

R-CFL Technology Innovation Competition

Phase 2 Winners

In October 2006, the U.S. Department of Energy (DOE) announced eight winning models (see Table 1) offered by three manufacturers in Phase 2 of the R-CFL Technology Innovation Competition. The winning reflector compact fluorescent lamps (R-CFLs), manufactured by GE, Osram Sylvania, and Philips, have passed rigorous specifications, as well as testing requirements that simulated the environment typically found in recessed downlights. As part of the competition, each lamp had to meet a number of technical specifications and reach an average rated life of at least 6,000 hours in high-temperature testing. The eight R-CFLs join two other models by Philips and Feit that were identified as winners during Phase I of the competition. Up to three additional models are scheduled to complete testing in March 2007.

Phase I Winners

In 2004, three¹ of the 10 lamp models submitted to the R-CFL Project (Phase 1) successfully completed over 6,000 hours of elevated temperature life testing and were deemed winners (see Table 1).

Overview

This two-phase effort was designed to improve the performance of screw-based R-CFLs and to increase their availability. This competition was intended to encourage new technologies and products through a competitive performance solicitation. This project is sponsored by the U.S. Department of Energy (DOE) and implemented by the Pacific Northwest National Laboratory with the cooperation and assistance of several organizations with similar interests. A number of organizations stated their intent to give buying preference to winning models, given the concern in the marketplace over the quality and performance of this category of CFLs.

How it Works

DOE solicited from manufacturers R-CFLs that are specifically designed for use in high heat applications, such as airtight, insulated ceiling-rated recessed cans. R-CFLs that meet the program's minimum requirements and successfully complete Elevated Temperature Life Testing (ETLT) to be declared competition winners. Initial evaluations, including the Short Term Acceptance Test, were completed on all models to identify those that met minimum requirements. Those that qualified were moved to ETLT.

Table 1. Technology Innovation Competition Winners

Model	Type	Wattage	Average Rated Life	Lumens
GE FLE15/2/DV/R30	R30 Dimmable	15	6,000	720
GE FLE15/2/R30XL	R30	15	10,000	750
PHILIPS EL/A BR30*	BR30	15	7,000	590
FEIT ESL15R30H*	R30	15	8,000	750
GE FLE26/2/PAR38/XL	PAR38	26	10,000	1300
PHILIPS EL/A PAR38	PAR38	20	8,000	968
SYLVANIA PAR38A	PAR38	19	6,000	1000
GE FLE26/2/R40XL	R40	26	10,000	1300
PHILIPS EL/A BR40	R40	20	8,000	968
SYLVANIA BR40A	R40	20	8,000	900

*Phase 1 Winners announced in 2004.

¹One of these models has since been discontinued.



See www.pnl.gov/rlamps for more information on how to purchase these lamps.



Minimum Specifications

R-CFLs submitted to this competition met a number of minimum specifications (see Table 2) in addition to the ENERGY STAR. Program requirements for reflector style CFLs. Models that met minimum specifications were moved to ETLT.

Elevated Temperature Life Testing

ETLT involves a minimum of 6,000 hours of operation in a simulated insulated ceiling rated airtight (ICAT) environment (laboratory testing). 6,000 hours is a minimum requirement for both this competition and the ENERGY STAR CFL Program. Models with rated life claims beyond 6,000 hours are required to continue testing until that claim is met. Ten lamps of each model are tested, and manufacturers are required to pay testing costs. The testing apparatus operates the lamps in an automated cycle of 3 hours “on,” 20 minutes “off,” for the test duration. Lamps are tested at an ambient temperature of 55°C. Light intensity for each lamp is measured every 2 weeks throughout the testing period to evaluate lumen maintenance over time. Manufacturers are provided with test results for their lamp(s) on a periodic basis.

Periodic Reporting of Test Results

Check the project website <http://www.pnl.gov/rlamps> for periodic summaries of test results.

Technology Innovation Competition Support

- Northwest Energy Efficiency Alliance
- Midwest Energy Efficiency Alliance
- ENERGY STAR Small Business and Congregations
- ENERGY STAR Homes
- Consortium for Energy Efficiency, Inc.
- Northeast Energy Efficiency Partnerships and Participating Program Sponsors
- Department of Defense, Defense Logistics Agency
- Sacramento Municipal Utility District
- Snohomish County PUD No. 1
- Southern California Edison
- Wisconsin Energy Conservation Corporation.

Table 2. Minimum Specifications

Feature	Minimum Requirement
Operating Temperature Rating	Maximum ambient temperature rating of at least 50°C for lamps 16 watts (measured) and lower, and 60°C for lamps greater than 16 watts (measured). The manufacturer shall provide a maximum ambient temperature for which the warranty is valid.
Size Characteristics R30-type Products R40-type Products (BR, PAR, etc. products also qualify)	Maximum Overall Length (MOL): 5.6 inches 6.6 inches
Luminous Flux	600 lumens (100 hours) minimum. Elevated temperature luminous flux: When operated at 55°C, lamp shall maintain 90% of 100-hour luminous flux achieved while operating at 25°C.
Beam Angle	Maximum 120°

Exception to these Requirements: Atypical and innovative R-lamp designs will be considered on an individual basis, provided 1) there is an overriding and compelling benefit, as described in the Offeror’s proposal, and 2) the design is approved by the evaluation committee as being consistent with the overall purposes and intent of this RFP.

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Reflector CFL Website:

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PNNL-SA-52799
November 2006

 Printed on 30% post-consumer recycled paper.

