



ENERGY STAR® for Residential Light Fixtures Quality Efforts

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Sponsor: US EPA

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Project Team

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- US EPA
 - Peter Banwell
 - David Shiller

Efforts

- Accelerated life testing (ALT) method for ballasts in ENERGY STAR residential light fixtures
- GU-24 product testing
- Photometric testing of ENERGY STAR residential light fixtures (not discussed here)



Accelerated Life Testing Method for Ballasts

- The goal of the project is to work with manufacturers to establish an ALT method for ballasts used in ENERGY STAR residential light fixtures
 - New spec requires the use of electronic ballasts
 - Needed a test to “weed out” poor performance products

Accelerated Life Testing Method for Ballasts

- Strawperson was developed by the LRC and presented to the industry at a round table held in May 2005
- Strawperson dealt with
 - Heat
 - Continuous operation + cycling
 - Voltage variation
- Question remained unanswered was:
 - How many cycles constitutes a meaningful ALT for ballasts in residential light fixtures?

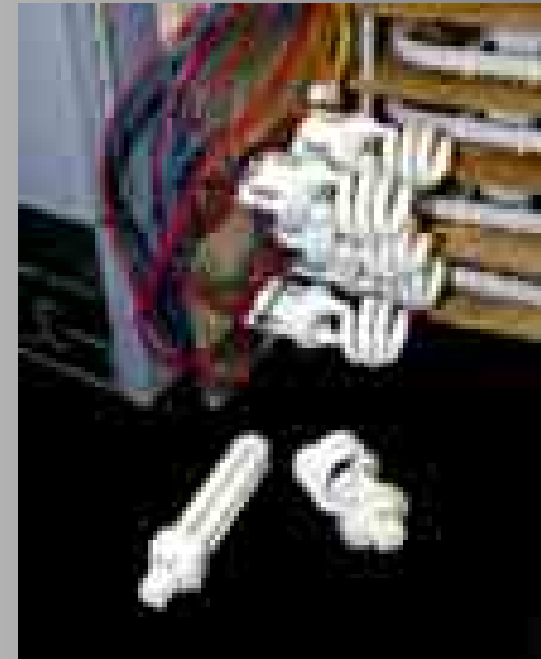
Accelerated Life Testing Method for Ballasts

- The goal of the pilot study performed by the LRC was to estimate the number of cycles needed to constitute a meaningful accelerated life test (ALT) for ballasts used in residential light fixtures



Accelerated Life Testing Method for Ballasts

- Pilot Study
 - Tested 5 ballast samples from 4 manufacturers
 - 2 temperatures (60°C and 80°C)
 - 2 voltages (108V and 132V)
 - Continuous operation for 8 hours
 - At the end of each hour, apply 15 cycles of 20-sec on/20-sec off, totaling 240 cycles for each day of operation
 - Number of cycles varied from 240 to 2880
 - Measured electrical parameters every other cycle
 - Power factor, current crest factor, lamp current and input power should not vary by more than 10%



Accelerated Life Testing Method for Ballasts

- Next steps
 - Present results of the pilot test to participants of the round table on March 16, 2006
 - Review strawperson based on the input from participants of the call
 - Recommend ALT method to EPA

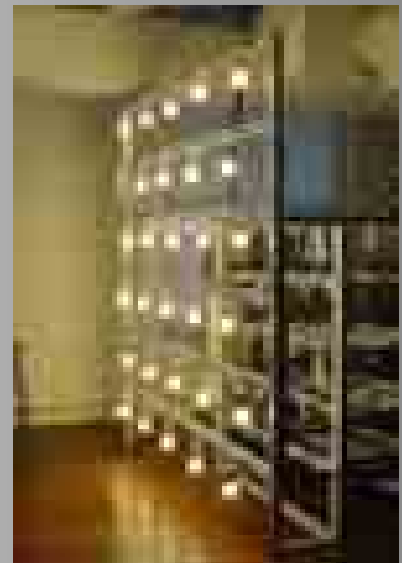
GU-24 Socket Ballast Testing

- Goal
 - Evaluate three models (10 samples each model) of GU-24 line voltage socket ballasts being used in ENERGY STAR residential lighting fixtures

Lamp Wattage	13 watts	13 watts	13 watts
			

GU-24 Socket Ballast Testing

- Testing parameters
 - System (lamp and ballast) efficacy
 - Lumen maintenance (@ 1000-hr and @ 40% life)
 - CRI and CCT (@ 1000-hr and @ 40% life)
 - Others such as start time, ballast frequency, PF, and CCF
- Current status
 - Finished 100-hour seasoning
 - Upgrading and calibrating LRC sphere system
 - Will start sphere measurements by end of February



Thank you!

For more information

www.lrc.rpi.edu

(Lighting Transformations Program)