Britespot: GE raises th

This month, GE's CMH20 is the lamp chosen to spend a spell in the notorious *Lighting* magazine boot camp. How did it fare after it was put through its paces?

CMH SuperMini
A capsule lamp that sets new standards

Here GE is departing from established capsule standards, and will have to persuade luminaire OEMs to wake up to its message. But the company has worked such miracles with its arc tube design, and combined it with a robust new base, that it should be the clear leader among 20W capsules if OEMs give it the chance it deserves.

Through a combination of GE's three-piece ceramic arc tube, with highly optimised metal halide chemistry, it boasts an impressive efficacy of over 80 lumens per watt. Life is also showing the way at 12,000 hours. Check out our table to see how it stacks up against Philips' MiniMastercolour. GE's lamp draws 10 per cent less power than the Philips 22W alternative, but puts out more light. The improvement in efficacy is striking.

Also GE has made significant improvements over the PGJ5 base contacts. The new GU6.5 standard is the result of close co-operation between the engineering teams of BJB and General Electric. The contact pins are ruggedly set into a ceramic collar. The whole assembly feels much more secure when the lamp is mated with its socket, snapping the arc tube centre firmly into position.

This new standard may yield a lamp a few millimetres longer than the PGJ5 types, but its value is that it puts the arc tube right on centre when you push in the lamp and twist. For tiny lamps such as this, arc tube positioning in the fitting is crucial. It's no use having a powerful arc tube if the base cannot guarantee that it is correctly aligned in the fitting, so we give the BJB/GE design full marks here. With luck, other firms will support this rugged base and high efficacy arc tube to give it the success it deserves.

Face off: CMH vs CDM

	GE CMH Supermini	Philips CDM-Tm
Wattage	20W	22W
Lumen output	1650lm	1500lm
Lumen per watt	83lm/W	68lm/W
Colour temperature	3000K	3000K
Colour rendering	80+	86
Lifetime	12,000 hours	9,000 hours
Base type	GU6.5	PGJ5
Overall length	56mm	51mm
Light centre length	30mm	22.6mm
Diameter	12mm	17mm

It's tough being a trend-setter in the lamp industry. No matter how great the technical breakthrough, or how attractive the final design, it can be difficult to get it specified if only a single supplier supports the format.

All too often we watch a great idea sit on the catalogue pages for years until the competitors embrace the idea. Only then, after a second supplier has jumped on board, does the market have the security it wants, and the idea takes off.

This month we saw the first steps of just such a move, when the second largest enterprise on the planet announced that it was putting its money behind MR16 metal halide technology.

General Electric's new lamp, dubbed CMH Precise MR16, is indeed a very smart take on Sylvania's BriteSpot format. But far from being just a second supplier, GE has shown unusual initiative and taken things not one, but two steps ahead in both function and technology. Such impressive efforts look set to expand the number of applications for the technology and simultaneously realise a significant performance boost.

And that's not the end of the story. A new 20W Supermini capsule is also being unveiled for luminaires with integrated optics.

Lighting has exposed samples of GE's latest offerings to our industry-famous benchtest, so read on to hear what we make of them – and why you can't afford to ignore these new trends.

CMH Precise MR16

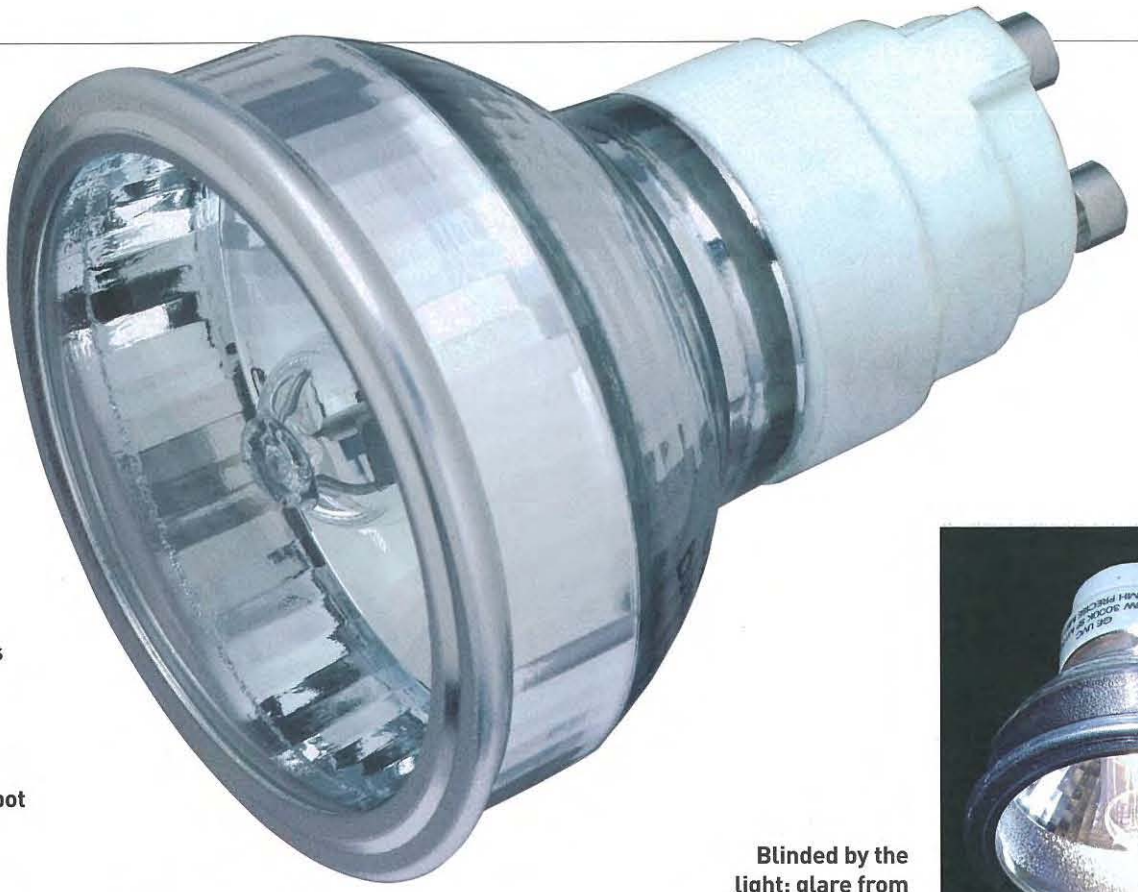
The lamp is precisely the same size as the Sylvania original – the GX10 base has also been maintained, so the lamp will fit in existing BriteSpot fittings. But from the functional standpoint, GE's lamp differs in that it is kicking off with a 20W rating – half the power of Sylvania's 35W original, and a smart choice because its output perfectly matches that of a 50W MR16 halogen lamp.

Whereas the 35W BriteSpot has been used to boost the amount of light you can pump out of an MR16-sized fixture, GE's 20W alternative will pay dividends through its significant energy-saving potential. It will be offered in three versions with beam angles of 12, 25 and 40 degrees.

From a technical standpoint, GE's lamp also sets itself apart with its ceramic, rather than quartz, arc tube. Sylvania's quartz technology has been so well refined that you can barely fit a cigarette paper between the light output data of these two technologies.

There are minor differences, for instance the provisional data for Sylvania's Quartz 20W, still in development, indicates that its beam intensity and CRI will be a shade higher (see table). But where GE's ceramic version will always win is on lamp life. Sylvania claims a 6,000-hour rating, whereas GE is

ar



BENCHTEST

CMH20

Power cut: GE's lamp is rated at 20W, nearly half the power of Sylvania's original Britespot

promising a full 12,000 hours of service (initial claim 8,000 hours). Now that really starts to take a serious whack out of total costs of ownership. With lighting maintenance costs running so high today, this means slashing labour costs to a third when you replace a 4,000-hour halogen lamp with the ceramic conversion.

Stylish faceflift

The GE lamp has also been given a stylish facelift, realising a high-tech appearance that really looks like it means business. The smooth contours of traditional reflectors have been replaced with a sharp angular look – a necessary optical constraint to cram the ceramic metal halide capsule into this tiny reflector. The aluminium front ring guarantees open-fixture security, and a crystal clear front lens on the new spot-beam version builds on the glittering sparkle of those facets that made the original MR16 halogen lamp so popular.

But users should be cautious where they aim the beam from this clear-fronted version, because the dazzling brilliance of the arc tube is reflected in a piercing ray from the parallel sidewalls of the reflector (see photo). Fixture designers may have to use extra baffles to block glare from direct view. Flood versions employ a lenticuled lens to solve this problem in the lamp.

One surprise is the choice of power rating. The industry-leading 20W lamp from Philips in fact operates at 22W, and Sylvania literature indicates that its future BriteSpot will be the same. But GE's model seems to have stuck with the exact 20W rating of its old CMH-TC format. Users should pay close attention to this detail because it could mean that each lamp may require a different ballast, presenting a maintenance nightmare. We can only hope that the various industry bodies responsible for standardisation will not allow the sale of two apparently identical lamps with different ballast requirements. ■

Blinded by the light: glare from the clear lens version

Second wave: GE's answer to Britespot

	GE CMH Precise MR16	Sylvania BriteSpot ES50
Wattage	20W	22W
Beam angle	24 degrees	25 degrees
Beam intensity	2800cd	3500cd
Colour temperature	3000K	3000K
Colour rendering	80+	85+
Lifetime	12,000 hours	6,000 hours
Cap type	GX10	GX10
Reflector coating	Aluminium	Aluminium
Burning position	Universal	Universal

lighting Verdict

GE CMH20

★★★★

It goes without saying that the delicacy of this 20W alternative is a powerful match with the traditional role of MR16 type fixtures – accent and display lighting. You don't want a huge flood of light or you illuminate too much area, defeating the purpose of using such small spotlights. You only have to look back in time to realise that the lion's share of the MR16 business was eventually channelled into the lumen package of the 50W versions, and the stronger 65 and 75W variants were left behind.

The user-friendly design of the 20W reflector is also guaranteed to be a hit. Although we have recently seen a trend towards compact metal halide capsules, the reflector version is where we'd put our money for the future. It's sealed, optically efficient, safe, and has the clear advantage of suitability for use in small low-cost open fixtures. Again look back a decade to the duel that raged between the 12V halogen capsule and the 12V MR16 reflector. History shows clearly that the friendly and functional reflector formats, if they are small enough, have always won the battle for dominance in display lighting.