

United States Patent and Trademark Office (USPTO)
Office Action (Official Letter) About Applicant's Trademark Application

U.S. Application Serial No. 79283665

Mark: K2 SYSTEMS

Correspondence Address:

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Applicant: K2 Markenrechte GmbH

Reference/Docket No. N/A

Correspondence Email Address:

NONFINAL OFFICE ACTION

International Registration No. 1081336

Notice of Provisional Full Refusal

Deadline for responding. The USPTO must receive applicant's response within six months of the "date on which the notification was sent to WIPO (mailing date)" located on the WIPO coverletter, or the U.S. application will be abandoned. To confirm the mailing date, go to the USPTO's Trademark Status and Document Retrieval (TSDR) database; select "US Serial, Registration, or Reference No.," enter the U.S. application serial number in the blank text box, and click on "Documents." The mailing date used to calculate the response deadline is the "Create/Mail Date" of the "1st Refusal Note."

Respond to this Office action using the USPTO's Trademark Electronic Application System (TEAS). A link to the appropriate TEAS response form appears at the end of this Office action.

Discussion of provisional full refusal. This is a provisional full refusal of the request for extension of protection to the United States of the international registration, known in the United States as a U.S. application based on Trademark Act Section 66(a). See 15 U.S.C. §§1141(f), 1141(h).

The referenced application has been reviewed by the assigned trademark examining attorney. Applicant must respond timely and completely to the issue(s) below. 15 U.S.C. §1062(b); 37 C.F.R. §§2.62(a), 2.65(a); TMEP §§711, 718.03.

SUMMARY OF ISSUES:

- Section 2(d) refusal – likelihood of confusion
- Mark description required
- Identification of goods
- Disclaimer required
- US Counsel required

SECTION 2(d) REFUSAL – LIKELIHOOD OF CONFUSION

Applicant is advised that the cited registration is currently in the grace period for filing maintenance documents, and may be subject to cancellation under Section 9 of the Trademark Act.

Registration of the applied-for mark is refused because of a likelihood of confusion with the mark in U.S. Registration No. 3706419. Trademark Act Section 2(d), 15 U.S.C. §1052(d); see TMEP §§1207.01 *et seq.* See the attached registration.

Facts

Applicant's mark **K2 SYSTEMS & Designs** for "Common metals and their alloys; building materials of metal; aluminium profiles, rotary metal structures for solar panels, solar modules and roof constructions, fixing material of metal, materials of metal for scaffolds, metal racks, metal poles, stakes and masts of metal, metal building profiles and frames; transportable buildings of metal; materials of metal for railway tracks; non-electric cables and wires of common metal (not for electric purpose); ironmongery, small items of metal hardware; pipes and tubes of metal; safes; goods of common metal not included in other classes; ores; all the aforementioned for mounting of renewable energy systems, particularly photovoltaic systems."

Registrant's mark **K2 SOLAR** is for "Custom design of solar photovoltaic systems, electrical and heating systems, solar energy systems, photovoltaic/solar hybrid systems, solar thermal systems, heating, cooling and environmental control systems, primarily using solar and other renewable energy resources based on personal selections made by the customer."

Standard for likelihood of confusion

Trademark Act Section 2(d) bars registration of an applied-for mark that is so similar to a registered mark that it is likely consumers would be confused, mistaken, or deceived as to the commercial source of the goods and/or services of the parties. See 15 U.S.C. §1052(d). Likelihood of confusion is determined on a case-by-case basis by applying the factors set forth in *In re E. I. du Pont de Nemours & Co.*, 476 F.2d 1357, 1361, 177 USPQ 563, 567 (C.C.P.A. 1973) (called the “*du Pont* factors”). *In re i.am.symbolic, llc*, 866 F.3d 1315, 1322, 123 USPQ2d 1744, 1747 (Fed. Cir. 2017). Any evidence of record related to those factors need be considered; however, “not all of the *DuPont* factors are relevant or of similar weight in every case.” *In re Guild Mortg. Co.*, 912 F.3d 1376, 1379, 129 USPQ2d 1160, 1162 (Fed. Cir. 2019) (quoting *In re Dixie Rests., Inc.*, 105 F.3d 1405, 1406, 41 USPQ2d 1531, 1533 (Fed. Cir. 1997)).

Although not all *du Pont* factors may be relevant, there are generally two key considerations in any likelihood of confusion analysis: (1) the similarities between the compared marks and (2) the relatedness of the compared goods and/or services. See *In re i.am.symbolic, llc*, 866 F.3d at 1322, 123 USPQ2d at 1747 (quoting *Herbko Int’l, Inc. v. Kappa Books, Inc.*, 308 F.3d 1156, 1164-65, 64 USPQ2d 1375, 1380 (Fed. Cir. 2002)); *Federated Foods, Inc. v. Fort Howard Paper Co.*, 544 F.2d 1098, 1103, 192 USPQ 24, 29 (C.C.P.A. 1976) (“The fundamental inquiry mandated by [Section] 2(d) goes to the cumulative effect of differences in the essential characteristics of the goods [or services] and differences in the marks.”); TMEP §1207.01.

Similarity of the marks

Marks are compared in their entireties for similarities in appearance, sound, connotation, and commercial impression. *Stone Lion Capital Partners, LP v. Lion Capital LLP*, 746 F.3d 1317, 1321, 110 USPQ2d 1157, 1160 (Fed. Cir. 2014) (quoting *Palm Bay Imps., Inc. v. Veuve Clicquot Ponsardin Maison Fondee En 1772*, 396 F.3d 1369, 1371, 73 USPQ2d 1689, 1691 (Fed. Cir. 2005)) TMEP §1207.01(b)-(b)(v). “Similarity in any one of these elements may be sufficient to find the marks confusingly similar.” *In re Imm at St. John’s, LLC*, 126 USPQ2d 1742, 1746 (TTAB 2018) (citing *In re Davia*, 110 USPQ2d 1810, 1812 (TTAB 2014)), *aff’d per curiam*, 777 F. App’x 516, 2019 BL 343921 (Fed. Cir. 2019); TMEP §1207.01(b).

In this instance, the parties’ marks share a similar format. The marks consist of the wording “K2”, followed by descriptive wording.

The wording “K2” is presented as the first feature of the respective marks. Consumers are generally more inclined to focus on the first word, prefix, or syllable in any trademark or service mark. See *Palm Bay Imps., Inc. v. Veuve Clicquot Ponsardin Maison Fondee En 1772*, 396 F.3d 1369, 1372, 73 USPQ2d 1689, 1692 (Fed. Cir. 2005) (finding similarity between VEUVE ROYALE and two VEUVE CLICQUOT marks in part because “VEUVE . . . remains a ‘prominent feature’ as the first word in the mark and the first word to appear on the label”); *Century 21 Real Estate Corp. v. Century Life of Am.*, 970 F.2d 874, 876, 23 USPQ2d 1698, 1700 (Fed. Cir. 1992) (finding similarity between CENTURY 21 and CENTURY LIFE OF AMERICA in part because “consumers must first notice th[e] identical lead word”); see also *In re Detroit Athletic Co.*, 903 F.3d 1297, 1303, 128 USPQ2d 1047, 1049 (Fed. Cir. 2018) (finding “the identity of the marks’ two initial words is particularly significant because consumers typically notice those words first”).

The marks are similar in appearance. Marks may be confusingly similar in appearance where similar terms or phrases or similar parts of terms or phrases appear in the compared marks and create a similar overall commercial impression. See *Crocker Nat’l Bank v. Canadian Imperial Bank of Commerce*, 228 USPQ 689, 690-91 (TTAB 1986), *aff’d sub nom. Canadian Imperial Bank of Commerce v. Wells Fargo Bank, Nat’l Ass’n*, 811 F.2d 1490, 1495, 1 USPQ2d 1813, 1817 (Fed. Cir. 1987) (finding COMMASH and COMMUNICATIONS confusingly similar); *In re Corning Glass Works*, 229 USPQ 65, 66 (TTAB 1985) (finding CONFIRM and CONFIRMCELLS confusingly similar); *In re Pellerin Milnor Corp.*, 221 USPQ 558, 560 (TTAB 1983) (finding MILTRON and MILLTRONICS confusingly similar); TMEP §1207.01(b)(ii)-(iii).

The wording “SOLAR” in registrant’s mark, and the wording “SYSTEMS” in the applied-for mark does not serve to differentiate the marks. Although marks are compared in their entireties, one feature of a mark may be more significant or dominant in creating a commercial impression. See *In re Viterra Inc.*, 671 F.3d 1358, 1362, 101 USPQ2d 1905, 1908 (Fed. Cir. 2012); *In re Nat’l Data Corp.*, 753 F.2d 1056, 1058, 224 USPQ 749, 751 (Fed. Cir. 1985); TMEP §1207.01(b)(viii), (c)(ii). Disclaimed matter that is descriptive of or generic for a party’s goods and/or services is typically less significant or less dominant when comparing marks. *In re Detroit Athletic Co.*, 903 F.3d 1297, 1305, 128 USPQ2d 1047, 1050 (Fed. Cir. 2018) (citing *In re Dixie Rests., Inc.*, 105 F.3d 1405, 1407, 41 USPQ2d 1531, 1533-34 (Fed. Cir. 1997)); TMEP §1207.01(b)(viii), (c)(ii). Here, the registrant has disclaimed the wording “SOLAR”, similarly the applicant must disclaim the wording “SYSTEMS”. The requirement for applicant’s disclaimer is summarized further below.

A likelihood of confusion is not obviated based on the fact that applicant’s mark features a design. When evaluating a composite mark consisting of words and a design, the word portion is normally accorded greater weight because it is likely to make a greater impression upon purchasers, be remembered by them, and be used by them to refer to or request the goods and/or services. *In re Aquitaine Wine USA, LLC*, 126 USPQ2d 1181, 1184 (TTAB 2018) (citing *In re Viterra Inc.*, 671 F.3d 1358, 1362, 101 USPQ2d 1905, 1908 (Fed. Cir. 2012)); TMEP §1207.01(c)(ii). Thus, although marks must be compared in their entireties, the word portion is often considered the dominant feature and is accorded greater weight in determining whether marks are confusingly similar, even where the word portion has been disclaimed. *In re Viterra Inc.*, 671 F.3d at 1366-67, 101 USPQ2d at 1911 (citing *Giant Food, Inc. v. Nation’s Foodservice, Inc.*, 710 F.2d 1565, 1570-71, 218 USPQ2d 390, 395 (Fed. Cir. 1983)).

When comparing marks, “[t]he proper test is not a side-by-side comparison of the marks, but instead whether the marks are sufficiently similar in terms of their commercial impression such that [consumers] who encounter the marks would be likely to assume a connection between the parties.” *Cai v.*

Diamond Hong, Inc., 901 F.3d 1367, 1373, 127 USPQ2d 1797, 1801 (Fed. Cir.2018) (quoting *Coach Servs., Inc. v. Triumph Learning LLC*, 668 F.3d 1356, 1368, 101 USPQ2d 1713, 1721 (Fed. Cir. 2012)); TMEP §1207.01(b). The proper focus is on the recollection of the average purchaser, who retains a general rather than specific impression of trademarks. *In re Inn at St. John's, LLC*, 126 USPQ2d 1742, 1746 (TTAB 2018) (citing *In re St. Helena Hosp.*, 774 F.3d 747, 750-51, 113 USPQ2d 1082, 1085 (Fed. Cir.2014); *Geigy Chem. Corp. v. Atlas Chem.Indus., Inc.*, 438 F.2d 1005, 1007, 169 USPQ 39, 40 (C.C.P.A. 1971)), *aff'd per curiam*, 777 F. App'x 516, 2019 BL 343921 (Fed. Cir. 2019); TMEP §1207.01(b).

Thus, the marks are confusingly similar.

Relatedness of the goods / services

The goods and/or services are compared to determine whether they are similar, commercially related, or travel in the same trade channels. *See Coach Servs., Inc. v. Triumph Learning LLC*, 668 F.3d 1356, 1369-71, 101 USPQ2d 1713, 1722-23 (Fed. Cir. 2012); *Herbko Int'l, Inc. v. Kappa Books, Inc.*, 308 F.3d 1156, 1165, 64 USPQ2d 1375, 1381 (Fed. Cir. 2002); TMEP §§1207.01, 1207.01(a)(vi).

The compared goods and/or services need not be identical or even competitive to find a likelihood of confusion. *See On-line Careline Inc. v. Am. Online Inc.*, 229 F.3d 1080, 1086, 56 USPQ2d 1471, 1475 (Fed. Cir. 2000); *Recot, Inc. v. Becton*, 214 F.3d 1322, 1329, 54 USPQ2d 1894, 1898 (Fed. Cir. 2000); TMEP §1207.01(a)(i). They need only be "related in some manner and/or if the circumstances surrounding their marketing are such that they could give rise to the mistaken belief that [the goods and/or services] emanate from the same source." *Coach Servs., Inc. v. Triumph Learning LLC*, 668 F.3d 1356, 1369, 101 USPQ2d 1713, 1722 (Fed. Cir. 2012) (quoting *7-Eleven Inc. v. Wechsler*, 83 USPQ2d 1715, 1724 (TTAB 2007)); TMEP §1207.01(a)(i).

Applicant's goods consist of metal goods for use in mounting of photovoltaic systems. Registrant offers services for designing photovoltaic systems. The attached Internet evidence, consisting of screenshots of the websites for SepiSolar and Voltaic, establishes that the same entity commonly manufactures, produces, or provides the relevant goods and/or services and markets the goods and/or services under the same mark. Thus, applicant's and registrant's goods and/or services are considered related for likelihood of confusion purposes. *See, e.g., In re Davey Prods. Pty Ltd.*, 92 USPQ2d 1198, 1202-04 (TTAB 2009); *In re Toshiba Med. Sys. Corp.*, 91 USPQ2d 1266, 1268-69, 1271-72 (TTAB 2009).

Accordingly, registration is refused under Section 2(d) of The Trademark Act.

Although applicant's mark has been refused registration, applicant may respond to the refusal(s) by submitting evidence and arguments in support of registration. However, if applicant responds to the refusal(s), applicant must also respond to the requirement(s) set forth below.

MARK DESCRIPTION REQUIRED

Although applicant submitted a drawing showing the mark in color with a color claim, applicant did not provide the required description that specifies where each color appears in the literal and design elements in the mark. *See* 37 C.F.R. §2.37, 2.52(b)(1); TMEP §807.07(a)-(a)(ii). Therefore, applicant must provide this description. *See* TMEP §807.07(a)(ii).

Generic color names must be used to describe the colors in the mark, e.g., red, yellow, blue. TMEP §807.07(a)(i)-(ii). If black, white, and/or gray represent background, outlining, shading, and/or transparent areas and are not part of the mark, applicant must so specify in the description. *See* TMEP §807.07(d).

The following description is suggested, if accurate: **"The mark consists of a red circle containing the stylized wording "K2 SYSTEMS" in white, with the wording "K2" vertically stacked on top of "SYSTEMS"."**

IDENTIFICATION OF GOODS

The identification of goods is indefinite and must be clarified to further specify the nature, use, or subject matter of certain items, as set out in bold below. *See* 37 C.F.R. §2.32(a)(6); TMEP §§1402.01, 1402.03.

In a Trademark Act Section 66(a) application, classification of goods and/or services may not be changed from that assigned by the International Bureau of the World Intellectual Property Organization. 37 C.F.R. §2.85(d); TMEP §§1401.03(d), 1904.02(b). Additionally, classes may not be added or goods transferred from one class to another in a multiple-class Section 66(a) application. 37 C.F.R. §2.85(d); TMEP §1401.03(d).

The identification of goods contains parentheses. Generally, applicants should *not* use parentheses and brackets in identifications in their applications so as to avoid confusion with the USPTO's practice of using parentheses and brackets in registrations to indicate goods that have been deleted from registrations or in an affidavit of incontestability to indicate goods not claimed. *See* TMEP §1402.12. The only exception is that parenthetical information is permitted in identifications in an application if it serves to explain or translate the matter immediately preceding the parenthetical phrase in such a way that it does not affect the clarity or scope of the identification, e.g., "fried tofu pieces (abura-age)." *Id.*

Therefore, applicant must remove the parentheses from the identification and incorporate any parenthetical information into the description of the goods.

Applicant may substitute the following, if accurate:

Common metals and their alloys; building materials of metal, **namely, {state type, e.g., reinforcing materials, metal canopies, awnings of metal, stair nosing of metal, metal soffits, etc.}**; aluminium profiles, rotary metal structures for solar panels, solar modules and roof constructions, fixing material of metal **in the nature of {clarify the nature of the goods, e.g., structure joint connectors of metal}**, materials of metal for scaffolds, metal racks, metal poles, stakes and masts of metal, metal building profiles and frames; transportable buildings of metal; materials of metal for railway tracks; non-electric cables and wires of common metal, **not** for electric purpose; ironmongery **being** small items of metal hardware, **namely, {list specific goods, e.g., karabiners, springs, washers, nuts, pulleys, buckles, etc.}**; pipes and tubes of metal; safes; goods of common metal, **namely, wire of common metal, pulls of common metal**; ores of metal; all the aforementioned for mounting of renewable energy systems, particularly photovoltaic systems

Applicant may amend the identification to clarify or limit the goods, but not to broaden or expand the goods beyond those in the original application or as acceptably amended. See 37 C.F.R. §2.71(a); TMEP §1402.06. Generally, any deleted goods may not later be reinserted. See TMEP §1402.07(e). Additionally, for applications filed under Trademark Act Section 66(a), the scope of the identification for purposes of permissible amendments is limited by the international class assigned by the International Bureau of the World Intellectual Property Organization (International Bureau); and the classification of goods services may not be changed from that assigned by the International Bureau. 37 C.F.R. §2.85(d); TMEP §§1401.03(d), 1904.02(b). Further, in a multiple-class Section 66(a) application, classes may not be added or goods transferred from one existing class to another. 37 C.F.R. §2.85(d); TMEP §1401.03(d).

For assistance with identifying and classifying goods and services in trademark applications, please see the USPTO's online searchable [*U.S. Acceptable Identification of Goods and Services Manual*](#). See TMEP §1402.04.

DISCLAIMER REQUIRED

Applicant must disclaim "SYSTEMS" because it is merely descriptive of an ingredient, quality, characteristic, function, feature, purpose, or use of applicant's goods. See 15 U.S.C. §1052(e)(1); *DuoProSS Meditech Corp. v. Inviro Med. Devices, Ltd*, 695 F.3d 1247, 1251, 103 USPQ2d 1753, 1755 (Fed. Cir. 2012); TMEP §§1213, 1213.03(a).

The wording "SYSTEMS" is descriptive of applicant's goods because applicant has indicated that its goods are used with photovoltaic systems. Thus, the wording "SYSTEMS" indicates a use of applicant's goods.

Applicant may respond to this issue by submitting a disclaimer in the following format:

No claim is made to the exclusive right to use "SYSTEMS" apart from the mark as shown.

For an overview of disclaimers and instructions on how to provide one using the Trademark Electronic Application System (TEAS), see the [*Disclaimer webpage*](#).

US COUNSEL REQUIRED

Applicant must be represented by a U.S.-licensed attorney at the USPTO to respond to or appeal the provisional refusal. An applicant whose domicile is located outside of the United States or its territories is foreign-domiciled and must be represented at the USPTO by an attorney who is an active member in good standing of the bar of the highest court of a U.S. state or territory. 37 C.F.R. §§2.11(a), 11.14; *Requirement of U.S.-Licensed Attorney for Foreign-Domiciled Trademark Applicants & Registrants*, Examination Guide 4-19, at I.A. (Rev. Sept. 2019). An individual applicant's domicile is the place a person resides and intends to be the person's principal home. 37 C.F.R. §2.2(o); Examination Guide 4-19, at I.A. A juristic entity's domicile is the principal place of business; i.e., headquarters, where a juristic entity applicant's senior executives or officers ordinarily direct and control the entity's activities. 37 C.F.R. §2.2(o); Examination Guide 4-19, at I.A. Because applicant is foreign-domiciled, applicant must appoint such a U.S.-licensed attorney qualified to practice under 37 C.F.R. §11.14 as its representative before the application may proceed to registration. 37 C.F.R. §2.11(a). See [*Hiring a U.S.-licensed trademark attorney*](#) for more information.

Only a U.S.-licensed attorney can take action on an application on behalf of a foreign-domiciled applicant. 37 C.F.R. §2.11(a). Accordingly, the USPTO will not communicate further with applicant about the application beyond this Office action or permit applicant to make future submissions in this application. And applicant is not authorized to make amendments to the application.

To appoint or designate a U.S.-licensed attorney. To appoint an attorney, applicant should submit a completed Trademark Electronic Application System (TEAS) [*Change Address or Representation*](#) form. The newly-appointed attorney must submit a TEAS [*Response to Examining Attorney Office Action*](#) form indicating that an appointment of attorney has been made and address all other refusals or requirements in this action, if any. Alternatively, if applicant retains an attorney before filing the response, the attorney can respond to this Office action by using the appropriate TEAS response form and provide his or her attorney information in the form and sign it as applicant's attorney. See 37 C.F.R. §2.17(b)(1)(ii).

How to respond. [*Click to file a response to this nonfinal Office action.*](#)

Trademark Examining Attorney
Law Office 125
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RESPONSE GUIDANCE

- **Missing the response deadline to this letter will cause the application to abandon.** A response or notice of appeal must be received by the USPTO before **midnight Eastern Time** of the last day of the response period. TEAS and ESTTAmaintenance or unforeseen circumstances could affect an applicant's ability to timely respond.
- Responses signed by an unauthorized party are not accepted and can **cause the application to abandon.** If applicant does not have an attorney, the response must be signed by the individual applicant, all joint applicants, or someone with legal authority to bind a juristic applicant. If applicant has an attorney, the response must be signed by the attorney.
- If needed, **find contact information for the supervisor** of the office or unit listed in the signature block.

DESIGN MARK

Serial Number

77517748

Status

SECTION 8 & 15-ACCEPTED AND ACKNOWLEDGED

Word Mark

K2 SOLAR

Standard Character Mark

Yes

Registration Number

3706419

Date Registered

2009/11/03

Type of Mark

SERVICE MARK

Register

PRINCIPAL

Mark Drawing Code

(4) STANDARD CHARACTER MARK

Owner

K2 Solar, Inc. CORPORATION CALIFORNIA 5339 Prospect Rd., #334 San Jose
CALIFORNIA 95129

Goods/Services

Class Status -- ACTIVE. IC 037. US 100 103 106. G & S: Building construction and repair; Building construction services; Construction of solar photovoltaic systems; Consulting in the field of building construction; Electrical contractor services; Electrical repairs and installation of heating apparatus, power generation systems; Installation and maintenance of photovoltaic installations; Installation and maintenance of photovoltaic/solar thermal hybrid installations; Installation and maintenance of solar thermal installations; Installation of computer systems; Installation of electrical systems; Installation, repair and maintenance of heating equipment; [Providing information in the field of home renovations and repairs;] Repair and installation services, namely, the installation of heating, cooling and environmental control systems primarily using solar energy, renewable energy resources and rainwater; [Residential and]building construction consulting. First Use: 2008/01/13. First Use In Commerce: 2008/05/16.

Goods/Services

Class Status -- ACTIVE. IC 042. US 100 101. G & S: Custom design of solar photovoltaic systems, electrical and heating systems, solar energy systems, photovoltaic/solar hybrid systems, solar thermal systems, heating, cooling and environmental control systems, primarily using solar and other renewable energy resources based on personal selections made by the customer. First Use: 2008/01/13. First Use In Commerce: 2008/05/16.

Disclaimer Statement

NO CLAIM IS MADE TO THE EXCLUSIVE RIGHT TO USE "SOLAR" APART FROM THE MARK AS SHOWN.

Filing Date

2008/07/09

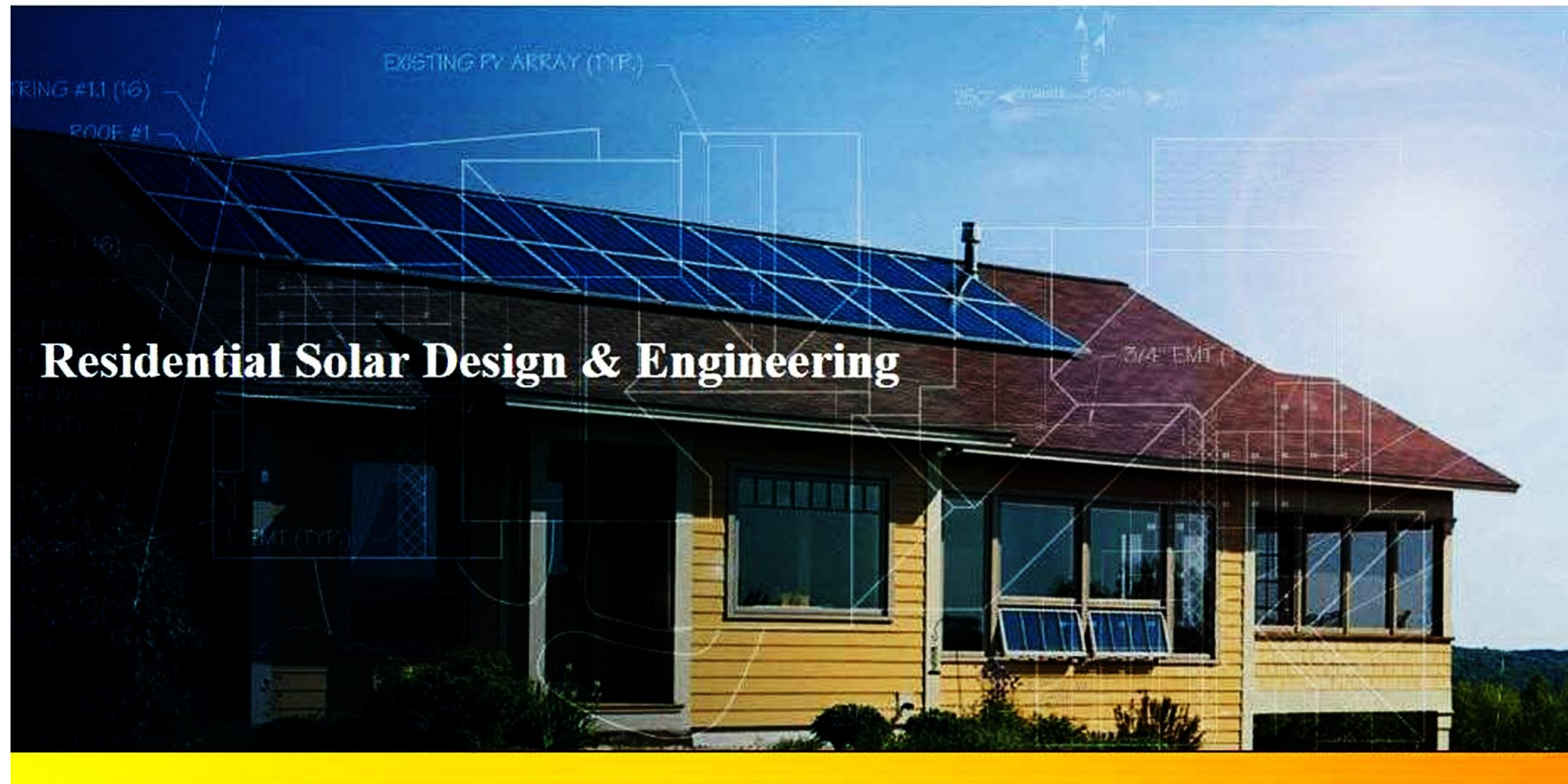
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LAWRENCE, SUE

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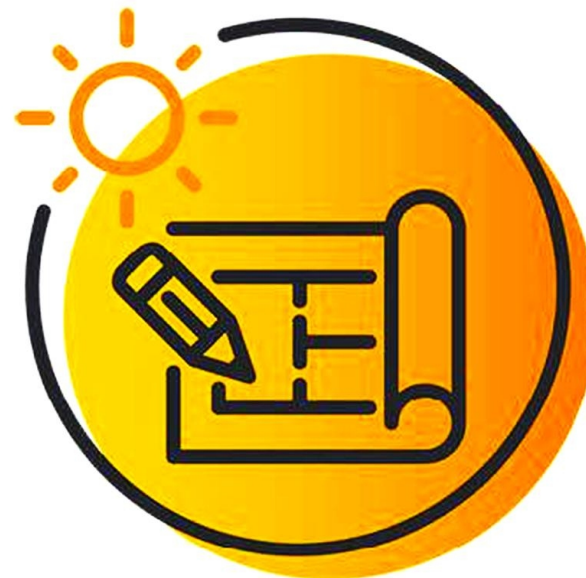
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K2 Solar



SepiSolar is your reliable solar design and engineering partner. Whether you're a high volume residential operation or just starting in the solar business, SepiSolar provides fast, accurate solar-plus-storage designs that get quickly approved.

SepiSolar's experienced U.S team of electrical and structural engineers speed up permitting and interconnection approvals by knowing the specific codes and requirements of your jurisdiction and utility. As a result, your permits get approved quickly, eliminating costly delays and increasing your client's trust and satisfaction.



Complete Permit-Ready Solar Design Package

SepiSolar's complete solar design packages include any customization needed for approvals from your specific local authority having jurisdiction (AHJs) and utility. Our permit-ready plan sets typically include:

- Project Description
- Governing Codes
- Site Plan
- PV Layout
- Mounting & Racking Methods
- Three-Line Electrical Diagram
- Electrical Calculations
- Parts List
- Required Safety Placards
- Elevation views
- Other requirements as specified by your AHJ

SepiSolar designs systems for all types of residential applications and equipment, including:

- Composite shingle, tile, Spanish tile, metal roofs, and various other roofing materials
- Ground mounts
- Solar canopies
- Residential solar trackers
- Batteries (on-grid self-consumption, off-grid back-up, or bi-modal/micro-grid with generator)
- Direct-burial, cable tray, wire harnesses
- DC-DC converters, optimizers, micro-inverters



Solar Design & Energy Storage Proposals

Outsource your residential sales proposals. Using Aurora, HelioScope, PVsyst, PVWatts, among many others, SepiSolar quickly generates branded sales proposals and returns them to your sales team in minutes.

Sales proposals typically include:

- Roof panel layout
- Utility information
- Shading analysis
- Performance estimates
- Estimated bill of materials (BOM)
- Savings, ROI, payback, and cash flow



P.E. Stamps for all 50 States

SepiSolar provides electrical and structural Professional Engineering (P.E.) stamps for all 50 states. Some states require P.E. stamps for solar projects and some contractors add P.E. stamps as an extra level of quality. Construction plans with P.E. stamps give customers added assurance that their solar and storage projects have been safely designed and engineered to the codes and standards of your state and jurisdiction.

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- ⚙ Coating Options
- ⚙ Substrate Options
- ⚙ Cell Stringing vs SMT
- ⚙ Wire Specifications
- ⚙ Mounting Options
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Development Process

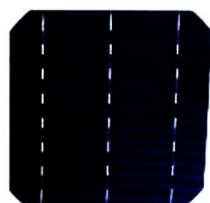
Our team typically follows a four-step development process:

- 1. Exploratory Discussion** - A combination of phone and/or email conversations to understand your timeline.
- 2. Panel Specifications and Design** - We produce one or more panel drawings that include dimensions and mounting mechanism.
- 3. Samples** - If needed, we produce samples for testing within your design. There are a range of mechanisms to test for performance and durability against your specifications.
- 4. Full Production** - Panels are produced at scale. We manage QA and the import process.

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Power & Voltage Options

Total power is determined by surface area and solar cell efficiency. We most frequently use both standard monocrystalline cells and SunPower back contact cells.



We cut laser cut those cells into smaller, equal-sized pieces and assemble them into a panel. The more cell area, the more power is produced.

Example Cell	Cell Type	Dimensions (mm)	Total Power (Watts)	Power per cm ² (Watts)
Motech 19.5% 3 Busbar Cell	Monocrystalline	156 x 156	4.76	0.0195
EEPV 21.2% 5 Busbar Cell	Monocrystalline	156 x 156	5.18	0.0212
SunPower 23.1% Maxeon Gen III	Mono Back Contact	125 x 125	3.54	0.0231

For example, this monocrystalline panel on the left has 118 cm² of cell area (12 52mm x 19mm pieces) using 19.1% efficient cells and is rated for 2.3 Watts. The SunPower panel on the right has 129 cm of cell area (18 50mm x 14.4mm pieces) using 23.1

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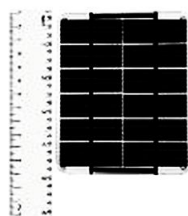
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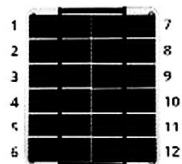
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SunPower cells gain much of their efficiency by moving their tracer lines and connection points to the back of the cells. While more expensive on a Watt basis, SunPower cells (vs. traditional monocrystalline cells) have:

- Higher efficiency - roughly 15% additional power per unit area
- Strong copper connections maintain power even if a cell is cracked
- Fewer constraints to cell size and layout when using an SMT production process
- Even appearance can disappear on a matte black background
- Slightly more physical flexibility

The downside of SunPower cells is that they cost more on a per Watt basis than traditional monocrystalline cells. On larger panels, there are also more constraints on how the cells can be cut. SunPower are available with ETFE or glass.

We create a specific voltage by stringing individual cell pieces in series. Each cell piece is ~0.55 Volts (shown below, we used 12 pieces to create a 6 Volt panel).



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Where possible, we recommend producing as low a voltage panel that works for your circuit. Here are some of the advantages of a lower voltage panel:


- Higher current - In the same area, an 18V panel will produce less current than a 16V panel. Your circuit may waste that excess voltage leaving you with 12.5% less power.
- Higher power - Each cell requires a gap between the next cell. The more cells on a panel, the more area is wasted to the gaps between cells.
- More partial shading and fouling risk - If an object adheres to or partially shades the panel, the power loss will be greater on a higher voltage panel. A string of cells generates as much current as the worst performer in the string. When cell pieces are smaller, the shading impact increases.
- Slightly more expensive to manufacture - more pieces equates to more labor

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Coating Options

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We recommend a coating for the panel based on your durability, cost, and design constraints. 

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Urethane: Highly UV resistant and durable. Our **urethane solar panels** last up to 10 years in the sun with minimal power degradation. The urethane coating is poured or "potted" on the solar cells and leads to a highly waterproof panel. Each individual cell is completely encapsulated by the urethane.

ETFE: Economical, waterproof and UV resistant, but shorter lifetime than urethane. Solar cells are attached to the substrate and then laminated under heat and pressure by EVA and ETFE. With high-quality materials (there is a difference in the production quality of ETFE and EVA), our **ETFE solar panels** have an expected life of 5-7 years outside.

Epoxy or PET: Panels made with these coatings will be inexpensive, but we don't recommend this coating for most industrial applications as it tends to have a relatively short lifetime. They are the least UV resistant of any of the options.

Glass: Great UV resistance and combined with a frame, a glass panel can have the longest lifetime. Glass panels are the heaviest on a per Watt basis.



From Left: Urethane, ETFE, PET, Glass

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Coating	Expected Lifetime Outdoors (Years)*	Typical Thickness (mm)	Approximate Weight of 5 Watt Panel (kg)	SMT Available
Urethane	10+	5	0.25	No
ETFE	5-7	2.5-3.5	0.21	Yes
Glass	10+	5	0.37	Yes
Glass with Frame	20+	20	0.49	Yes
PET	2-3	2.5-3.5	0.21	Yes

*Lifetime will vary based on a wide range of factors including panel design, materials used, production conditions.

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Substrate Options

The solar cells are mounted on a substrate or backing. Again, there are several options.

Aluminum-Plastic-Aluminum: Very high strength to weight ratio material used in commercial building applications. Allows embedding of solar cells.

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Aluminum-Plastic-Aluminum: Very high strength to weight ratio material used in commercial building applications. Allows embedding of screws into substrate. Only available with our urethane panels.

PCB Plastic: Different thicknesses available, from 0.6mm to 3mm depending on requirements. Higher density than Aluminum-Plastic-Aluminum substrate.

TPT: No rigidity but is paired with glass panels as the glass provides the structural support.

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Cell Stringing vs SMT

There are two ways we connect the cell pieces in series.

The more traditional way is to solder the positive of one cell piece to the negative of the next cell piece what's called a stringing machine. One or more strings are then placed on the substrate and connected as



The SMT method starts with a PCB that matches the back contacts of SunPower cell pieces. Cell pieces are placed onto the PCB by a modified SMT machine normally used for pick and place of components. The PCB and cells are sent through a reflow oven to solidify the connection.



SMT provides more flexibility on cell layout and size and is our preference when making 1 Watt or less more economical.

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Mounting Options

In addition to customizing the embedded screws or adding through holes, we offer the ability to create a custom panel mount for your specifications. This includes the design and manufacture of custom brackets, gaskets or VHB seals.

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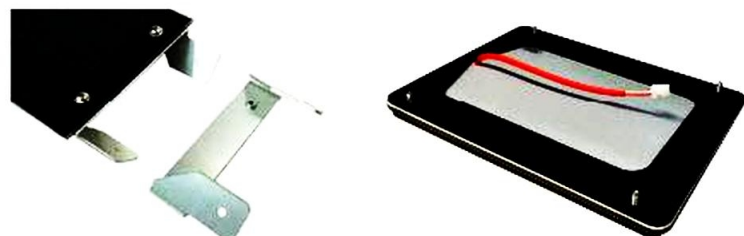
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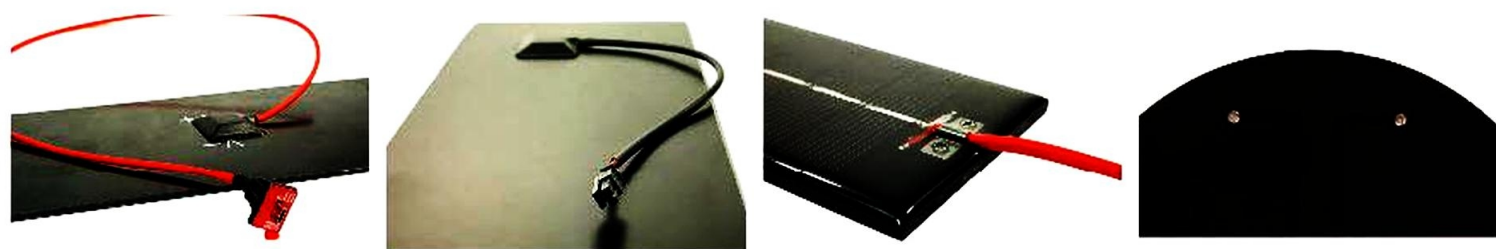
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Wire Specifications

Our standard wire has strain relief is about 12 inches long and terminates in a 3.5x1.1mm plug. This can be changed to whatever length and termination you prefer. The wire can be embedded into the substrate to keep it waterproof or soldered on the outside of the panel. Power and ground wires can even be separated. Another option is to place contact pads on the back of the panel. These can be positioned anywhere on the panel.



On the back of our ETFE panels, we normally cover the connection to the wire with silicone sealant and waterproofing and strain relief. We have other junction boxes available for higher gauge wires.

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Design & Tooling Fees

There are no design fees to create a prototype of your custom solar panel. Some, but not most, designs may require a fee to prepare the machinery to create your specific panel at volume.

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Minimum Order Quantities

Our MOQ is 500 - 2,000 units depending on the size of the panel.

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Supply Chain and Tariffs

Solar panels brought into the United States are subject to a wide range of countervailing and anti-dumping duties. In some cases, these duties can exceed 200%. We manage that risk for our US customers, by importing and clearing panels for them.

We think about the panel import process from the very beginning of the design process by selecting panels that are not subject to those tariffs and keep costs down.

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Solar Panel Design Tips

- Estimate your realistic solar power production in worst-case scenarios. Here's how to [estimate solar irradiance](#) by month based on your expected location(s).
- Reduce your circuit's power requirements before discussing the panel's power requirement. For example, if you can reduce your circuit's mA requirements by 50% this reduces the size of the solar panel by 50%, saving you money, size, and weight.
- Prototype your project with [small solar panels](#) before moving forward with custom designs. This allows you to confirm the efficiency of the circuit and power production estimates before investing in a custom design.

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