

Have You Heard? Cutting Edge on the Shelf

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BENYA LIGHTING DESIGN

For the CLTC Forum 11-1-06



Watt's Going On

Retrofit

Current Practices Future Potential Needs

- Yes, we've done well
- But we must do better
- Watt if.....we did watt is sitting there waiting for us



Watt we can do better

Creative and Clever

- Practical
- Marketing driven
- Common sense
- Easily taught
- Easily applied
- Cost not a real issue

Paradigm Shifting

- Significant change in our point of view
- Changes design or construction practice
- Requires significant R&D and significant education
- Changes basic economics



Watt we can do better

Just Do It

- So practical I can't stand it
- Why do you use anything else?
- Common sense like a 2x4 over the head
- Idiot proof
- Payback is fast enough for Scrooge
- Like...duh



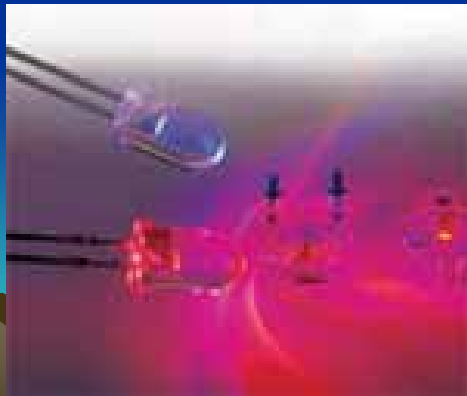
Watts Out There

- Lamps and Ballasts
- Luminaires
- Controls
- Design Practices



Lamps and Ballasts: LED

- Fantastic promise
- Useable products and real applications are the question
- This is early adopter technology



Report Card

Creative and Clever

Paradigm Shifting ✓

Just Do It

Cost effectiveness **F**

Lighting Quality **C**

Acceptability **F**

Lamps and Ballasts: Super T8

- Readily available
- Low cost
- Highly reliable
- Shave 22% energy off standard designs with the flick of a keyboard key



Report Card

Creative and Clever

Paradigm Shifting

Just Do It ✓

Cost effectiveness **A+**

Lighting Quality **A+**

Acceptability **A+**

Lamps and Ballasts: Super T5

- Not easy to find
- Moderate cost
- Highly reliable
- Shave 22% energy off standard designs with the right lighting system



Report Card

Creative and Clever

Paradigm Shifting ✓

Just Do It

Cost effectiveness **B+**

Lighting Quality **A+**

Acceptability **B+**

Lamps and Ballasts: Compact Fluorescent (pin-based)

- Readily available
- Moderate cost
- Highly reliable
- Shave 67% energy off incandescent designs with most lighting systems



Report Card

Creative and Clever

Paradigm Shifting

Just Do It ✓

Cost effectiveness **B-**

Lighting Quality **B+**

Acceptability **B+**

Lamps and Ballasts: Compact Fluorescent (screw-based)

- Readily available
- Cheap
- Reliable enough
- Shave >50% energy off incandescent designs with most lighting systems
- New Generation Professional Grade lamps



Report Card

Creative and Clever

Paradigm Shifting

Just Do It ✓

Cost effectiveness **A+**

Lighting Quality **B+**

Acceptability **A-**

Lamps and Ballasts: Ceramic Metal Halide 150 watts and less

- Readily available
- Expensive lamps, ballasts and luminaires
- Marginal payback <70 watts
- Shave >60% energy off tungsten designs



Report Card

Creative and Clever
Paradigm Shifting ✓
Just Do It

Cost effectiveness	C-
Lighting Quality	A-
Acceptability	C-

Lamps and Ballasts: Ceramic Metal Halide >150 watts

- Available
- Expensive lamps, ballasts and luminaires
- Save 100 watts at a chunk
- Shave >25% energy compared to existing metal halide designs

Report Card

Creative and Clever

Paradigm Shifting

Just Do It ✓

Cost effectiveness **B+**

Lighting Quality **A**

Acceptability **A-**

Lamps and Ballasts: Ceramic Metal Halide (self ballasted)

- Available
- Cheaper than real lighting fixtures
- Reliable enough?
- Shave >50% energy off tungsten designs replacing 60 watt IR or 75 watt halogen lamps



Report Card

Creative and Clever

Paradigm Shifting ✓

Just Do It

Cost effectiveness **B+**

Lighting Quality **A-**

Acceptability **B**

Luminaires: New Generation Troffers

- Readily available
- T5 based
- Ultra high efficiency
- Very thin



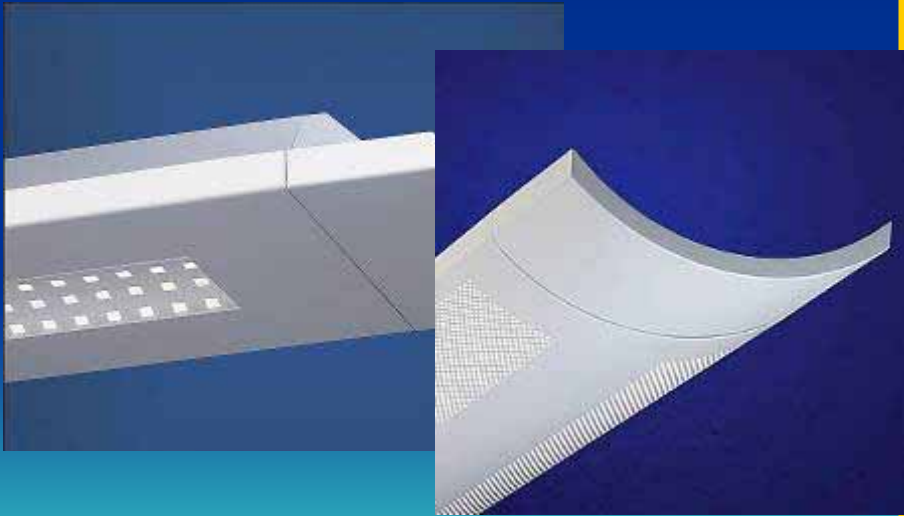
Report Card

Creative and Clever
Paradigm Shifting
Just Do It ✓

Cost effectiveness	B+
Lighting Quality	A-
Acceptability	A

Luminaires: New Generation Pendants

- Great shapes
- T5 or T8 based
- Ultra high efficiency
- Very thin in T5



Report Card

Creative and Clever

Paradigm Shifting

Just Do It ✓

Cost effectiveness **A to C**

Lighting Quality **A-**

Acceptability **A to C**

Luminaires: Fluorescent High Bay

- High performance
- T5HO or T8 based
- Ultra high efficiency
- Can be attractive



Report Card

Creative and Clever
Paradigm Shifting
Just Do It ✓

Cost effectiveness **A to C**

Lighting Quality **A-**

Acceptability **A to C**

Luminaires: HID High Bay

- High performance anti static reflector
- CMH or QMH
- Electronic dimmable ballast
- Lamp choice 250-320-350-400



Report Card

Creative and Clever

Paradigm Shifting ✓

Just Do It

Cost effectiveness **A**

Lighting Quality **A**

Acceptability **A-**

Luminaires: Drop lens downlights

- Increases efficiency >30% with white
- Save 25% or more
- No scallops
- Up to 42 w
- Color glass choice if desired



Report Card

Creative and Clever ✓

Paradigm Shifting

Just Do It

Cost effectiveness **B**

Lighting Quality **A**

Acceptability **A**

Controls: Dimming Ballasts

- Still expensive
- “Efficient” versions just starting to show up
- 5 different dimming circuit types

Report Card

Creative and Clever
Paradigm Shifting ✓
Just Do It

Cost effectiveness	F
Lighting Quality	A
Acceptability	C

Controls: Digital Controls

- Appears cost effective
- Major learning curve issues
- No software
- No application theory
- Very little experience
- Are you sure you want to do this?

Report Card

Creative and Clever

Paradigm Shifting ✓

Just Do It

Cost effectiveness **A-F**

Lighting Quality **A**

Acceptability **C**

Controls: Wireless Controls

- Cost effectiveness issues
- Being developed for the dimmable ballast...does anyone see the problem here?
- And it's a digital system, too

Report Card

Creative and Clever

Paradigm Shifting ✓

Just Do It

Cost effectiveness **F**

Lighting Quality **A**

Acceptability **?**

Controls: Hybrid Controls

- Merges conventional and digital technologies
- Works with existing loads as well as dimmable and addressable ballasts

Report Card

Creative and Clever

Paradigm Shifting ✓

Just Do It

Cost effectiveness **C**

Lighting Quality **A**

Acceptability **B-**

Controls: Daylighting Controls

- Available for both conventional and digital technologies
- Ballast type specific (digital, 0-10 volt, etc.)

Report Card

Creative and Clever

Paradigm Shifting ✓

Just Do It

Cost effectiveness **B-**

Lighting Quality **A**

Acceptability **B-**

Controls: Motion Controls

- Wide variety
- Integrated and stand alone
- Mature technology

Report Card

Creative and Clever

Paradigm Shifting

Just Do It ✓

Cost effectiveness **A**

Lighting Quality **A**

Acceptability **B**

Practices: CHPS/LEED/Savings by Design

- More of ethic than practice
- Wide potential range of results

Report Card

Creative and Clever

Paradigm Shifting ✓

Just Do It

Cost effectiveness **B**

Lighting Quality **B**

Acceptability **B**

Practices: Daylighting

- Massive can of worms
- No established “good practices”
- Subject to the fashion of architecture and design

Report Card

Creative and Clever

Paradigm Shifting ✓

Just Do It

Cost effectiveness **A-F**

Lighting Quality **A-F**

Acceptability **A-F**

Practices: PIER Classroom Lighting

- The single best example of how a best practice needs to be developed
- Provides well defined solutions, guidelines and limited options
- Integrates in a new paradigm: ***conserve steel and copper***

Report Card

Creative and Clever
Paradigm Shifting ✓
Just Do It

Cost effectiveness **A**

Lighting Quality **A**

Acceptability **A**

Practices: Task Ambient/ Low Ambient

- Long established concept
- Too many choices
- Hard to apply
- We need office concepts to match the classroom solution
- Low ambient/natural ambient needs good daylighting

Report Card

Creative and Clever

Paradigm Shifting ✓

Just Do It

Cost effectiveness **A-C**

Lighting Quality **A-B**

Acceptability **A-F**

Practices: Integrated Two Level

- Turn off lights when not needed..duh
- Make it simple for Sparky
- A chance to develop smart projects

Report Card

Creative and Clever ✓

Paradigm Shifting

Just Do It

Cost effectiveness **A**

Lighting Quality **A**

Acceptability **A**

Practices: User Control

- Light Right recommended
- On screen
- Gen X and younger

Report Card

Creative and Clever

Paradigm Shifting ✓

Just Do It

Cost effectiveness **C**

Lighting Quality **A**

Acceptability **A (<35)**

F (>35)

Issues: Culture

- Change our expectations of lighting
 - Adapting workers
 - Less is more is not our culture
- Change our financing structures in buildings
 - Green Money
 - Purple Money
 - Orange Money



Issues: Architecture and Design

- Change our education of architects
 - Function with Fashion
 - A little honesty and integrity about buildings, please
- Make lighting and daylighting easier
 - Interior finishes
 - Space shapes
 - Realistic expectations



Our Reality versus Potential

REALITY

- Connected power 1.0 watts/sf

POTENTIAL

- 0.9 watts/sf connected load
- 0.45 watts/sf average power
- 0.20 watts/sf on peak lighting power



Needs

1. Remove the barriers
 - KISS
 - Economics
 - Commissioning and other scary stories
 - Bad energy codes
2. Ensure the funding
3. Continue the Incentives
4. More Education



Have You Heard?

www.benyalighting.com

