

Buying replacement projection lamps: why take a risk?

This White Paper examines the factors that buyers should consider when sourcing replacement projector and rear-projection TV lamps.

It highlights the performance and safety advantages of buying only original and genuine lamps, and exposes the risks associated with using 'copy lamps'. These range from poor performance to serious health and safety concerns.

The White Paper provides lamp buyers with guidelines for avoiding these risks.

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SECTION 1

Insiders' guide to the market:

Why replacement lamps are not always what they seem

When the performance of a projector or rear-projection TV lamp module deteriorates or fails entirely, the owner or operator is faced with the task of finding a replacement. The starting point in the search is sometimes a specialist dealer, but more often today it is the internet.

Search engines will throw up a host of choices, requiring decisions to be made. These decisions can spark a range of consequences spanning from simple dissatisfaction with the quality of the product, to health and safety risks – and even questionable ethics and legality where intellectual property is abused or counterfeit lamps are passed off as genuine replacements.

In today's market for replacement lamps, the cheapest option doesn't always represent the best value; products are not always what they seem and even the presence of a manufacturer's brand or technology provider's logo is not always a guarantee that a replacement lamp is genuine.

Projector lamp modules are assembled from components including the housing, the lamp (or bulb) and connectors (for a full account see the 'Lamp technology primer' in Appendix 1). Production of the lamp is a technically advanced process undertaken in a small number of high-tech manufacturing facilities in clean-room conditions.

Patents have been awarded to these lamp manufacturers to allow them to recover substantial research and development costs. There are only seven lamp manufacturers that supply the core components of lamp modules for projector and rear-projection TVs. These are Philips, Osram, Ushio, Iwasaki (Eye), Matsushita (Panasonic), Phoenix and more recently Epson.

Lamp housings are usually made by projector manufacturers for specific projector and rear-projection TV models and so lamp modules are not interchangeable between dissimilar devices.

In the past, the unique characteristics of each lamp module posed problems where a projector model was withdrawn or lamp supply issues meant that the user could not obtain a replacement lamp quickly. Steps were taken to rationalise the distribution channel for replacement projector lamps. Specialist lamp distributors now carry large quantities of stock and offer rapid delivery services on an international basis.

But a second issue remained – that of price. Small production quantities, the cost of holding stock at distribution, reseller or retail level and a complex route to market led to a disparity between the replacement lamp module prices and declining projector and rear-projection

TV prices. Mobile front projectors, in particular, reached the point where the price of a replacement lamp module almost reached parity with the price of a new projector.

Lamp module pricing created a gap in the market for cheaper and more readily available replacement lamp modules which was filled by a number of third party suppliers of 'compatible lamps'.

To offer consumers and organisational buyers an alternative to sourcing a replacement lamp from the original device manufacturer, the leading lamp technology rights owners authorised a small number third party suppliers to manufacture compatible replacement lamp modules using the same technology as the original, branded product installed by the projector and rear-projection TV manufacturers. (See REF1: 'Re-engineering lamp supply').

These are called 'genuine lamps'.

While 'genuine lamps' can often provide a cheaper option for the lamp module buyer (while using the same technology as the original projector manufacturers' lamps) they are not usually the cheapest available. Prices are constrained by the requirement to pay license fees to the technology rights owner, the need to factor in the costs of proper quality control and of offering a meaningful performance and reliability warranty.

Largely unburdened by these requirements, a class of products emerged called 'copy lamps'. Manufacturers of these products are not authorised by technology rights owners and so cannot use genuine lamp technology – even though some purport to do so. As a result, tests have proved that copy lamps offer inferior performance (see REF2: The KEMA Report) and, in some instances, copy lamps have been found to be positively dangerous.

Despite the industry initiatives to reduce prices and improve the availability of original and genuine replacement lamps, the copy lamp problem continues to exist.

The recent economic downturn has placed capital spending under pressure. Consumers and organisational buyers are prolonging the life of their projectors by buying replacement lamps. Even in circumstances where the basic price would seem to favour replacing the projector, taking the cost of installation into account usually pushes the decision favour of keeping the current device.

Unfortunately, these same economic pressures have pushed unwary buyers towards the copy lamp suppliers.

SECTION 2

Performance and safety risks associated with 'copy lamps'

Attracted by the offers of cheap replacement projector and rear-projection TV lamp modules, consumers and organisational buyers are largely unaware of the problems associated with lamps of uncertain provenance.

There are a number of popular misconceptions, not least of which are the notions that "lamps are all the same anyway" and that "you are only paying for the brand". There are real proven advantages to the buyer in insisting on genuine replacement lamps, and serious potential disadvantages to taking the risk on copies.

○ Pricing

When compared to the price of a replacement lamp module from a projector manufacturer or an authorised supplier of genuine lamps, copy lamps will generally show a price advantage. Rarely is this transferred into a true cost advantage when factors including reliability, lamp life, brightness and image quality are considered.

While distribution data for original and genuine replacement lamps shows an extraordinarily low level of returns for lamp modules 'dead on arrival', the lamp buyer has no such assurance for copy lamps. The cost and time involved in returning a faulty product can often wipe out any initial saving.

A further point to consider is that claims against suppliers of products with no chain of 'traceability' are very difficult to enforce, should any damage to equipment or its operators arise. Part of the value associated with original and genuine lamps is the willingness of their suppliers to stand behind them.

○ Performance

Lamp modules are integral to achieving the return on the investment in a projector or rear-projection TV. To assess the relative performance standards of genuine Philips lamps and a selection of commercially available copy lamps, the KEMA research organisation conducted a series of comparative tests.

o KEMA concluded that the genuine Philips lamps produced a significantly higher luminance than the lamps from the other manufacturers on test. The ANSI lumen values for the Philips front projection LCD lamps were reported as being an average of 46% higher than the other samples (see REF2 for full details).

o The luminance in the centre of a rear-projection LCD TV tested averaged 54% higher when using Philips' lamps compared to the others on test. The luminance in the centre of a rear-projection DLP TV averaged 218% higher using the Philips lamp.

These performance figures have a direct relationship to the value proposition offered by genuine lamps in relation to copy lamps. A price differential of a few pounds in favour of copy lamps is quickly offset by a performance differential of better than half.

○ Reliability

Quality control procedures operating in the manufacture of genuine lamps are designed to prevent faulty lamp modules from reaching the market, with the result that modules that are defective have often suffered damage in transit. Quality control at the factory and properly designed packaging ensures that lamp module failures are kept to a minimum.

In contrast, comparative data, from a former distributor of copy lamps, shows that copy lamps are not usually subject to the same exacting quality control regimes. Quality control is largely left to customers, along with the expense and inconvenience of returning products that are 'dead on arrival' or which fail early.

○ Health and safety

Lamp technology rights owners maintain 'black museums' of lamp modules that infringe their patents. On the evidence of these collections of counterfeit and other dubious products, buyers experiencing inferior performance and reliability only should perhaps consider themselves lucky.

Lamps installed in projectors and rear-projection TVs operate at high temperatures and pressures. Lamps contain mercury which is toxic. Inadequate manufacturing or quality control processes can result in fires, explosions and the high costs associated with cleaning up a mercury spill.

○ Legality

Technology rights owners losing revenue to distributors of copy lamps have been left with little choice but to protect their market through legal enforcement of their intellectual property rights. Some copy lamp manufacturers have even gone as far as printing false branding and logos on their products with the clear intention of duping buyers of replacement lamp modules, with the resulting damage to the technology rights owner's reputation.

A recent case in the United States saw Philips securing damages of \$43m from a competitor distributing lamps that were found to infringe a Philips' patent. The court ruled that Philips was owed a royalty of \$28.70 on every lamp unit sold by the distributor that infringed the technology rights owner's patents. (See REF3: US Philips Corporation v Iwasaki Electric Company Ltd for details.)

Further enforcement actions are anticipated in instances to protect intellectual property and to prevent copy lamp manufacturers passing off their products as genuine. For lamp buyers, the result will be interruptions to supply and possibly the embarrassment of being associated with an illicit and unethical trade.

SECTION 3

Buyers' guide:

How to make sure that a replacement lamp is original and genuine

With some copy lamp manufacturers resorting to deception, by, for example, applying fake brands and logos to their products, it is difficult for buyers trying to pursue a safe and ethical buying policy, to avoid being duped.

Even where there is no intention to deceive on the part of the copy lamp manufacturer, buyers of replacement lamp modules often simply don't know exactly what they are being sold when buying 'blind' on the internet.

These guidelines will help buyers to distinguish between a good deal on a genuine replacement lamp and a potential rip-off:

• The price

Is the replacement lamp on offer just too cheap?

There is a hierarchy of lamp pricing. Original lamps supplied by the manufacture of the projector or rear-projection TV are usually the most expensive, but offer the replacement lamp buyer reassurance on issues such as continuing warranty protection.

Next in the hierarchy come genuine lamps, manufactured with the consent and support of the lamp technology rights owners and using exactly the same lamp components as the original lamp fitted to the projector or rear-projection TV. Genuine replacement lamps are made by a small number of authorised manufacturers. For example, Philips has authorised Diamond Lamps to make replacement lamp modules using genuine UHP technology.

Finally, the cheapest lamps available will almost certainly be copy lamps. The manufacturers save costs in a variety of ways, none of which are generally favourable to lamp module buyers (See SECTION 3: What's wrong with copy lamps').

• The source

Can the reseller or retailer be trusted?

The emergence of copy lamps has triggered a host of internet-based dealers to enter the market for replacement lamp modules. Some of these have excellent credentials, often linked to an established audio-visual or consumer electronics business, while others are simply opportunistic.

When buying on the internet it can be difficult to assess the quality or ethical policy of the supplier. Helpful signs of a quality supplier include relationships with projector manufacturers, such as authorised dealer status, or a specialist replacement lamp distributor.

• The product

How does the product compare with the lamp module it is replacing?

As already discussed, the presence of a lamp manufacturer's brand or a logo indicating the use of a specific lamp technology is no guarantee of authenticity, and so buyers should appraise the product itself. Some manufacturers of original and genuine replacement lamp modules stamp their products with a code. It is no guarantee of authenticity, but the presence of the following codes can indicate that the module comes from a legitimate source:

Lamp manufacturer	Code
Philips	UHP
Ushio	NSH, UMPRD
Osram	P-VIP, VIP
Phoenix	SHP
Iwasaki (Eye)	HSCR, MSCR
Matsushita	UHM, HS, 'M'
Epson	UHE

(also used on bulbs made for them by others)

Coding aside, manufacturers of original and genuine replacement lamps take extraordinary care in the production and quality control of their products. Replacement lamp modules, manufactured with the consent and support of technology rights holders, have a quality look and feel. Buyers with any doubts about the quality of a product they have received should return it to its source.

• The packaging

Does the packaging look authentic?

As an indicator of the source of supply, lamp packaging is perhaps not always as helpful as it could be. Some projector brands share lamp suppliers and so the packaging for lamp modules is sometimes unbranded. Even so, poor quality packaging can be an indicator. Also, the inclusion of the word 'compatible' in the product description or in any documentation is usually an indicator that the lamp is neither original nor genuine.

• The documentation

Does the replacement lamp module come with instructions or a manual?

In keeping with the quality presentation of the product, original and genuine and replacement lamps are often provided with well written and properly translated documentation. While it is not true to say that the absence of documentation suggests that the lamp module is a copy, the inclusion of useful documentation is an indicator of the responsible approach taken by suppliers of original and genuine lamps.

SECTION 4

Replacement projection lamps: be safe, be ethical

Buying anything other than original or genuine lamps involves taking a risk that is rarely balanced by reward.

The copy lamp sector represents an opportunistic approach to a market on price alone, leaving consumers and organisational buyers with no verifiable assurances of performance, reliability or safety.

Disgruntled buyers will, justifiably, point their fingers at their supplier, for whom the few extra pounds earned as short-term profit rarely represents good business when measured against the long-term relationship with the customer.

Copy lamps usually offer no chain of traceability or statement of origin which makes it difficult for buyers to make claims when problems arise, potentially leaving

the buyer out-of-pocket or at least embarrassed and sellers, perhaps, with the prospect of litigation.

In comparison, sourcing lamps from legitimate, original or genuine sources offers a safe and ethical alternative, in which lamp buyers are supplied with replacement projector and rear-projection TV lamps that offer value, performance and reliability.

APPENDIX 1

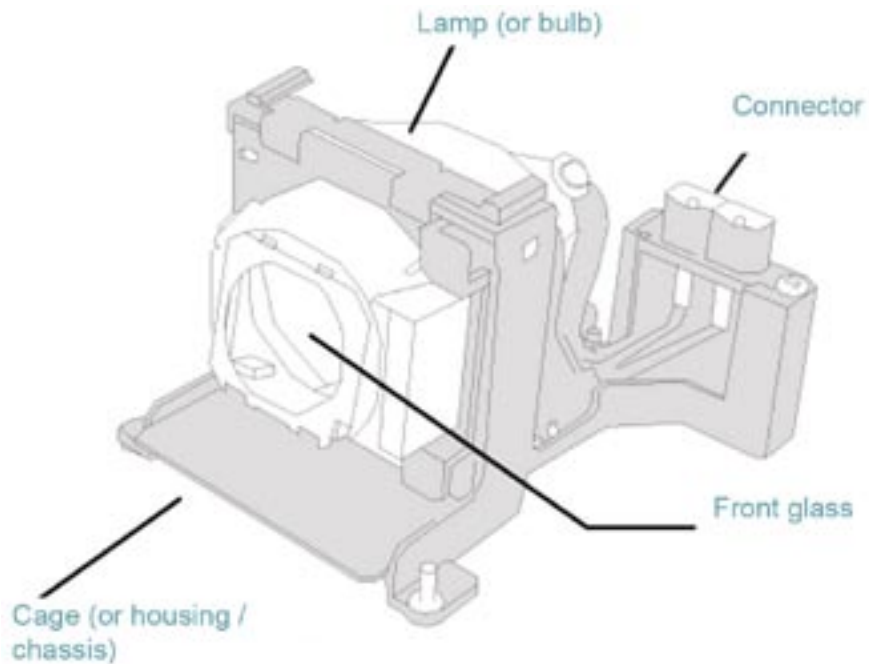
Lamp technology primer

As apparently simple devices, the lamp modules that provide the light sources for projectors and rear-projection TVs are actually operating at the cutting edge of physics, chemistry and materials science.

The lamp (or bulb) is a sealed unit and contains a 'burner' assembled in a clean room environment using a patented manufacturing process. The lamp operates at extremely high temperatures and pressures. Projection lamps run at temperatures in excess of 8,000 degrees Kelvin and at pressures equivalent to 50 times that of a car tyre (see REF5: 'What's in a lamp?').

To make it possible for the lamp to sit correctly in the projector or rear-projection television, the lamp is set in a cage (or chassis). This is a moulding of heat resistant plastic with appropriate clips and connectors designed to enable the lamp module to be easily and quickly fitted.

Cages are designed and manufactured by all the different projector manufacturers in many different designs to suit their various models.



APPENDIX 2

Policy guidelines for buyers of replacement lamp modules

To avoid running the risk of being ripped off or duped into buying from unethical sources, the following guidelines are recommended for buyers of replacement lamp modules:

1. Buy from legitimate sources

When selecting a source for a replacement lamp module, choose specialist audio visual resellers, consumer electronics retailers and internet dealers with associations with well known projector or rear-projection TV brands, or specialist lamp distributors. Look out for 'authorised dealer status' and membership of professional bodies (such as CEDIA or the Genuine Lamp Alliance).

2. Choose verifiable original or genuine lamps

While there are a number of counterfeit replacement lamp modules in circulation, the vast majority of lamps carrying the brand or code of the original equipment manufacturer or that of an approved genuine lamp supplier are legitimate. Ask the supplier to confirm that the replacement lamp module is an original or genuine replacement lamp and to specify its source.

3. Be wary of unrealistic discounts

By all means shop around for the best deal but exercise caution when dealing with suppliers offering dramatically cheaper prices. If concerns arise about the authenticity of a lamp, ask the supplier about its provenance. In other words, where did the reseller or retailer get it from? Distributors of original and genuine replacement lamps will generally be happy to confirm that they are the source of the product.

4. Consider the true costs

Replacing the lamp module in a projector or rear-projection TV can extend the life of the device by years. Don't be tempted by short term savings offered by copy lamps. They are probably not real. The lower performance and lack of reliability of the lamp will almost certainly wipe out any possible saving on the lamps and copy product could damage the projector or rear-projection TV.

For further help and advice see the list of reference resources listed at the end of this White Paper.

GLOSSARY

Projector lamp terminology explained

Cages

Cages are housings designed and produced by the projector manufacturers to seat the lamp accurately and which enable user replacement. Each physically different projector model usually requires its own bespoke cage design.

Compatible lamps

'Compatible lamps' are those that are sold to work with a specific brand and model of projector, but which are not the same as the original lamp placed in the projector by the projector manufacturer. These 'non-original lamps' could be products designed around the authorised use of technology protected by intellectual property or they could be 'copy lamps'.

Copy lamps

'Copy lamps' are those produced by unregulated manufacturing companies using technologies without the agreement of the intellectual property

rights owner and producing products that are not pre-installed by any projector manufacturers.

Copy lamp modules

'Copy lamp modules' are copy lamps fitted in replica cages manufactured by companies not endorsed by the projector manufacturers.

Genuine lamps

Genuine replacement lamps are those developed, manufactured and sold with the explicit approval and support of the owners of intellectual property governing technology used in the original lamps installed in projectors and rear-projection TVs. Genuine lamps offer the same standards of performance and reliability of their original counterparts and offer full compliance with intellectual property legislation.

Lamps

Lamps (or bulbs) are ultra high-performance lights developed manufactured in advanced manufacturing facilities owned and operated by world leaders in lighting technology, including Philips and Osram.

Lamp modules

Lamp modules are made up of the lamp (or bulb), the cage (or housing) and electrical connectors.

Original lamps

The term 'original lamp' gained currency when the only suppliers of replacement projector lamps were projector manufacturers. It is defined as including lamp modules manufactured using lamp technology, protected by intellectual property rights, with the support and agreement of the developer holding the technology patent. The term is used as a synonym for 'genuine lamp', but following the extension of authorisation for lamp manufacturing to third parties, by rights owners including Philips and Osram, the term 'genuine lamp' is now defined as inclusive of 'original lamps' and those manufactured by third parties with the support and agreement of the rights owners.

Re-lamping

'Re-lamping' describes the practice of removing a used lamp from its cage and replacing it with a new one, or even substituting the burner within the lamp itself. The risks associated with re-lamping (lamps contain mercury) are considered to be unacceptable for consumers and even specialist resellers might shy away from the task. Those willing to undertake the task run the risk of damaging the lamp cage. These were designed for the ease of replacement rather than refurbishment and so can be fragile.

REFERENCES

Useful resources for buyers and sellers of replacement lamp modules

- REF1: Re-engineering lamp supply
AV News International
P8 ISE preview 2008 issue
- REF2: The KEMA Report
Benchmark research to the quality of projector
January 2008
- REF3: US Philips Corporation
v Iwasaki Electric Company Ltd
United States District Court
Southern District of New York

Published by:
Genuine Lamp Alliance
www.genuinelamps.org

