

Christopher Klinga P.E.

Solar Product & Project Expert

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A solar industry leader and structural engineering expert with 18 years of experience driving the design, development, and deployment of innovative photovoltaic systems—specializing in the structural analysis, integration, and performance of architectural solar solutions.

Current Engagements

SolMotiv - Owner/Principal (June 2016 - Present)
Architectural Solar Association (ASA) - Technical Director (June 2016 - Present)
Underwriters Laboratories—UL 3741 Working Group Member
International Electrotechnical Commission Technical Committee 82
Working Group 2 - International PV module standards (2018 - Present)

SolMotiv - Principal / Owner June 2016 to Present

Notable Clients

Solar Installers/Developers - Solar engineering services and expert witness

[Pivot Energy](#) - Vertical and flat Roof structural Engineering

[iPower Alliance](#) - Carport, flat and pitched roof solar structural engineering

[Independent Power Systems](#) - Pitched and flat roof racking structural engineering

[The Solar Revolution](#) - Pitched, flat and ground mounted solar structural engineering

[Custom Solar](#) - Pitched and flat roof racking structural engineering

[All Energy Solar](#) - Third party structural engineering review

Solar Product Companies - Structural engineering review for various solar modules and racking systems

[Opsun Systems Inc.](#) - Flat roof racking engineering

[Onyx Solar](#) - Structural engineering product consulting

[Walters & Wolf](#) - The 6th largest glazier in the US., BIPV product consulting

[USA Shade](#) - Architectural solar product integration

[VPS](#) - Solar hail protection product and project development services

Architects - Architecturally coordinated PV system design, development and oversight services

[Gensler](#), [Coburn Partners](#), [RATIO](#), [KEPHART](#), [Alm2s](#)

Property Owners/Managers - PV design development, oversight and solar asset management

[TF Cornerstone](#), [Morgan Creek Ventures](#), [Cushman & Wakefield](#), [Greystar](#), [Necker Island](#), [Guana Island](#)

Accomplishments

Walters & Wolf Unitized BIPV Window Wall System – Product & project engineering for the first UL Listed

Unitized BIPV window wall systems. Initial Project: 5901 Sunset Blvd. Los Angeles, CA July 2019

36 kW Custom BIPV Awning System - Pear Ave. Mountain View, CA

350 kW of BIPV Screenwall and Curtainwall systems across 6 buildings in Long Island City & Brooklyn NY

572 kW Boulder Commons Phase I Façade/Roof - Boulder, CO (Rooftop and Facade performance analysis)

317 kW Boulder Commons Phase II Façade/Roof - Boulder, CO (PV Elec. & Mech. Design, Structural EOR)

3 MW Bifacial Solar Integrated Hail Canopies for dealerships Development Services – 13 sites (CO, CA)

10 MW Bifacial Solar Integrated Hail Protection Canopy at KIA Automotive - West Point, GA

265 kW/500 kWh Islanded Microgrid with Diesel Generator Backup Design & RFP—Guana Island, BVI

Accomplishments

[LSX Module and Racking System](#) - Brought to market July 2011, distributed globally today

- An architecturally integrated and differentiated approach to solar
- Won the Dwell on Design Best Energy Product in 2012
- Featured on the cover of Home Power & Solar Pro and within several architectural publications

[Lumos SolarScapes](#) – Brought to market July 2013, distributed globally today

- A configurable architectural approach for small- to mid-scale PV canopies with LSX modules

[Lumos GSX Module and Racking System](#) – Brought to market in January 2016, distributed globally today

- Glass-on-glass module and mullion racking system , features aluminum and rubber extrusions
- Conceals all wiring while also creating a robust roof system

[Intellectual Property Mgmt.](#) - Lead effort to patent all concepts being developed

Publications

Mathew O Reese and Christopher S Klinga , *The 2020 photovoltaic technologies roadmap 8. Non-traditional module and system designs: building integration, floating, agriculture, and flexible/high specific power applications* , **Journal of Physics D: Applied Physics, Volume 53, Number 49** - 09/20

[How to Accelerate Architectural Solar in the US Market: From BIPV to Building Component](#) **NA Clean Energy** 11/17

Media.

Webinar: [Case Study: Boulder Commons Case Study](#), *Arch. Solar Assoc./NREL* 12/24

Webinar: [The Architectural Solar Continuum and Solar Area Ratio](#) *Arch. Solar Assoc. /NREL* 10/24

Short Course ; [Introduction to Architectural Solar](#) ,*Arch. Solar Assoc. / NREL, Heatspring* 03/24

Podcast: [Christopher Klinga, P.E. on Applications of Architectural Solar Glass](#) - *Flanigan's Eco-Logic* 07/22

Podcast: [Integrating Solar into the Built Environment with Chris Klinga](#) - *Climate Changers w/ Ryan Flahive* 03/20

Webinar: [An Evolution of BIPV Design Tools](#) *Arch. Solar Assoc.* 4/18

Webinar: [Unlocking the Power of Zero Energy with Solar Materials](#) *Arch. Solar Assoc.* 11/17

Webinar: [Global Business Opportunities for Architectural Solar \(BIPV\)](#) *Arch. Solar Assoc.* 2/17

Interview: [Lumos Solar: Changing the Perception of Solar Energy with SketchUp and 3D Warehouse](#) *SketchUp Blog* 11/15

Article: [Commercial Grid-Direct PV & Thermal Systems: Movement Climbing & Fitness](#) *Solar Pro* Dec/Jan '10 : Issue 3.1

Patents Granted

[US9172325 B2](#) Photovoltaic Panel Carrier Device

[US8946539 B2](#) Junction Box Cover

[US9515599B2](#) Racking with Integrated Electronics

Patents Pending

[WO2015042143 A1](#) 1/4 - Turn Solar Mounting System

[US20130119211 A1](#) Sloped Roof Mounting System

[US20130161457 A1](#) Solar Racking Roof Attachment

Detailed Work Experience

Technical Director / Co-Founder, Architectural Solar Association 06 / 2016 – Present

- Responsible for technical direction and education efforts
- Technical liaison to the building industry focused on integrating solar into all applicable building trades
- Lead all technical marketing efforts

Principal / Founder, SolMotiv Design 06 / 2016 – Present

- Independent design consultant encompassing product/project development and engineering
- Clients range from product companies to well established architectural building envelope providers

VP of Operations, Lumos Solar 07 / 2015 – 05 / 2016 (11 mos.)

- Responsible for all procurement, production, warehousing and logistics efforts
- Managed the ERP/CRM system and all data entry associated with Lumos product line
- Worked closely with Controller on operational cash flow and budgets
- Continued all VP of Product Development duties listed below

VP of Product Development, Lumos Solar 06/2011- 06/2015 (4 yrs.)

- Managed engineering team and reviewed product layouts, structural details, and load calculations
- Set expectations, monitored performance and provided feedback to the engineering team
- Conducted yearly performance reviews of all product engineers
- Expanded and guided the company's product development strategy based on market insights
- Designed product concepts in SolidWorks and SketchUp and provided guidance on CAD methodology
- Developed detailed product specifications for 100+ SKUs
- Developed and maintained strategic vendor relationships
- Oversaw all UL & IEC testing for product revisions or additional manufacturers
- Developed Excel based code compliant structural engineering calculators
- Set pricing for all products
- Traveled extensively to Asian, Canadian and US manufacturing sites
- Prepared and managed intellectual property patent portfolio
- Passed Colorado professional engineering exam with an emphasis on civil/structural design

Product Designer/Mech. Engineer, Lumos Solar 06-2007 to 05-2011 (4+ yrs.)

- Designed, engineered, and brought to market the LSX Module and Racking System
- Established manufacturing relationships in China and US
- Optimized products to fit manufacturing and installation constraints with a focus on architectural aesthetics
- Managed third party testing to UL1703 and IEC 61730/61215 standards

General Manager, Lighthouse Solar 07-2009 to 01-2010 (7 mos.)

- Supervised and managed sales, installation and engineering teams
- Conducted yearly performance reviews of all technical sales engineers
- Performed bidding, design and engineering functions for the most complex projects
- Developed performance based metrics for engineering and installation teams to follow
- Analyzed projects to determine methods of streamlining design, engineering and installation process
- Developed a cloud based estimation software based on a large dataset of installation metrics

Project Manager, Lighthouse Solar 02-2009 to 06-2009 (5 mos.)

- Same job description as Mech. Eng. below but with an emphasis on larger projects
- Coordinated the design and the construction phase of the project
- Obtained NABCEP certification

Technical Sales Engineer / Mechanical Engineer, Lighthouse Solar 06-2007 to 01-2009 – (1.75 yrs.)

- Analyzed the structural, electrical and financial feasibility of solar for commercial and residential sites
- Estimated costs, wrote proposals, and interfaced with customers directly
- Designed photovoltaic and solar thermal energy systems per local building and electrical codes
- Developed permit and installation packages with SketchUp and SolidWorks
- Developed initial Lumos design concepts in SolidWorks and prototyped designs on LHS installs

Note: Lighthouse Solar and Lumos Solar were sister companies and positions were held concurrently.

Product Development Intern, Great Trango Holdings 2005-2007

Climbing Wall Fabricator/Welder, Eldorado Climbing Walls 2005-2006