



Orca Green Marine Technology Corporation

LED Lighting

Capabilities Brief



Primary NAICs:
488310-488330
335122
Primary SIC:
3646-3648, 8711
Woman-Owned/Operated
Cage Code: 314F3
DUNS: 145598905

A New Dawn in Lighting

Orca Green Marine LED Lighting

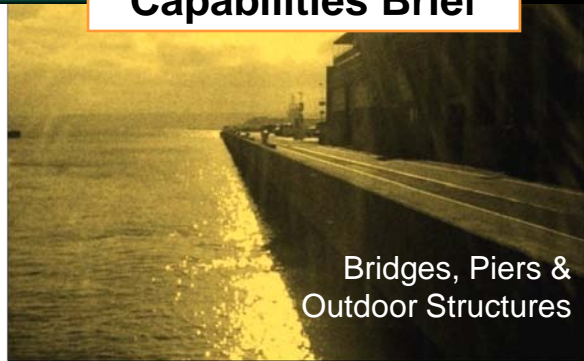
OGM brought rugged, waterproof LED lighting products to the boating industry back in 2004 and continues to lead the way in LED lighting in this harsh marine environment. So it's only natural for our next step in evolution to be to expand our product line with our new bridge, pier and other harsh environment lighting systems particularly suited for those structures touched as closely by the seas as the variety of marine vessels currently using OGM's innovative LED lighting.

Partnering for Success

To provide a full service solution to our customers, Orca Green has developed key partnerships to ensure continued innovation in LED lighting technologies that can quickly be brought to market in a quality ISO 9001:2000 facility in San Marcos, TX. Partnering with Technology Kitchen in Austin, TX, an engineering firm with a full range of expertise in LED lighting engineering and development, prototyping, and support and with Ember Industries in San Marcos, TX, as the manufacturing arm, OGM is poised to quickly ramp production from an innovative customized solution to full production in the US and abroad.

Quality and Innovation in America

OGM and its partners provide fully integrated LED solutions made in the United States by a collaboration of Small Businesses ranging from engineering services, and machine shops to full service assembly manufacturers of components and final production as well as marketing, sales, and educational services. LED Lighting solutions from OGM keeps America an integral part of the green economy.



Bridges, Piers & Outdoor Structures

Specializing in Harsh Environment, Outdoor and Remote Structures.



with TKEngineering

Turnkey LED Lighting Solutions On or Off-Grid

Innovation * Quality * Manufacturing Excellence

With Ember Industries: ISO 9001:2000

LED Lighting Leaders



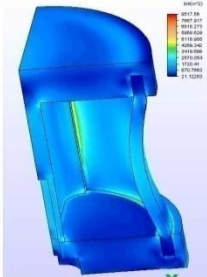
“ Orca Green continues to bring leading edge LED technology to the Marine Industry. ”

OGM LED Lighting Features:

- ✓ Full Range of LED Navigation Lights for Marine
- ✓ Custom and Semi-Custom LED Lighting Available
- ✓ Wide operating voltage range: 8V to 28V DC or 120-240 AC (using AC/DC converter)
- ✓ 50,000 hour operational life span
- ✓ Rugged industrial enclosures for harsh, aggressive environments
- ✓ Non-corrosive materials stands up to an exceptionally broad range of environmental exposures
- ✓ Watertight IP-67 Rating – (higher rating pending)
- ✓ UV resistant minimizes the affects of sunlight
- ✓ Easy maintenance, Low cost of operations – no bulbs to replace
- ✓ Low profile, pleasing aesthetics easily blends into piers and bridge designs

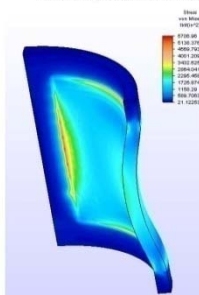
Assembly Stresses @ 480'

- Applied Pressure: 215 psi (480' sea water)
- Aluminum
 - $\sigma_{\text{applied}} \approx 8.5$ ksi
 - $\sigma_{\text{y Al}} = 35$ ksi
- Acrylic / Polycarbonate
 - $\sigma_{\text{applied}} \approx 5.7$ ksi
 - Maximum stress is in compression
 - Maximum tensile stress ≈ 2.8 ksi
- Assume $\sigma_{\text{y}} = 6$ ksi
- Polycarbonate / acrylic cylinder is OK is factor of safety of 1.6 on 300' is acceptable



Full Assembly Stresses

Plastic Cylinder Stresses

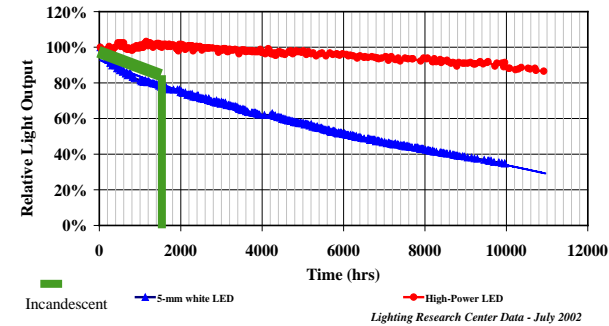


OGM : LED Lighting You Can Depend On

Orca Green Marine is dedicated to providing the marine and other harsh environment industries with the most reliable, energy efficient lighting available, using the latest in LED (light-emitting diode) technology.

Why use LEDs?

- ✓ **Efficiency** –up to 5 times less power than conventional bulbs for lighting
- ✓ **Reliability** --LEDs are semiconductors which are immune to shock and vibration
- ✓ **Long Life** --Last 25 to 50 times longer than conventional bulbs
- ✓ **Low Heat**
- ✓ **Lower Maintenance Cost** --No replacement bulbs need to be stocked or routine bulb replacements. LEDs will last 17 years with daily operation.



OGM™

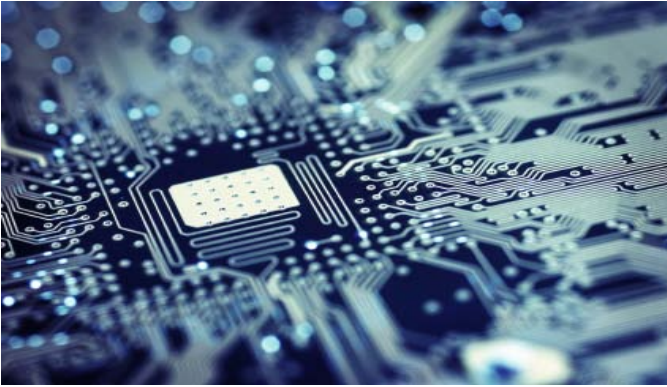
Orca Green Marine Technology Corporation

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Valley Mills, TX 76689

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Our cross-functional engineering team designs products from concept to production and provides all aspects of the development process including all hardware, software, mechanical, PCB layout, project management, testing, documentation, and product sustaining functions.

Capabilities:

Electrical Engineering

- ✓ Digital, Analog, Power, and RF Circuit Design
- ✓ Embedded Systems Design
- ✓ Printed Circuit Board (PCB) Layout

Mechanical Engineering

- ✓ Solid Modeling
- ✓ Sheet Metal and Machined Part Design
- ✓ Thermal Analysis
- ✓ AutoCAD Drawings
- ✓ Prototyping, Testing, and Analysis

Software Development

- ✓ Real-time Embedded Systems Development
- ✓ Robust, Modular, Well-Documented Code
- ✓ 8, 16, and 32-bit Target Processors
- ✓ C and Assembly Programming
- ✓ Complex Algorithms and Time Critical Requirements

Turn-key Product Development

- ✓ Strong Project Development Process From Concept to Prototyping to First Article Test
- ✓ Design for Manufacturability
- ✓ High Quality Documentation
- ✓ Full Life-Cycle Support

Technology Kitchen (TK) is a high-tech product development group based in Austin, Texas. We are passionate about product development and committed to creating innovative, high-quality, robust designs. We have over 100 years of combined engineering experience focused on the research and development of electronic products. While our core competency is developing products with embedded microcontrollers, we have experience with a wide variety of technologies and applications. We take great pride in producing engineering documentation that is detailed, clear and complete. Technology Kitchen was founded in 1998 through a desire to focus on engineering development and minimize time-to-market for customer products. Our mission is to develop innovative and technologically advanced products of the highest quality.

// Technology Kitchen's talented team of engineers is like having a full R&D department at our fingertips. //

~ OGM



Technology Kitchen

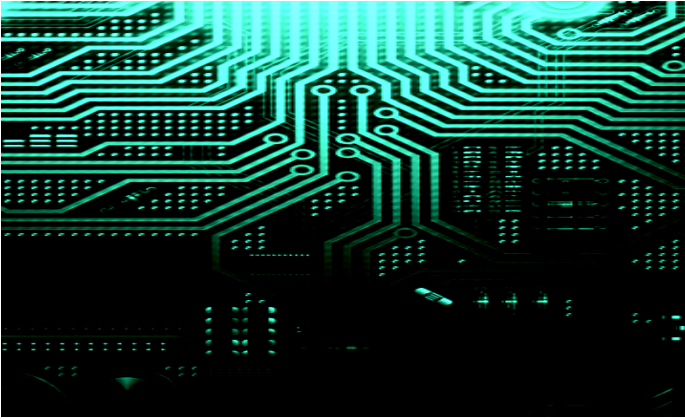
3636 Executive Center Drive, Ste G-70

Austin, TX 78731

(512) 788-5580

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Manufacturing & Assembly



Ember Industries is a full service Electronic Manufacturing Services (EMS) company. We provide full turn-key assembly and work with our customers in the early phases of design to cut production time, improve quality and cut costs in production.

Capabilities:

Design for Manufacturing/Design for Test

- ✓ Range of Engineering, design, manufacturing experience to aid in quality manufacturing while reducing cost & time to market

Printed Circuit (PCB) Assembly

- ✓ Full RoHS Compliant Assemblies
- ✓ Automated SMT and Thru-hole Technologies
- ✓ BGA and VSOIC Placement
- ✓ Automated Optical Inspection (AOI)
- ✓ Automated and Functional Testing

Wire, Cable & Mechanical Assembly

- ✓ Cable and wire harness assembly and testing
- ✓ Coating and potting of assemblies

Full Range Testing

Turn-key Manufacturing & Fulfillment

- ✓ Full production, packaging and shipping facility

Manufacturing Process Management

- ✓ Integrated Process Control and Documentation
- ✓ Conformance to IPC-610 Class 2 practices

Innovation * Manufacturing * Excellence

We Assemble Products; We Create Success

Ember Industries, Inc. is a full service contract manufacturing organization with extensive experience in the electronic assembly industry.

As an environmentally conscientious company, Ember is fully compliant to the requirements of the RoHS initiatives and recycles much of the waste materials and byproducts resulting from the assembly process.

Ember Industries is committed to the continuous improvement in quality, costs and efficiencies as evidenced by the various awards presented to Ember from its customers, suppliers and associate organizations.

// Ember is the manufacturing arm of Orca Green. Together, we can easily ramp volume of LED Lighting from small volume to large contract fulfillment. //

~ OGM

Ember Industries:
ISO 9001:2000



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