved worker productivity and security
- Ongoing cost savings – like installing a cash-generating ATM

Universal Interoperability

- Easy upgrade and integration with automation systems
- Rapid integration and deployment into existing spaces
- Immediate integration with fluorescent technology today, adapts to new lighting technologies in the future
- Extensible to control other energy-intensive systems

Additional Benefits



Architects and Engineers

- Gain LEED points by minimizing lighting power density
- Implement daylighting, scheduling and other advanced controls
- Comfort and aesthetics
- Enables sustainable and low-carbon designs



Distributors and OEMs

- Breakthrough ballast technology lowers number of SKUs required in inventory
- Highly interoperable ballasts and LMCS ensures fit for multiple projects



ESCOs

- Remote management enables control over multiple buildings
- Detailed reporting provides analytics and analysis
- Demand response provides additional energy savings

Additional Benefits



Energy Service Provider

- Advanced demand response allows multi-stage priority-based load-shedding
- Monitoring and reporting provides for DR verification



Facilities Manager

- Lower replacement cost
- Interoperable
- Virtually maintenance-free
- Long expected service life of controllers

LUMEnergi Core Product Line



iB-100 Dimming Electronic Ballast

- The most technologically-advanced shipping ballast
- Compatible with T5, T5HO, T8 lamps, across wide range of voltages



Lighting Management Control System (LMCS)

- DALI, 0-10V lighting management system
- Manages up to 50,000 ft per unit autonomously



LMCS Remote Server

- State-of-the-art multiple-site control software
- Implements all lighting strategies and demand response

The Flagship iB-100 DEB

Industry's First Intelligent Ballast

30 Years of IP – 28 Patents

- Maximizing silicon reduces hardware costs, increases performance and features
- High Bf (1.20) – more light output
- Local dimming, program start



World-class – Universal Compatibility

- DALI, 0-10V outputs | 105 V to 305V, 50/60 Hz, Emergency Lighting
- One SKU for 1, 2, and 3 Lamps (T5, T5HO, T8)
- Meets or exceeds all energy codes including CA Title 24

LUMEnergi LMCS

Cost-effective and Reliable Lighting Management

- Integrated system management – configured via Remote Server
- Covers up to 50,000 sq ft / unit

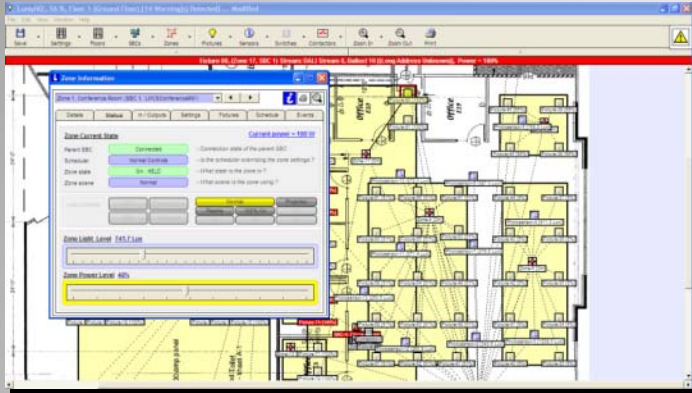
- **32 control zones**
- **Outputs:**
 - 2048 DALI addresses
 - 32 0-10V lines
 - 32 contact (relay)
- **Inputs:**
 - 32 switches
 - 32 photo sensors

- Interoperable with most dimming electronic ballasts
- High reliability with fail-safe and autonomous operation



LMCS Remote Server

World's Most Advanced Lighting Management Software



- Breakthrough in lighting management systems
- Powerful yet simple-to-use
- Desktop, web and mobile device clients
- Manages up to 24 LMCS controllers – across remote buildings and sites



Key Features

- Commissioning wizard
- Advanced scheduling
- Data gathering, analytics and monitoring
- Troubleshooting and maintenance
- Advanced DR capabilities
 - Local
 - Existing fixed system
 - Dynamic
- Emergency broadcast control



Taking the Next Steps with LUMEnergi



Building
Survey and
ROI analysis

Design and
Proposal
Generation

Contractor
Selection,
Product
Purchase

Fixture
Install and
Commission

Training

Let us help you save money, increase employee productivity
and lay the foundation for energy management for the future!

Pricing and Availability



iB-100 Intelligent Ballast

- Available in February 2009



LMCS and Remote Server

- Available immediately



For price quote

- Contact sales@lumenergi.com



Thank You!

For more information:
sales@lumenergi.com
www.lumenergi.com