

## **Are HID (Xenon) lights really better?**

HID (High Intensity Discharge) lights have achieved popularity as a better, brighter, and longer-lasting lighting system. Most HID systems use bulbs filled with xenon gas and are simply called “xenons”. These systems have been available on BMW’s for over 10 years now and are beginning to appear in significant number on the used car market. This means the general public will purchase these cars with higher expectations.

But will these expectations be fulfilled? How do these lights hold up over time compared to a standard halogen system?

I recently bought a 2003 530i Sport, which came with HID (xenon) low beams and halo rings. While I recognized the halos were purely for show, I would be driving behind xenons for the first time and was hopeful they would provide a noticeable improvement in light projection over the BMW halogen modules with which I was familiar.

To start, the headlight modules had the typical failed adjusters. I immediately discovered rebuilding these modules is more difficult than halogen modules, also requiring more expensive aftermarket adjusters (since BMW doesn’t acknowledge these lights can even be rebuilt; see my website for an E39 DIY procedure: [tinyurl.com/kjxq4lz](http://tinyurl.com/kjxq4lz)). Since halogen modules experience failed adjusters too, I was willing to overlook this.

Afterwards it was time to evaluate light projection. Over the course of several months I tried to distinguish the light projection abilities of my stock halogen '99 E39 compared to my '03. Other than the light color, I disappointedly concluded there was no discernible difference between the two. On some nights I thought I could see a difference, but that may have been the placebo effect...and it certainly didn’t rock my world. How could this be?

As anyone would, I assumed perhaps I needed new, better bulbs than the set inherited from the previous owner. Online forums recommended “The Retrofit Source” where I purchased Morimoto 3-Five bulbs (4300K) for the relatively great price of \$45/pair. Eagerly I installed them. One socket tab broke off the bulb’s base during installation, illustrating manufacturers continue to underestimate the forces applied when installing them (both tabs were broken off my existing Philips bulb).

And what were the dramatic results? Well, they didn’t work. There was a brief flash however. After about seven separate attempts to turn them on, they finally started. A call to the nice folks at TRS customer service revealed my old ballasts weren’t producing the needed voltage. TRS experts told me ballasts last only 5-6 years and should be replaced with the bulbs. This was not stated on their website. (They do publish a 2000-hour service life for their Morimoto 35-watt ballast and only 1500 hours for 55-watt ballasts.) When they worked, the 3-Fives’ light projection was the same as my existing set.

Thoroughly disgusted, I was told thru forum advice that for best results I should buy new projectors too (which reside inside the light module). Since BMW does not offer projectors as a replacement part and OEM ballasts are outrageously priced (about \$700/pair!), aftermarket sources are a must.

For more light, many have “upgraded” their OEM 35-watt xenon systems to 55-watts, coupled with a range of projectors starting at around \$120/pair and high-end bulbs

approaching \$200/pair. None of these parts (except bulbs) is a direct plug-n-play replacement for OEM stuff and, the legality of this notwithstanding, it certainly negates any efficiency advantage of xenon lights (standard halogens use 55 watts).

I also couldn't help notice the complexity of xenon light modules. On the BMW E39, a xenon system replaces a halogen three-circuit system (high beam, low beam, turn/corner bulb) with a five-circuit system (high beam, low beam, halo/side, turn, leveler motor) *plus* the electro-mechanicals needed to generate the level signals (suspension-mounted arms and control module). Complexity is inherently less reliable and more expensive.

Xenon lights are also quite popular with the aftermarket crowd. Many have spent hundreds of dollars retrofitting xenon lights in place of halogens on their older BMWs. They do indeed look good, especially when combined with halos or LED arrays. But I have discovered few, if any, are aware of the limitations of these systems. While this may be only grudgingly acknowledged by lighting pros, most car enthusiasts don't want to talk about it. I suppose the trendiness of xenons makes me a party pooper.

Conclusions:

As shown, xenon light projection apparently diminishes over time as the OEM bulbs, ballasts, and projectors deteriorate. In fact, it reduces to the point of being no brighter than a halogen system. How long this process takes probably depends on usage, but it appears to take affect within 5 years. Since it's a gradual process I doubt many drivers are even aware of their reduced light output. Even as an auto enthusiast, I wasn't aware of this and have not seen this widely discussed in automotive literature.

This means all pre-2008 BMWs with xenons on the road today have lights performing no better than halogen systems. In order to restore them to their former glory, a complete light module rebuild is necessary.

I must conclude xenon lights are not living up to their reputation as a better, longer-lasting system. The average used car buyer would not go to the lengths I did in resolving this, since most are only familiar with replacing bulbs in a halogen system. And once the cost of "properly" rebuilding xenon lights is considered (bulbs/ballasts/projectors), the cost advantage of long-life xenon bulbs evaporates.

In the end, I think xenon lighting can be a benefit, but only if the light modules are periodically rebuilt. This can only be done if knowledge of their limitations becomes more widely known. Until then, the reputation of xenons may suffer and - possibly - affect car resale values. Meanwhile, those interested in long-term value (bang for your buck, ease of maintenance, etc.) may prefer a halogen system which, when combined with the new range of "super-bright" H7 bulbs on the market, should perform as good or better than aging, stock BMW xenon systems.

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