Thorn's new light

The British electricals giant reckons its 'two-dimensional' fluorescent is a world-beater

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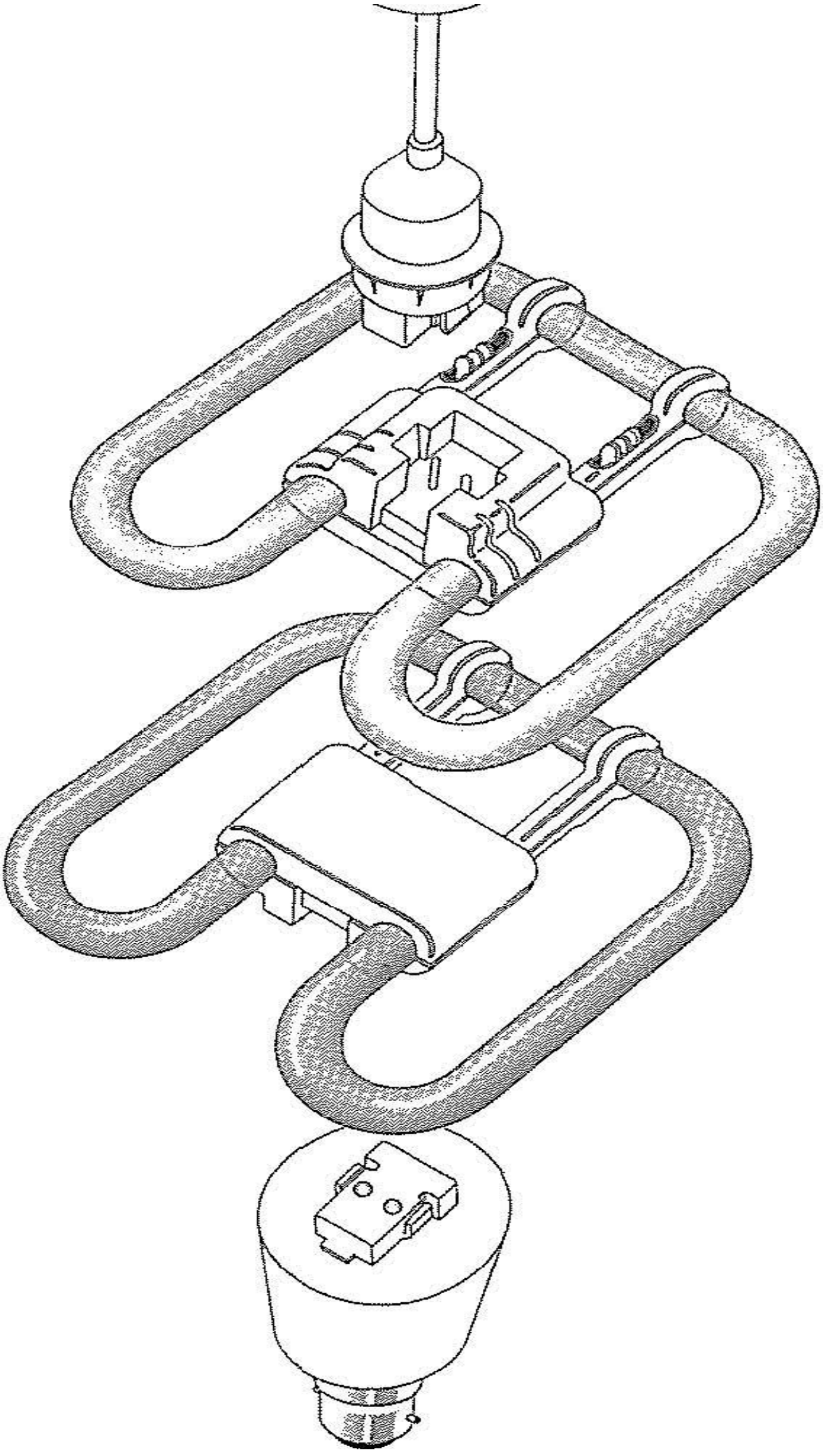

The 2D needs purpose-designed sockets, top***, or an adaptor housing a ballast unit*** above

The carbon filament light bulb has been around since the 1880s. When first invented, by Swan, it was rapidly recognised as a simple, reliable and cheap means of illumination. But it hasn't become much more efficient over the years. In 1880 Swan's little marvel gave out five lumens per watt consumed; today, the common domestic light bulb can still only reach 12 lpw, and even the more sophisticated type of 'incandescent' (wire filament), the tungsten halogen, can barely muster twice that.

At present, the only alternative to the incandescent is the gas discharge light, an inherently more efficient device (illumination figures start at 75 lpw for fluorescents and rise to 120 lpw for high pressure sodium lamps). Back in 1947 a third breed of lamp, based on electroluminescence, looked as if it might prove viable; but it did not, and experts now think that another, more successful strain will take at least 10 years to develop. So it's still a two-sided contest.

Incandescents have been fighting a rearguard action ever since the 1960s, when high-pressure sodium gas discharge lights began to displace tungsten halogen devices from the one-kilowatt-and-up spotlight market. Yet progress has been made: after years of effort to bring output screw fittings, of output ratings down, the tungsten halogen may shortly supplant the less efficient tungsten filament at the top end of the domestic wattage range (Thorn has, for instance, recently come up with a 2000 hour, 150 watt unit). Nevertheless, it is in the gas discharge field that the more spectacular advances are being made.

High-pressure sodium lights are getting better and better. Not only are they becoming more efficient, but they also don't make blues and greens look so dark, nor reds so off-colour as they used to. Take Thorn's new 150w and 250w Sondilux lamps. They have a colour rendering index of more than 70, which is considered top bracket; and, though their efficiency suffers as a consequence, at 90 lpw it's still respectable. Furthermore, Thorn claims lifetimes of 8000 hours for them – longevities it says competitors like Osram have talked about but have yet to realise.

So we may not have that many years to wait before sodium lights, having previously entered factories and warehouses (where colour rendering isn't vital), begin to invade offices (where it is). Where, therefore, does that leave fluorescents? Thorn's answer is simple. It believes that, because of their electricity-saving, high efficiency characteristics, there's a big future for fluorescents in the home. And, in February, it announced that it would begin mass production of its own, in-house designed 'domestic fluorescent', the 2D, in the autumn.

The inverted commas round the phrase are there for a purpose. Though the familiar long white tubes can now perform more satisfactorily than ever before, if only because manufacturing methods and phosphor coatings are being upgraded, conventional fluorescents still don't compare with incandescents in the home. They're useful as a cheap source of ambient illumination, but they give a harsh effect, often make a noise, take time to flicker into life (and then carry on flickering) and are unwieldy to install. Thorn would rather the 2D was not labeled a fluorescent because of the unflattering connotations the term suggests. The inverted commas round the phrase are there for a purpose. Though the familiar long white tubes can now perform more satisfactorily than ever before, if only because manufacturing methods and phosphor coatings are being upgraded, conventional fluorescents still don't compare with incandescents in the home. They're useful as a cheap source of ambient illumination, but they give a harsh effect, often make a noise, take time to flicker into life (and then carry on flickering) and are unwieldy to install. Thorn would rather the 2D was not labelled a fluorescent because of the unflattering connotations the term suggests.

That's fair enough, for the 2D is nothing like fluorescent strip. First, it's coated in phosphors that enable it to emit light of a quality that's hardly distinguishable from that of the tungsten models. Second, it's silent in operation. Third, though it takes a second or two to start up, it doesn't flicker after that. And last, it's based on a very thin tube, wound in a shape not unlike an electric kettle element. Put together, these features result in a bulb that's slim, flat and no more than 130mm square.

Dimensions like this seem certain to make the 2D of major interest to lighting designers in search of compactness Moreover, its high efficiency allows it to run so cool (it dissipates a mere 16 watts) that even delicate and inflammable shade materials can nestle right up to it in safety. Thorn is so convinced of its design potential that, though it will be selling its own fittings to go with the 2D, it's anxious to make the basic technology available to company has commissioned Conran Associates to devise a series of prototype lamps to show what can be done. Though Thorn will be offering an adaptor to enable the two-pin 2D to be attached to conventionally wired bayonet or Edison screw fittings, it hopes that purpose-built fittings will predominate. The adapter has to incorporate the 2D's wire-wound ballast unit, which makes it rather bulky; far better, Thorn feels, to design lights that hide the electricals away.

Given the design possibilities it opens up, how does the 2D compare with tungsten filament bulbs, and what has it got that rival substitutes for incandescents haven't? Well, the 2D's output is rated the equivalent of the 100w conventional unit, yet the bulb consumes only a fifth as much electricity. It also lasts some 5000 hours, as opposed to the 1000 that's usual for incandescents. But it will cost something like a fiver in the shops (excluding the cost of ballast and, if required, adaptor) – a hefty sum against the 70p or so retailers ask for tungsten filaments. However, the overall economics of the proposition are irresistible. Such is the efficiency of the 2D that, at spring 1981 electricity prices, consumers should save £16 over the lamp's life.

As for the advantages the 2D has over Philips's widely publicised 'domestic fluorescent' SL models (DESIGN, August 1980, page 14), they're simply stated. Unlike the 2D, the SL range has its ballasts built in, so it can function as a direct and complete replacement for tungsten filament devices. That's all very well; but the configuration makes SL models very big and heavy. In addition, it ensures that, when the bulb is spent, consumers don't just throw it away but a perfectly good ballast unit as well. Thorn is confident that its separation of bulb from ballast makes a lot more sense.