

The European Design Competition for Dedicated CFL Fixtures: A Successful Example of Market Transformation

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ABSTRACT

Market research has indicated that to achieve durable market transformation and increase the use of CFLs in the residential sector, it is essential to develop and market attractive and well designed CFL dedicated lighting fixtures. To this end a major European design competition for designers, students and fixture manufacturers was launched at the beginning of 1999. The main challenge for competition participants was to produce innovative and attractive design solutions aimed at the residential market for lighting fixtures dedicated to pin-based CFLs. The key technical design feature was that fixtures embodied the ballast for the CFLs, thus making the retrofit of an incandescent lamp impossible. One of the main expected results of the competition is to boost the market for pin-based CFLs, nowadays almost not present at points of sale for residential customer, because there are almost no domestic fixtures where they can fit. The competition attracted a very large number of participants, representing 19 European countries, and about 200 designs have been proposed, including very well know designers and the largest European lighting fixtures manufacturers. The winning models were shown at the largest European fair on domestic lighting, EuroLuce in April 2000. The competition will be followed by a European-wide marketing and promotion campaigns for winning models, planned for the fall 2000.

Introduction

In the context of the Kyoto Agreement, the European Community and individual Member States are looking for cost-effective measures to reduce CO₂ emission and combat climate change. To this end the European Commission under the SAVE and PACE programmes has pursued several actions to improve energy efficiency of equipment in the domestic, commercial and industrial sectors. These actions include labelling and classification schemes, minimum efficiency standards and negotiated agreements, and technology procurement.

In particular, the Commission has investigated the possibility to introduce energy efficiency actions in domestic lighting. Total domestic lighting consumption in the 15 Member State of the European Union (EU) is about 90 TWh, i.e. about 15% of all residential electricity use. Moreover this consumption is predicted to raise to 105 TWh by 2020, largely because of the growth in household numbers.

A major investigation on the lighting consumption in the EU, the DELight study (ECU 1998) reported that: "The average number of light bulbs is 24 per house across the EU. The majority (at least 70%) are incandescent, with the remainder being fluorescent (strip or CFLs) and halogen lamps. In Germany, Sweden and Italy, there are more halogens than CFLs in the installed stock." The study confirmed that there is a growing trend towards an

increased use of halogens lamps both in ceiling fixtures (e.g. low voltage dichroic lamps in light spot) and in upright floor standing luminaires (“torchieres”).

Electric lighting is used in practically all households throughout Europe and represents a key component of peak electricity demand in many countries. There is already a well developed energy-efficient technology available on the market, in the form of compact fluorescent light bulbs (CFLs), that could deliver substantial savings. Such savings could be accessed quickly due to the rapid turnover of lamps in the stock - the challenge is to get the more efficient technology installed and guarantee the savings.

Compact fluorescent light bulbs (CFLs) use at least 60% less electricity than the traditional incandescent lamps while lasting ten to twelve times as long and can therefore deliver substantial savings in terms of both electricity and money. Integral ballast CFLs, with a screw or bayonet base, currently represent the best opportunity to achieve significant electricity savings in residential lighting since they are the most energy-efficient technology suitable for use in fixtures already in the home. Pin-based CFLs are also available. These have a separate ballast either in a screw or bayonet based adapter (modular system) or incorporated into the fixture (dedicated system).

The EU lamp manufacturing industry is dominated by three large multi-national companies, common to both the residential and commercial sectors, whereas luminaires are manufactured by over 1000 companies in the EU, often specific to the residential sector (called also the “decorative” sector), moreover this sector is characterised mainly by national manufacturers. Successful collaboration between these two industries has been already demonstrated by the rapid development of the market for low voltage halogen lamps, which require specific fixtures.

Barriers to Overcome

As indicated in the DELight study “One of the main reasons for not owning CFLs is the lack of well-designed fixtures suitable for CFL use in the residential sector. So the purchase of a new fixture is likely to add to the stock of inappropriate fixtures. Moreover consumer after having tried a CFL often switch back to incandescent bulbs”.

Although one of the main reasons for not owning CFLs was that they were too expensive, now CFL price has been dramatically reduced. Today the main reason is the fact that most lighting fixtures for the domestic sector are designed for incandescent or halogen lamps. In most of the current fixtures the CFL would not fit nor give an appropriate light output.. Even current owners of CFLs need assistance in recognising the opportunities for installing CFLs in their fixtures.

Moreover consumers lack confidence in the durability and continuity of CFL technology. The range of CFLs on the market is confusing and they do not know how to choose the appropriate one for their fixtures. There is little collaboration between the bulb and fixture manufacturers in developing a range of well-designed fixtures suitable for CFL use in the residential sector, so the annual purchase of a new fixture is likely to add to the stock of inappropriate fixtures.

Moreover in several cases the beneficiary of promotion rebate schemes would most often switch back to the incandescent lamp when the CFL would fail, this because either have a spare incandescent lamp at home or they can find it easily at the local supermarket.

The Way Forward

After a considerable number of promotions and rebate schemes, promoted mainly by utilities and European manufacturers, about 135 million CFLs are used in European homes. However it shall also be noted that only 30% of household in the EU have at least a CFL, with those households that own them having an average of three or four. Increasing ownership further will need a continuing level of policy support. However, if the full savings available in this sector are to be realised, a coherent strategy is required to transform the lighting market. Market transformation is a well-established strategic approach, utilising a combination of policies, such as education, labels, rebates, procurement and standards, to speed up the introduction of energy efficient technologies into the home. This approach is currently less well developed with domestic lighting than with appliances. To this end the Commission has put in place a number of new policy instruments, including mandatory energy labelling of lamps and a new major promotion campaign for integral CFLs.

One of the most important developments to ensure a sustainable growth and use of CFL is to develop the market for dedicated CFL fixtures, which is now basically not existent in the residential sector. To this end collaboration between the lamp and fixture manufacturers has to be promoted to ensure the availability of a sufficient range of suitable fixtures within the next five years. In parallel with this, promotion of integral ballast CFLs needs to be continued in the short term because of the current lack of dedicated fixtures. The underlying aim of any approach must be to build a positive image of CFLs to lay the foundation for the successful transfer to dedicated fixtures.

A two component strategy has been chosen by the European Commission to promote efficient lighting in the domestic sector. The first is to promote the integral CFL through a new European wide campaign, sponsored by the European Commission and the European association of the electricity industry (Eurelectric). However to achieve the long term goal of transforming the domestic lighting market and having a large penetration of CFL in each household, the best approach is to develop and to help the initial market penetration of CFL dedicated luminaires.

How Best to Transform the Market?

Many of the problems associated with the use of CFL in the existing fixtures could be avoided through the use of fixtures designed for pin-based CFLs. Dedicated fixtures optimise the light distribution and performance of CFLs and improve the cost-effectiveness of installation (pin-based CFLs are cheaper than the integral ballast versions), as well as guaranteeing the energy savings. . As experienced with other equipment there are a number of policy actions to transform the lighting fixture market and create a sustainable use of CFL. These include procurement, labelling, efficiency requirements. After discussion with experts and careful analysis it was agreed that in order to stimulate the introduction of energy efficient luminaires in the residential market, which is very fragmented, the best action was to promote the design competition. With this actions new model were to be designed and produced, and marketed. This was also to match interesting design (something high on the private purchasers' list with energy efficiency which does have a very low profile with lighting customer in the residential sector). Moreover if successful the competition would break a vicious loop. Since there are on the market only a very limited number of luminaires

for the domestic sector using pin-based CFL, this type of lamps are not usually available in retail outlets. By creating a demand for pin-based CFLs, it is hoped that this type of lamp would become common available in the EU shops and supermarket chains. Moreover there is a lack of suitably designed fixtures for the residential sector, representing an energy-saving opportunity that has not yet been fully exploited. On the contrary dedicated fixtures are rather common in the professional/service sector (e.g. offices, hotels, etc.), where a price premium is demanded for this type of luminaires.

It is also important to notice that the current price of pin-based CFL is about half of the integral CFL; moreover this type of lamp will last at least the double of the integral CFL, and therefore it will generate much less waste and therefore less environmental impact.

The Competition

The aim of this European design Competition is to foster and to promote the design, production and marketing of attractive, well-designed dedicated fixtures, i.e. fixtures that can take only pin-based CFLs.

The competition entry design should give the most innovative and attractive solutions to the presentation of this technology, in particular the selected designs must look good decoratively, give an aesthetic lighting impact, and exploit new design, materials and technology.

Competition entries can range from modern to classical luminaires. The products must be suitable for the retail decorative market. Emphasis should be on well designed and mass produced products rather than 'one-off' architectural schemes.

All competition entries must: 1) use a ballast which must be part of the luminaire; must not use retrofit lamps;¹ 2) show market research undertaken and demonstrate the application of this research to the design; 3) identify materials used and why they were chosen; 4) show an understanding of product pricing including materials, assembly, packaging and distribution; 5) show creative use of lighting technology. Products already in production, which are converted to take only pin-based bulbs, are eligible for the competition.² The technical specifications have been kept as simple as possible and include the following three points: i) only class A, B1 and B2 ballasts are allowed (no C or D class ballasts are permitted as per the CELMA, the Committee of the European Luminaire Manufacturer Association, classification scheme(CELMA 1997)); ii)only class A and B pin-based lamps are allowed, according to the new legislation for energy labelling of lamps; and iii) the luminaire must be fit for use in the residential sector.

The competition is open to all manufacturers, designers and students. It is rather important that large and well know manufacturers participate in the competition as they are the only one able to guarantee the production and marketing of the competition entry models. However it was experienced in previous design competition for lighting fixtures that students and professional designers are likely to come up with new and innovative ideas. However it is not always possible or guaranteed that original design would at the end of the competition be put in production.

The EU competition covers five product categories for the domestic sector using as indicated only pin-based fluorescent bulbs. The chosen categories are: ceiling luminaires,

¹ Screw based or bayonet type CFL.

² The products with non pin-based bulbs have to be withdrawn from production within one year.

walls luminaires, floors luminaires, tables luminaires and outside luminaires. In addition each product category is further divided in two (retail-)price intervals in such a way to cater for both ends of the market. In particular the floor category is intended to stimulate design, which would replace the halogen torchieres.

The competition consists of two phases. In the first phase the design flatwork together with an estimate of production costs and the potential market is submitted to the jury for selection. The selected finalists participate in the second phase, where they are requested to submit prototypes. These prototypes will undergo a second selection, which shall include more detailed estimates of production costs, market analysis and preliminary production plan.

The competition awards will be given to those prototypes (“winning products”), which have complied with the requirements of the competition, are safe and are deemed worthy of introduction into the market (according to price, production and aesthetic criteria) .

It is felt that the right balance between the need to have attractive designs and marketable products was reached with a jury composed by well known professional designers and retailers, the latter having a feeling on which product can be sold and would be accepted by customers (especially taking into account the price). To judge he submitted design an independent jury, composed of 10 representatives of professional designers and retailers, has been established.

The Awards

The competition awards were discussed with the European manufacturer association and other experts. The main award for the winning models is the publicity deriving from having won a European design competition and having being exhibited at the EuroLuce fair. This is particularly true for manufacturers, which looks for extra publicity for their models, and for professional designers who could then get their model purchased/produced by manufacturer and they would establish themselves in public recognition. This is because in Europe (or certainly in some part of Europe product by famous design/companies are best-sellers, as example of famous design one can quote Philip Stack, and one of a famous producer Artemide). Moreover, the award of the competition includes the use on the winning products of the European Design Excellency Logo for Energy Efficient Fixtures and on consumer awareness campaigns at the European and national levels. This is particularly appropriate for the winning designs that become products.

The winning products were exhibited at the EuroLuce Fair, held in Milan (Italy) in April 2000. EuroLuce is the largest and more important European fair for decorative (i.e. residential) lighting, being visited by about 200000 people (mainly involved in the lighting business). The Commission is also investigating the possible to show the winning models at other exhibitions and at other national Lighting Fairs.

For students there was also a cash price (of 1000 Euro for the first and 500 Euro for the second classified together with a paid trip to EuroLuce). However the major incentive for students and professional designers is to find a suitable manufacturer to produce their models after the EuroLuce show.

The Promotion and Marketing Campaign

During the lighting commercial season 2000/2001 which will start in September 2000 both European and national promotion activities, in at least five EU Member States (United Kingdom, Italy, Sweden, Denmark, The Netherlands) will take place. The national energy agencies in collaboration with the national lighting association will be responsible for these co-ordinated campaigns. Discussion are underway to have similar campaigns also in France and Germany.

Promotion and marketing activities will consist of: at European level in further exhibition of the winning models at the EU sponsored 2nd international conference on energy efficiency in household appliances in Naples in September 2000 and at World Expo 2000 in Hanover in October 2000 and to other national lighting exhibitions.

At national level the following activities will be carried out: distribution of the catalogue of the winning models; articles and press coverage in lighting and design magazine and in DIY/home furnishing television programmes; promotion at national lighting and home furniture exhibitions; market launch events by lamp and luminaire manufacturers; intensive discussion with retailers to persuade them to stock the winning models and to run special promotions on this models, including dedicated space in the retail shop to energy efficiency in lighting; and finally consumer awareness promotional campaigns. The detailed national lighting campaigns are now under detail design, at European level an advisory board for this action has been established consisting of retailers, manufacturers and other experts in the sector. The total cost of the promotion campaign will be around 250000 Euro and the European Commission will pay half of it, while the other half will come from national governments.

The Competition' Results

While the full impact of the competition can be evaluated only after the promotion campaigns to start in the autumn 2000, so far the competition has been rather successful in terms of participants and the quality of products. The competition was officially launched at the Hanover fair (the largest European lighting fair in 1999) in April 1999. More than 10000 brochures were distributed to manufacturers, students and professional designers, several announcements were made in the specialised press. About 650 participants registered for the competition by July 31st 1999, and 140 participants have submitted the required flatwork by the deadline of December 31st 1999 for about 200 different models of luminaires. The actual number of models submitted was below the initial expectation, but it was understood that to prepare the flat work required a lot of efforts without any guarantee of success, and not many people especially designer were ready to undertake the risk. The quality has been very high and after the first selection 62 models were exhibited at the Euro luce fair. The final models belong to 52 different participants so divided : 18 manufacturers, 20 professional designers and 12 students. The participants represent 12 European countries. The 18 manufacturers include some of the most well known and largest ones at European level. 27 models (9 by professional designers, 11 by manufacturers and 7 by students) were declared winners during the public award ceremony on April 12th. The competition stand was visited by a large number of visitors and about 5000 competition folders were distributed at Euro luce during the fair. The overall competition budget up to include the Euro luce fair was of around

100000 Euros. The next step is to ensure that the winning products will be manufactured and marketed. A big efforts is now underway to try to marry the design by students and professional designers to manufacturers, in such a way that they could be produced and marketed.

Conclusions

This is the first serious tentative at European level to transform the residential lighting market and drastically reduce incandescent lighting in a sustainable manner. The Commission and the other organisations (CELMA, Assoluce, The Lighting Association, iSaloni, Eurelectric, DEA, ENEA, NOVEM, STEM, ETSU), who have supported this competition, are aware that this is a difficult task, but the competition and the following marketing campaign will create awareness in the lighting business and in residential consumers. It will show a new way to design and produce luminaires. The critical point will be to convey the message to the large number of visitors at EuroLuce (or any other Lighting Fair) and then to reach the largest number of players in the lighting field, and residential customers in future promotional campaigns. Given the successful (9 at least so far) of the design competition, a new competition will be organised in two year time; the future competition will perhaps open to other new promising energy savings lighting technologies (e.g. L.E.D.). Of course the full evaluation of this action will be possible only after the marketing campaign has been completed and changed in the market place will be observed. Perhaps in terms of models sold the competition will not make such an important impact, but in term of raising awareness in the lighting industry it will have a long lasting impact. The full documentation and pictures of the winning models are now available on the web at the following web address: www.etsu.com/eulightdesign.

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