



BIVAR

Power & Energy Storage Illumination with Style

Ruggedization meets consumer-level design aesthetics

Bivar.com



Ruggedized, stylish energy and power LED illumination all in one



Look around your house and you'll quickly spot a variety of devices designed with sleek, smooth, enjoyable interfaces. Interactions are simple and style is top-notch.

Now look around the equipment and suite of devices you use in the workplace. Are you one of the B2B or OEM manufacturers wondering why your products can't serve the same design aesthetics we know and love in our everyday lives?

Your favorite products use cleverly pulsating lights, eye-catching illumination, and smoothly route light along surfaces that show you just how to use them. If you're looking at your favorite device and wondering **'hmm...why can't we do this too?'**, it's time to have a look at Bivar, where we're reinventing energy and power illumination design with today's modern design aesthetics.



New devices teeming with data feeds

Industry 4.0, IoT, and AI is here, debuting a new squadron of devices whirring with data to share with users. Whether it's a simple on/off indicator on a robotic arm or charging status on an electric vehicle wall box, we're building illumination solutions that integrate with power needs and display related data stylishly and effectively.

More data than ever is churning through industrial environments

IoT-connected devices will generate an estimated 79.4ZB of data by 2025 — an alarming 4X growth over just five years.¹ This means more information for panels and interfaces to display to end users. Crowded LEDs lead to murky readings that confuse users, so you'll need bright ideas to keep next-gen information shining clearly and concisely.

Find more than a 'part' — build a system-level solution

We work alongside your team on fully customizable LED illumination systems that survive the long-run. Instead of combing a parts catalog to find 'parts' that might work from various vendors, you'll have a fully working system-level solution. When it comes to streamlining purchasing and assembly, one arrangement is more efficient over the long-run.

A full-fledged partner that considers your unique operations

Our vision goes beyond technical specs. We focus on answers that fit into how your organization operates, through shipping, testing, and storage. From verification to post-sale service, we're by your side for the entire lifespan of your product.

¹ IDC, "How you can contribute to today's growing DataSphere and its enterprise impact": <https://blogs.idc.com/2019/11/04/how-you-contribute-to-to-days-growing-datasphere-and-its-enterprise-impact/>

LED Illumination Energy & Power Applications Where Bivar Shines

Charging Systems

From consumer vehicles to warehouse robots that pick and pack, the number of devices that are charging up is on the rise. 'Ready' indicators, power level statuses, and maintenance reminders need to be communicated easily and safely. An intuitive user interface, enhanced with LED indicators that can blink, change colors, or show sequential progress, provides clear, real-time status updates and alerts. By considering the user's common viewing angles, we help make monitoring easy and efficient, whether you're charging consumer devices, electric vehicles, or managing industrial automation equipment.

Batteries

A user-friendly interface, complemented by LED indicators, offers users clear visibility from multiple viewing angles, making it easy to check battery status at a glance. We work with battery systems of all sizes, whether it's a handheld device or a battery aboard ruggedized heavy equipment.

Distributed Energy

LED illumination provides clear indications of power consumption and energy flow within distributed systems. Convey important information such as operational status, battery levels, and fault conditions using different colors and blinking patterns. By focusing on LED indication and system functionality display, our distributed energy solutions power user-friendly interfaces that simplify the management of complex energy systems.

Utilities

Advanced preventative maintenance features help avoid costly disruptions by identifying and addressing issues early. The LED-enhanced user interface offers clear, at-a-glance system status from multiple viewing angles, ensuring operators are always informed.

Energy Harvesting

When capturing and storing ambient energy from the environment, such as solar or wind energy, and converting it into usable electrical power, LED illumination provides real-time visual feedback on system performance, energy levels, and operational conditions.

Power Supplies

When working with human machine interfaces that communicate power levels for vital healthcare equipment or severe industrial environments, LED illumination needs to thrive in severe situations. Especially backup systems that need to deliver reliable performance in the most critical moments. From meeting the toughest IP ratings to tolerating extreme shock and vibration, users will be able to check status and observe performance clearly and safely.

A 5-Step Start-To-Finish Roadmap to Your Project's Success

Where do you need help? We are ready to jump in at any stage of the production process, but see how coming to us early in the design phase can boost your product's performance.

Bivar Bright Tip: In our five-step process, you'll find a range of value-added mindsets and strategic philosophies to help steer your project's success. At each stage, we keep in mind product shipping, assembly, and secure supply alternatives to withstand market fluctuations. We continuously align with industry trends and advancements, so your products and assembly protocols are future-ready.



Engineering Project Timeline

- 1 **Project Assessment:** In the first step, we learn from you: what critical data needs to be communicated to the user and how the illumination aesthetic can best complement the device's overall appearance. Understanding these critical data points ensures that the illumination aesthetic enhances the overall device appearance.
- 2 **Idea Exchange:** Time to brainstorm! Here, we listen to customer observations and merge them with our design experience to identify possible options that meet the design challenge. Listening to customer feedback is crucial in this stage to ensure we meet the design challenge effectively.
- 3 **Design Modeling:** Here, we develop initial design concepts and conduct software analysis to maximize LED and light pipe integrity. This step involves creating robust design concepts and ensuring software analysis supports the integrity of LED lights.
- 4 **Verification:** Concept models are verified by design simulation. We corroborate mechanical, electrical, and optical performance expectations, and confirm product manufacturability through DFM consultations. Verification through design simulation ensures all performance expectations are met, and manufacturability is confirmed.
- 5 **Prototyping:** The final stage! We demonstrate product performance and precise fitment in coordination with system controls and task commands. Once all is set, we work with you on getting the green light for production. This stage showcases the product's performance and fitment, leading to production approvals.

Bivar Bright Tip: While we jump into projects at any phase of design, products that communicate power data should consider LED illumination early on. This is especially important when illumination enhances safety by providing clear visual cues about the system's power status, such as levels, operational modes, or emergency alerts.

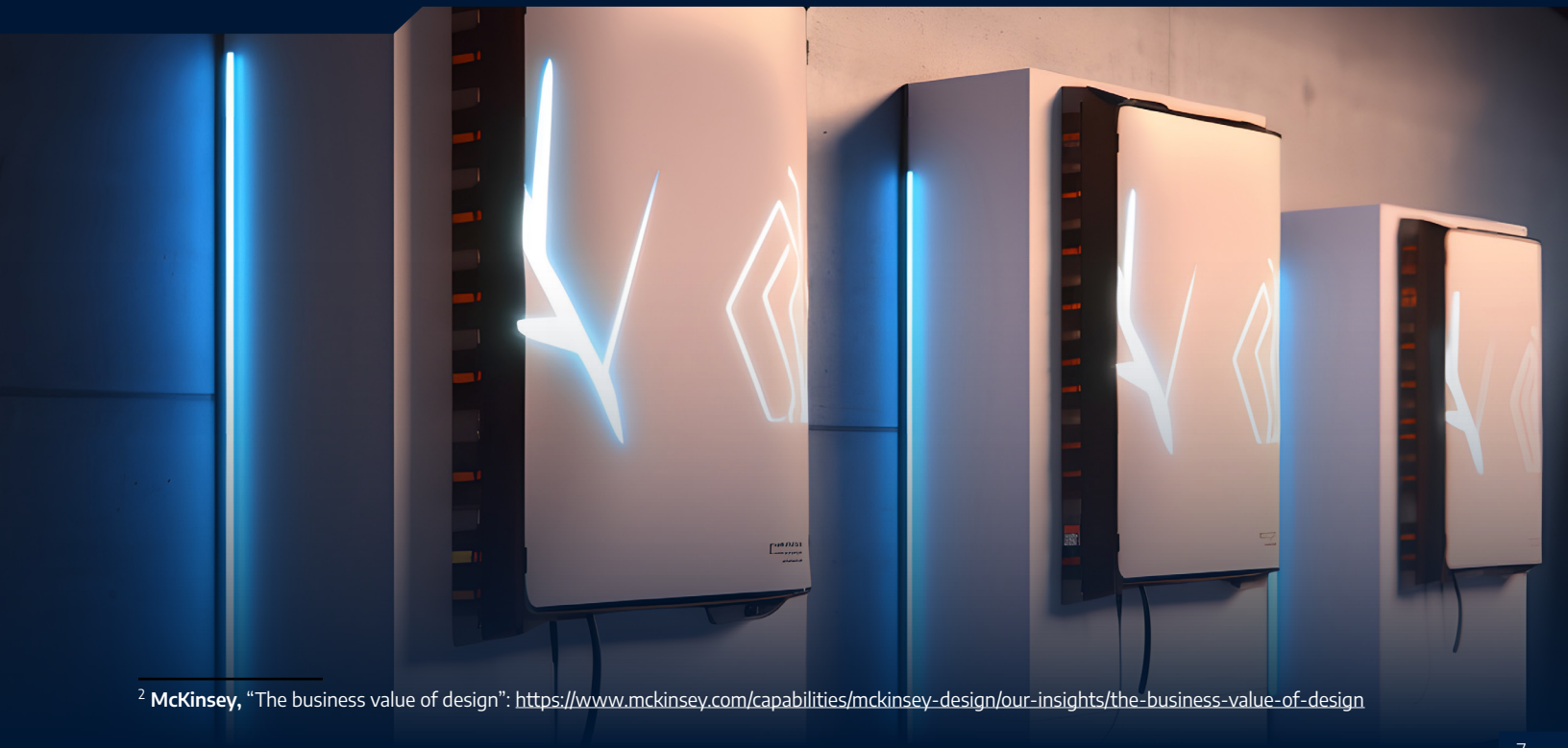
Power & Energy Illumination That Makes a Visual Splash — And Survives the Toughest Conditions

Think sleek and stylish products are only for delicate consumer electronics? Think again. Our LED illumination solutions are built to take on harsh conditions thrown at outdoor power systems, fleet chargers, and bustling factory floors. Whether it's humid tropical evenings or frosty desert nights, our lenses, LEDs, and light pipes are outfitted to survive the most punishing circumstances.

According to McKinsey, companies that focus on top-notch design can **increase revenue at nearly twice the rate** of companies that ignore this trend.²

Moving light means more than getting it from Point A to Point B. At Bivar, we're re-envisioning industrial LED illumination from a mere functional element into a distinctive brand signature.

Bivar Bright Tip: Small improvements in product usability can drive significant gains in customer satisfaction and retention.



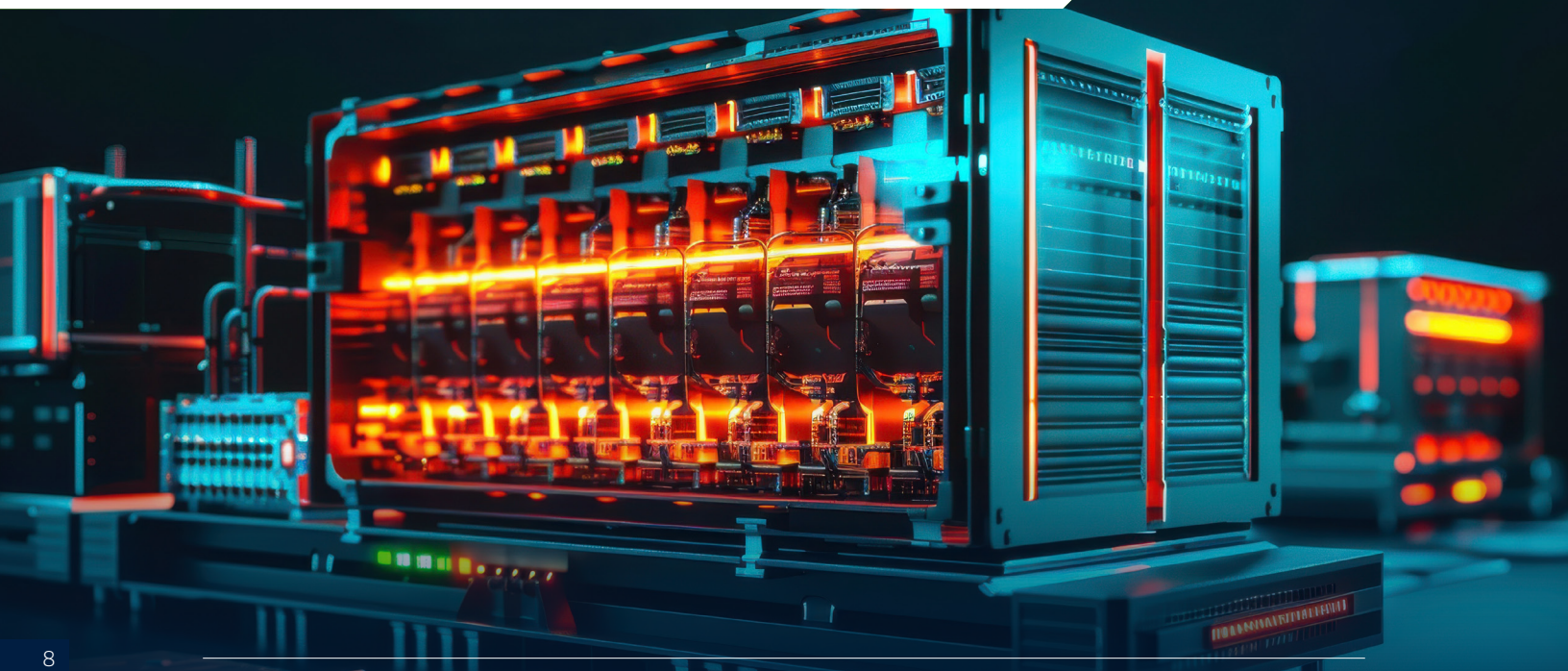
² McKinsey, "The business value of design": <https://www.mckinsey.com/capabilities/mckinsey-design/our-insights/the-business-value-of-design>

Brand & Style

User experience has become the new brand signature. This is where functional illumination seamlessly blends with rugged design and noticeable style.

Light Guides direct users' attention and actions. They dynamically light up entire surfaces or illuminate creative shapes, guiding user interactions and adding an aesthetic flair that enhances the overall experience.

Various options such as edge lighting, side lighting, and ring lighting can be integrated to achieve this effect. Additionally, color-coding combined with functional effects like flashing, blinking, and patterning provides stylish illumination that draws the eye. Versatile mounting options include snap, slide-in, screw, and adhesive attachments.





Precision & Protection

LED illumination used in the Arctic tundra, soggy rainforests, or sweltering parking lots need the utmost protection against unexpected elements. They can face rigorous jostling. Be splashed by hazardous materials or plunged into deep water. For the most demanding environments, we ensure LEDs and light pipes that communicate power levels and statuses can endure the toughest challenges.

Built to withstand any environment

IP rated to handle any setting, with industry-standard protection against liquids, objects, and particulates. Our products meet all IP specifications, including common dust and water resistance needs, with ratings like IP54, IP67, and IP68.

Positioning trays for foolproof installation

Positioning trays to streamline the installation process, reducing assembly time and errors while enhancing production efficiency. Multiple light pipes are configured into a single package for drop-in installation, ensuring precise alignment every time.

Countersinks offer enhanced protection

Countersinks are used to fit light pipes flush with surfaces, providing protection against external damage and environmental hazards. This design feature helps to maintain the integrity and longevity of illumination systems in challenging conditions.





Fit & Maneuverability

Are you tired of compromising your brand's unique needs into generic templates? Unleash your creativity with **fully custom illumination solutions**. Say goodbye to the frustration of trying to 'fit a square peg in a round hole' and embrace the freedom to design without constraints. Our bespoke illumination options empower your team to bring any product design your imagination can conceive to life.

Have a product that must be viewed at a precise angle? Maybe...

- A charger for a fleet of EV vans that must be visible from below
- A solar panel interface that a user looks down on
- A small, handheld battery pack with a small, compact space reserved for status indication

We do more than route light from Point A to Point B. We position illumination at the optimal viewing angle, so it's bright, vibrant, and distinct for your user's optimal viewing angle.

- Long & Short Distance Solutions
- SMD LED Systems
- Panel Press-Fit
- Board Mount

We provide innovative options that integrate seamlessly with today's top reference designs. Even if you're not starting from scratch, you can still create a product that stands out with fresh innovation and distinctive style.

Bivar Bright Tip: Thinking of illumination too late in the process can create challenges. Bivar helps plan ahead for use cases, so no matter how many light pipes you'll need, light is always visible, discernible and distinctive from neighboring light sources.

Why Choose Bivar?

Long-term product support that meets your organization's goals

Enhance the longevity of your illumination solutions with our forward-thinking approach and strategic sourcing. We're always on the lookout for innovations that are not just current, but future-ready. Our dedicated research and development team vigilantly monitors industry advancements to anticipate and adapt to changes before they become mainstream.

At Bivar, we always think beyond the technical aspects to find illumination solutions:

- We prioritize **simplicity and efficiency in every aspect of our product designs**, ensuring they are easy to manufacture, assemble, ship, and store.
- We **consider factors your internal team might overlook**, ensuring every detail is optimized for ruggedized power performance and top-notch usability.
- We focus on **how users interact with product illumination** to provide a finely tuned experience that delights and satisfies.

With this proactive approach, we design products that are resilient and adaptable, capable of thriving in harsh environments and evolving alongside technological progress. Whether integrating advanced AI capabilities and IoT systems or utilizing sustainable materials, our commitment to future-proofing guarantees our products stay ahead of the curve.





Let's work together to illuminate your next innovation!

When faced with a complex illumination challenge, you need a partner that understands all the details. At Bivar, we illuminate the path forward for creative engineering groups, empowering them to bring refined, high-quality products to the market with confidence.

Contact us and let's talk about how your LED illumination can merge industrial ruggedization with consumer-facing style.



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