

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
 Stylesheet Version v1.2

EPAS ID: PAT2721108

SUBMISSION TYPE:	CORRECTIVE ASSIGNMENT																										
NATURE OF CONVEYANCE:	Corrective Assignment to correct the APPLICATION NUMBER FROM '13/301162' previously recorded on Reel 032045 Frame 0657. Assignor(s) hereby confirms the CORRECT APPLICATION NUMBER SHOULD BE '13/601162'.																										
CONVEYING PARTY DATA																											
<table border="1"> <thead> <tr> <th>Name</th> <th>Execution Date</th> </tr> </thead> <tbody> <tr> <td>FIRST SOLAR MALAYSIA SDN. BHD.</td> <td>08/05/2013</td> </tr> </tbody> </table>		Name	Execution Date	FIRST SOLAR MALAYSIA SDN. BHD.	08/05/2013																						
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FIRST SOLAR MALAYSIA SDN. BHD.	08/05/2013																										
RECEIVING PARTY DATA																											
<table border="1"> <tr> <td>Name:</td> <td>FIRST SOLAR, INC.</td> </tr> <tr> <td>Street Address:</td> <td>350 WEST WASHINGTON STREET</td> </tr> <tr> <td>Internal Address:</td> <td>6TH FLOOR</td> </tr> <tr> <td>City:</td> <td>TEMPE</td> </tr> <tr> <td>State/Country:</td> <td>ARIZONA</td> </tr> <tr> <td>Postal Code:</td> <td>85281</td> </tr> </table>		Name:	FIRST SOLAR, INC.	Street Address:	350 WEST WASHINGTON STREET	Internal Address:	6TH FLOOR	City:	TEMPE	State/Country:	ARIZONA	Postal Code:	85281														
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PROPERTY NUMBERS Total: 212																											
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Application Number:	12639093
Application Number:	12645802
Application Number:	12893288
Application Number:	12645660
Application Number:	12818669
Application Number:	12683831
Application Number:	12765268
Application Number:	12826234
Application Number:	12639037
Application Number:	12765316
Application Number:	13751852
Application Number:	12639043
Application Number:	13447534
Application Number:	12841489
Application Number:	12638713
Application Number:	12828359
Application Number:	12638772
Application Number:	12639048
Application Number:	12638749
Application Number:	12818717
Application Number:	12639053
Application Number:	12828378
Application Number:	12639073
Application Number:	12825815
Application Number:	12639099
Application Number:	12649621
Application Number:	12639085
Application Number:	13285184
Application Number:	12683807
Application Number:	12766135
Application Number:	13561575
Application Number:	12828408
Application Number:	12828421
Application Number:	12638731

	12827029
Application Number:	12770027
Application Number:	13751761
Application Number:	12638807
Application Number:	13005602
Application Number:	12894217
Application Number:	12894242
Application Number:	13251851
Application Number:	12750056
Application Number:	12771515
Application Number:	12765295
Application Number:	12750096
Application Number:	12765340
Application Number:	12770055
Application Number:	12750116
Application Number:	12770078
Application Number:	12750136
Application Number:	13235780
Application Number:	12638653
Application Number:	12638687
Application Number:	13560155
Application Number:	13937765
Application Number:	12770102
Application Number:	12768929
Application Number:	12790689
Application Number:	12765225
Application Number:	12894901
Application Number:	12894916
Application Number:	12894926
Application Number:	12827053
Application Number:	12825800
Application Number:	12826966
Application Number:	12829544
Application Number:	13558770
Application Number:	12829563

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Application Number:	12870013
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Application Number:	12857810
Application Number:	12975493
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Application Number:	12913454
Application Number:	12829652
Application Number:	12842106
Application Number:	12870055
Application Number:	12870092
Application Number:	12913296
Application Number:	13080029
Application Number:	12842352
Application Number:	12913357
Application Number:	12913390
Application Number:	12977139
Application Number:	12972242
Application Number:	13306392
Application Number:	12956761
Application Number:	12951108
Application Number:	12977161
Application Number:	13047189
Application Number:	12892414
Application Number:	12977543
Application Number:	13018650
Application Number:	13070661
Application Number:	13088496
Application Number:	12975422
Application Number:	13070673
Application Number:	12973058
Application Number:	12973093
Application Number:	13149100

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Application Number:	12976166
Application Number:	13089825
Application Number:	12977416
Application Number:	13073410
Application Number:	12956811
Application Number:	13165298
Application Number:	13150485
Application Number:	13249818
Application Number:	13149167
Application Number:	13159558
Application Number:	13197233
Application Number:	13197251
Application Number:	13168207
Application Number:	13149395
Application Number:	13149423
Application Number:	13149454
Application Number:	13285501
Application Number:	13249892
Application Number:	13284037
Application Number:	13278464
Application Number:	13192545
Application Number:	13188782
Application Number:	13188808
Application Number:	13217409
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Application Number:	13326775
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Application Number:	13326945
Application Number:	13326973
Application Number:	13308288
Application Number:	13290474
Application Number:	13290494

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Application Number:	13308336
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Application Number:	13362813
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Application Number:	13329418
Application Number:	13280499
Application Number:	13291421
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Application Number:	13654461
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Application Number:	13654470
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Application Number:	13607917
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Application Number:	13305924
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Application Number:	13681822
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Application Number:	13600846
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Application Number:	13951783
Application Number:	61705546
Application Number:	13866132

**CORRESPONDENCE DATA**

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Address Line 2: ONE MARITIME PLAZA FIFTH FLOOR  
Address Line 4: TOLEDO, OHIO 43604

ATTORNEY DOCKET NUMBER: 1-55757

NAME OF SUBMITTER:

CHRISTOPHER J. WORREL

Signature:

/Christopher J. Worrel/

Date:

02/10/2014

**Total Attachments: 43**

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**CORRECTED**

APPLICATION NUMBER: 12415275 FILING DATE: 03/31/2009  
PATENT NUMBER: ISSUE DATE:  
TITLE: LAYER FOR THIN FILM PHOTOVOLTAICS AND A SOLAR CELL MADE  
THEREFROM

APPLICATION NUMBER: 12503390 FILING DATE: 07/15/2009  
PATENT NUMBER: ISSUE DATE:  
TITLE: NANOSTRUCTURED FUNCTIONAL COATINGS AND DEVICES

APPLICATION NUMBER: 12608455 FILING DATE: 10/29/2009  
PATENT NUMBER: ISSUE DATE:  
TITLE: METHOD AND SYSTEM FOR DEPOSITING MULTIPLE MATERIALS ON A  
SUBSTRATE

APPLICATION NUMBER: 12612271 FILING DATE: 11/04/2009  
PATENT NUMBER: ISSUE DATE:  
TITLE: LAYER FOR THIN FILM PHOTOVOLTAICS AND A SOLAR CELL MADE  
THEREFROM

APPLICATION NUMBER: 12635767 FILING DATE: 12/11/2009  
PATENT NUMBER: ISSUE DATE:  
TITLE: PROCESS FOR MAKING THIN FILM SOLAR CELL

APPLICATION NUMBER: 12638653 FILING DATE: 12/15/2009  
PATENT NUMBER: 8247255 ISSUE DATE: 08/21/2012  
TITLE: MODULAR SYSTEM AND PROCESS FOR CONTINUOUS DEPOSITION OF A THIN  
FILM LAYER ON A SUBSTRATE

APPLICATION NUMBER: 12638687 FILING DATE: 12/15/2009  
PATENT NUMBER: 8481355 ISSUE DATE: 07/09/2013  
TITLE: MODULAR SYSTEM AND PROCESS FOR CONTINUOUS DEPOSITION OF A THIN  
FILM LAYER ON A SUBSTRATE

APPLICATION NUMBER: 12638713 FILING DATE: 12/15/2009  
PATENT NUMBER: 8189198 ISSUE DATE: 05/29/2012  
TITLE: ACTIVE VIEWPORT DETECTION ASSEMBLY FOR SUBSTRATE DETECTION IN A  
VAPOR DETECTION SYSTEM

APPLICATION NUMBER: 12638731 FILING DATE: 12/15/2009  
PATENT NUMBER: 8187555 ISSUE DATE: 05/29/2012  
TITLE: SYSTEM FOR CADMIUM TELLURIDE (CDTE) RECLAMATION IN A VAPOR  
DEPOSITION CONVEYOR ASSEMBLY

APPLICATION NUMBER: 12638749 FILING DATE: 12/15/2009  
PATENT NUMBER: 8143515 ISSUE DATE: 03/27/2012  
TITLE: CADMIUM TELLURIDE THIN FILM PHOTVOLTAIC DEVICES AND METHODS OF  
MANUFACTURING THE SAME

APPLICATION NUMBER: 12638772 FILING DATE: 12/15/2009  
PATENT NUMBER: ISSUE DATE:  
TITLE: CONVEYOR ASSEMBLY FOR A VAPOR DEPOSITION APPARATUS

APPLICATION NUMBER: 12638807 FILING DATE: 12/15/2009  
PATENT NUMBER: 8252618 ISSUE DATE: 08/28/2012  
TITLE: METHODS OF MANUFACTURING CADMIUM TELLURIDE THIN FILM  
PHOTOVOLTAIC DEVICES

**CORRECTED**

APPLICATION NUMBER: 12639037 FILING DATE: 12/16/2009  
PATENT NUMBER: 8247683 ISSUE DATE: 08/21/2012  
TITLE: THIN FILM INTERLAYER IN CADMIUM TELLURIDE THIN FILM PHOTOVOLTAIC  
DEVICES AND METHODS OF MANUFACTURING THE SAME

APPLICATION NUMBER: 12639043 FILING DATE: 12/16/2009  
PATENT NUMBER: 8163089 ISSUE DATE: 04/24/2012  
TITLE: VAPOR DEPOSITION APPARATUS AND PROCESS FOR CONTINUOUS DEPOSITION  
OF A THIN FILM LAYER ON A SUBSTRATE

APPLICATION NUMBER: 12639048 FILING DATE: 12/16/2009  
PATENT NUMBER: 8303779 ISSUE DATE: 11/06/2012  
TITLE: METHODS FOR FORMING A TRANSPARENT CONDUCTIVE OXIDE LAYER ON A  
SUBSTRATE

APPLICATION NUMBER: 12639053 FILING DATE: 12/16/2009  
PATENT NUMBER: 8430966 ISSUE DATE: 04/30/2013  
TITLE: VAPOR DEPOSITION APPARATUS AND PROCESS FOR CONTINUOUS DEPOSITION  
OF A THIN FILM LAYER ON A SUBSTRATE

APPLICATION NUMBER: 12639073 FILING DATE: 12/16/2009  
PATENT NUMBER: ISSUE DATE:  
TITLE: GRADED ALLOY TELLURIDE LAYER IN CADMIUM TELLURIDE THIN FILM  
PHOTOVOLTAIC DEVICES AND METHODS OF MANUFACTURING THE SAME

APPLICATION NUMBER: 12639085 FILING DATE: 12/16/2009  
PATENT NUMBER: 8048194 ISSUE DATE: 11/01/2011  
TITLE: SYSTEM AND PROCESS FOR RECOVERY OF CADMIUM TELLURIDE (CDTE) FROM  
SYSTEM COMPONENTS USED IN THE MANUFACTURE OF PHOTOVOLTAIC (PV)  
MODULES

APPLICATION NUMBER: 12639093 FILING DATE: 12/16/2009  
PATENT NUMBER: ISSUE DATE:  
TITLE: METHOD OF P-TYPE DOPING OF CADMIUM TELLURIDE

APPLICATION NUMBER: 12639099 FILING DATE: 12/16/2009  
PATENT NUMBER: 8039290 ISSUE DATE: 10/18/2011  
TITLE: METHOD OF MAKING PHOTOVOLTAIC CELL

APPLICATION NUMBER: 12645618 FILING DATE: 12/23/2009  
PATENT NUMBER: ISSUE DATE:  
TITLE: PHOTOVOLTAIC CELL

APPLICATION NUMBER: 12645660 FILING DATE: 12/23/2009  
PATENT NUMBER: ISSUE DATE:  
TITLE: PHOTOVOLTAIC CELL

APPLICATION NUMBER: 12645802 FILING DATE: 12/23/2009  
PATENT NUMBER: 8301409 ISSUE DATE: 10/30/2012  
TITLE: PHOTON IMAGING SYSTEM FOR DETECTING DEFECTS IN PHOTOVOLTAIC  
DEVICES, AND METHOD THEREOF

APPLICATION NUMBER: 12649621 FILING DATE: 12/30/2009  
PATENT NUMBER: 8328946 ISSUE DATE: 12/11/2012  
TITLE: CONVEYOR ASSEMBLY WITH REMOVABLE ROLLERS FOR A VAPOR DEPOSITION  
SYSTEM

APPLICATION NUMBER: 12683807 FILING DATE: 01/07/2010  
PATENT NUMBER: 8430963 ISSUE DATE: 04/30/2013  
TITLE: COOL-DOWN SYSTEM AND METHOD FOR A VAPOR DEPOSITION SYSTEM

**CORRECTED**

APPLICATION NUMBER: 12683831 FILING DATE: 01/07/2010  
PATENT NUMBER: 8252117 ISSUE DATE: 08/28/2012  
TITLE: AUTOMATIC FEED SYSTEM AND RELATED PROCESS FOR INTRODUCING SOURCE  
MATERIAL TO A THIN FILM VAPOR DEPOSITION SYSTEM

APPLICATION NUMBER: 12750056 FILING DATE: 03/30/2010  
PATENT NUMBER: 8257561 ISSUE DATE: 09/04/2012  
TITLE: METHODS OF FORMING A CONDUCTIVE TRANSPARENT OXIDE FILM LAYER FOR  
USE IN A CADMIUM TELLURIDE BASED THIN FILM PHOTOVOLTAIC DEVICE

APPLICATION NUMBER: 12750096 FILING DATE: 03/30/2010  
PATENT NUMBER: 8053350 ISSUE DATE: 11/08/2011  
TITLE: METHODS OF FORMING A CONDUCTIVE TRANSPARENT OXIDE FILM LAYER FOR  
USE IN A CADMIUM TELLURIDE BASED THIN FILM PHOTOVOLTAIC DEVICE

APPLICATION NUMBER: 12750116 FILING DATE: 03/30/2010  
PATENT NUMBER: 8043954 ISSUE DATE: 10/25/2011  
TITLE: METHODS OF FORMING A CONDUCTIVE TRANSPARENT OXIDE FILM LAYER FOR  
USE IN A CADMIUM TELLURIDE BASED THIN FILM PHOTOVOLTAIC DEVICE

APPLICATION NUMBER: 12750136 FILING DATE: 03/30/2010  
PATENT NUMBER: 8043955 ISSUE DATE: 10/25/2011  
TITLE: METHODS OF FORMING A CONDUCTIVE TRANSPARENT OXIDE FILM LAYER FOR  
USE IN A CADMIUM TELLURIDE BASED THIN FILM PHOTOVOLTAIC DEVICE

APPLICATION NUMBER: 12765225 FILING DATE: 04/22/2010  
PATENT NUMBER: 8524524 ISSUE DATE: 09/03/2013  
TITLE: METHODS FOR FORMING BACK CONTACT ELECTRODES FOR CADMIUM  
TELLURIDE PHOTOVOLTAIC CELLS

APPLICATION NUMBER: 12765268 FILING DATE: 04/22/2010  
PATENT NUMBER: 8409407 ISSUE DATE: 04/02/2013  
TITLE: METHODS FOR HIGH-RATE SPUTTERING OF A COMPOUND SEMICONDUCTOR ON  
LARGE AREA SUBSTRATES

APPLICATION NUMBER: 12765295 FILING DATE: 04/22/2010  
PATENT NUMBER: ISSUE DATE:  
TITLE: MODULAR SYSTEM FOR HIGH-RATE DEPOSITION OF THIN FILM LAYERS ON  
PHOTOVOLTAIC MODULE SUBSTRATES

APPLICATION NUMBER: 12765316 FILING DATE: 04/22/2010  
PATENT NUMBER: 8361229 ISSUE DATE: 01/29/2013  
TITLE: SEAL CONFIGURATION FOR A SYSTEM FOR CONTINUOUS DEPOSITION OF A  
THIN FILM LAYER ON A SUBSTRATE

APPLICATION NUMBER: 12765340 FILING DATE: 04/22/2010  
PATENT NUMBER: ISSUE DATE:  
TITLE: METHOD FOR INCREASING THE WORKING SURFACE AREA OF A PHOTOVOLTAIC  
(PV) MODULE AND ASSOCIATED SUBSTRATES

APPLICATION NUMBER: 12766135 FILING DATE: 04/23/2010  
PATENT NUMBER: 8252619 ISSUE DATE: 08/28/2012  
TITLE: TREATMENT OF THIN FILM LAYERS PHOTOVOLTAIC MODULE MANUFACTURE

APPLICATION NUMBER: 12768929 FILING DATE: 04/28/2010  
PATENT NUMBER: ISSUE DATE:  
TITLE: PHOTOVOLTAIC CELLS WITH CADMIUM TELLURIDE INTRINSIC LAYER

**CORRECTED**

APPLICATION NUMBER: 12770027 FILING DATE: 04/29/2010  
PATENT NUMBER: 8361232 ISSUE DATE: 01/29/2013  
TITLE: VAPOR DEPOSITION APPARATUS AND PROCESS FOR CONTINUOUS INDIRECT  
DEPOSITION OF A THIN FILM LAYER ON A SUBSTRATE

APPLICATION NUMBER: 12770055 FILING DATE: 04/29/2010  
PATENT NUMBER: ISSUE DATE:  
TITLE: CADMIUM SULFIDE LAYERS FOR USE IN CADMIUM TELLURIDE BASED THIN  
FILM PHOTOVOLTAIC DEVICES AND METHODS OF THEIR MANUFACTURE

APPLICATION NUMBER: 12770078 FILING DATE: 04/29/2010  
PATENT NUMBER: ISSUE DATE:  
TITLE: CADMIUM SULFIDE LAYERS FOR USE IN CADMIUM TELLURIDE BASED THIN  
FILM PHOTOVOLTAIC DEVICES AND METHODS OF THEIR MANUFACTURE

APPLICATION NUMBER: 12770102 FILING DATE: 04/29/2010  
PATENT NUMBER: ISSUE DATE:  
TITLE: SYSTEM AND METHODS FOR HIGH-RATE CO-SPUTTERING OF THIN FILM  
LAYERS ON PHOTOVOLTAIC MODULE SUBSTRATES

APPLICATION NUMBER: 12771515 FILING DATE: 04/30/2010  
PATENT NUMBER: 8173482 ISSUE DATE: 05/08/2012  
TITLE: DEVICES AND METHODS OF PROTECTING A CADMIUM SULFIDE FOR FURTHER  
PROCESSING

APPLICATION NUMBER: 12790689 FILING DATE: 05/28/2010  
PATENT NUMBER: ISSUE DATE:  
TITLE: MONOLITHICALLY INTEGRATED SOLAR MODULES AND METHODS OF  
MANUFACTURE

APPLICATION NUMBER: 12818669 FILING DATE: 06/18/2010  
PATENT NUMBER: ISSUE DATE:  
TITLE: MODIFIED CADMIUM TELLURIDE LAYER, A METHOD OF MODIFYING A  
CADMIUM TELLURIDE LAYER, AND A THIN FILM DEVICE HAVING A CADMIUM  
TELLURIDE LAYER

APPLICATION NUMBER: 12818717 FILING DATE: 06/18/2010  
PATENT NUMBER: ISSUE DATE:  
TITLE: SYSTEM AND METHOD FOR MODIFYING AN ARTICLE AND A MODIFIED  
ARTICLE

APPLICATION NUMBER: 12825495 FILING DATE: 06/29/2010  
PATENT NUMBER: ISSUE DATE:  
TITLE: PHOTOVOLTAIC (PV) MODULE WITH IMPROVED BUS TAPE TO FOIL RIBBON  
CONTACT

APPLICATION NUMBER: 12825800 FILING DATE: 06/29/2010  
PATENT NUMBER: 8247682 ISSUE DATE: 08/21/2012  
TITLE: METALLIC GRIDLINES AS FRONT CONTACTS OF A CADMIUM TELLURIDE  
BASED THIN FILM PHOTOVOLTAIC DEVICE

APPLICATION NUMBER: 12825815 FILING DATE: 06/29/2010  
PATENT NUMBER: 8460765 ISSUE DATE: 06/11/2013  
TITLE: METHODS FOR FORMING SELECTIVELY DEPOSITED THIN FILMS

APPLICATION NUMBER: 12826234 FILING DATE: 06/29/2010  
PATENT NUMBER: ISSUE DATE:  
TITLE: PHOTOVOLTAIC CELL AND METHODS FOR FORMING A BACK CONTACT FOR A  
PHOTOVOLTAIC CELL

**PATENT**  
**REEL: 032239 FRAME: 0016**

**CORRECTED**

APPLICATION NUMBER: 12826966 FILING DATE: 06/30/2010  
PATENT NUMBER: ISSUE DATE:  
TITLE: INTEGRATED GEARBOX AND ROTARY FEEDTHROUGH SYSTEM FOR A VACUUM  
CHAMBER STRUCTURE

APPLICATION NUMBER: 12827029 FILING DATE: 06/30/2010  
PATENT NUMBER: ISSUE DATE:  
TITLE: METHODS OF ARC DETECTION AND SUPPRESSION DURING RF SPUTTERING OF  
A THIN FILM ON A SUBSTRATE

APPLICATION NUMBER: 12827053 FILING DATE: 06/30/2010  
PATENT NUMBER: ISSUE DATE:  
TITLE: METHODS AND APPARATUS OF ARC PREVENTION DURING RF SPUTTERING OF  
A THIN FILM ON A SUBSTRATE

APPLICATION NUMBER: 12828359 FILING DATE: 07/01/2010  
PATENT NUMBER: ISSUE DATE:  
TITLE: APPARATUS AND METHOD FOR ISOLATING A VIEWPORT

APPLICATION NUMBER: 12828378 FILING DATE: 07/01/2010  
PATENT NUMBER: ISSUE DATE:  
TITLE: TRANSPARENT ELECTRICALLY CONDUCTIVE LAYER AND METHOD FOR FORMING  
SAME

APPLICATION NUMBER: 12828408 FILING DATE: 07/01/2010  
PATENT NUMBER: 8525019 ISSUE DATE: 09/03/2013  
TITLE: THIN FILM ARTICLE AND METHOD FOR FORMING A REDUCED CONDUCTIVE  
AREA IN TRANSPARENT CONDUCTIVE FILMS FOR PHOTOVOLTAIC MODULES

APPLICATION NUMBER: 12828421 FILING DATE: 07/01/2010  
PATENT NUMBER: ISSUE DATE:  
TITLE: METHOD AND SYSTEM FOR FORMING A PHOTOVOLTAIC CELL AND A  
PHOTOVOLTAIC CELL

APPLICATION NUMBER: 12829544 FILING DATE: 07/02/2010  
PATENT NUMBER: 8236601 ISSUE DATE: 08/07/2012  
TITLE: APPARATUS AND METHODS OF FORMING A CONDUCTIVE TRANSPARENT OXIDE  
FILM LAYER FOR USE IN A CADMIUM TELLURIDE BASED THIN FILM  
PHOTOVOLTAIC DEVICE

APPLICATION NUMBER: 12829563 FILING DATE: 07/02/2010  
PATENT NUMBER: 8241938 ISSUE DATE: 08/14/2012  
TITLE: METHODS OF FORMING A CONDUCTIVE TRANSPARENT OXIDE FILM LAYER FOR  
USE IN A CADMIUM TELLURIDE BASED THIN FILM PHOTOVOLTAIC DEVICE

APPLICATION NUMBER: 12829652 FILING DATE: 07/02/2010  
PATENT NUMBER: ISSUE DATE:  
TITLE: METHODS FOR SPUTTERING A RESISTIVE TRANSPARENT BUFFER THIN FILM  
FOR USE IN CADMIUM TELLURIDE BASED PHOTOVOLTAIC DEVICES

APPLICATION NUMBER: 12841489 FILING DATE: 07/22/2010  
PATENT NUMBER: 8402628 ISSUE DATE: 03/26/2013  
TITLE: APPARATUS, CARRIER, AND METHOD FOR SECURING AN ARTICLE FOR  
COATING PROCESSES

APPLICATION NUMBER: 12842106 FILING DATE: 07/23/2010  
PATENT NUMBER: ISSUE DATE:  
TITLE: METHOD AND SYSTEM FOR APPLICATION OF AN INSULATING DIELECTRIC  
MATERIAL TO PHOTOVOLTAIC MODULE SUBSTRATES

**PATENT**  
**REEL: 032239 FRAME: 0017**

**CORRECTED**

APPLICATION NUMBER: 12842352 FILING DATE: 07/23/2010  
PATENT NUMBER: ISSUE DATE:  
TITLE: PHOTOVOLTAIC (PV) MODULE WITH IMPROVED BUS TAPE TO FOIL RIBBON CONTACT

APPLICATION NUMBER: 12844931 FILING DATE: 07/28/2010  
PATENT NUMBER: ISSUE DATE:  
TITLE: PHOTOVOLTAIC DEVICE

APPLICATION NUMBER: 12857810 FILING DATE: 08/17/2010  
PATENT NUMBER: ISSUE DATE:  
TITLE: SLIT VALVE FOR VACUUM CHAMBER MODULE

APPLICATION NUMBER: 12870013 FILING DATE: 08/27/2010  
PATENT NUMBER: 8513516 ISSUE DATE: 08/20/2013  
TITLE: INTRA-LAMINATE DISK LAYER FOR THIN FILM PHOTOVOLTAIC DEVICES AND THEIR METHODS OF MANUFACTURE

APPLICATION NUMBER: 12870055 FILING DATE: 08/27/2010  
PATENT NUMBER: 8338698 ISSUE DATE: 12/25/2012  
TITLE: ANISOTROPIC CONDUCTIVE LAYER AS A BACK CONTACT IN THIN FILM PHOTOVOLTAIC DEVICES

APPLICATION NUMBER: 12870092 FILING DATE: 08/27/2010  
PATENT NUMBER: 8187912 ISSUE DATE: 05/29/2012  
TITLE: METHODS OF FORMING AN ANISOTROPIC CONDUCTIVE LAYER AS A BACK CONTACT IN THIN FILM PHOTOVOLTAIC DEVICES

APPLICATION NUMBER: 12892360 FILING DATE: 09/28/2010  
PATENT NUMBER: 8349144 ISSUE DATE: 01/08/2013  
TITLE: METHODS OF SPUTTERING USING A NON-BONDED SEMICONDUCTING TARGET

APPLICATION NUMBER: 12892414 FILING DATE: 09/28/2010  
PATENT NUMBER: 8460521 ISSUE DATE: 06/11/2013  
TITLE: SPUTTERING CATHODE HAVING A NON-BONDED SEMICONDUCTING TARGET

APPLICATION NUMBER: 12893288 FILING DATE: 09/29/2010  
PATENT NUMBER: ISSUE DATE:  
TITLE: METHOD AND SYSTEM FOR SCRIBING A MULTILAYER PANEL

APPLICATION NUMBER: 12894217 FILING DATE: 09/30/2010  
PATENT NUMBER: ISSUE DATE:  
TITLE: PHOTOVOLTAIC DEVICE AND METHOD FOR MAKING

APPLICATION NUMBER: 12894242 FILING DATE: 09/30/2010  
PATENT NUMBER: 8044477 ISSUE DATE: 10/25/2011  
TITLE: PHOTOVOLTAIC DEVICE AND METHOD FOR MAKING

APPLICATION NUMBER: 12894901 FILING DATE: 09/30/2010  
PATENT NUMBER: ISSUE DATE:  
TITLE: PHOTOVOLTAIC DEVICES

APPLICATION NUMBER: 12894916 FILING DATE: 09/30/2010  
PATENT NUMBER: ISSUE DATE:  
TITLE: PHOTOVOLTAIC DEVICES

APPLICATION NUMBER: 12894926 FILING DATE: 09/30/2010  
PATENT NUMBER: ISSUE DATE:  
TITLE: PHOTOVOLTAIC DEVICES

**CORRECTED**

APPLICATION NUMBER: 12913296 FILING DATE: 10/27/2010  
PATENT NUMBER: 7939363 ISSUE DATE: 05/10/2011  
TITLE: SYSTEMS AND METHODS OF INTERMIXING CADMIUM SULFIDE LAYERS AND  
CADMIUM TELLURIDE LAYERS FOR THIN FILM PHOTOVOLTAIC DEVICES

APPLICATION NUMBER: 12913357 FILING DATE: 10/27/2010  
PATENT NUMBER: ISSUE DATE:  
TITLE: MIXED SPUTTERING TARGETS AND THEIR USE IN CADMIUM SULFIDE LAYERS  
OF CADMIUM TELLURIDE BASED THIN FILM PHOTOVOLTAIC DEVICES

APPLICATION NUMBER: 12913390 FILING DATE: 10/27/2010  
PATENT NUMBER: 7943415 ISSUE DATE: 05/17/2011  
TITLE: METHODS OF SPUTTERING CADMIUM SULFIDE LAYERS FOR USE IN CADMIUM  
TELLURIDE BASED THIN FILM PHOTOVOLTAIC DEVICES

APPLICATION NUMBER: 12913419 FILING DATE: 10/27/2010  
PATENT NUMBER: ISSUE DATE:  
TITLE: INTERMIXING OF CADMIUM SULFIDE LAYERS AND CADMIUM TELLURIDE  
LAYERS FOR THIN FILM PHOTOVOLTAIC DEVICES AND METHODS OF THEIR  
MANUFACTURE

APPLICATION NUMBER: 12913454 FILING DATE: 10/27/2010  
PATENT NUMBER: ISSUE DATE:  
TITLE: MIXED SPUTTERING TARGET OF CADMIUM SULFIDE AND CADMIUM TELLURIDE  
AND METHODS OF THEIR USE

APPLICATION NUMBER: 12915671 FILING DATE: 10/29/2010  
PATENT NUMBER: ISSUE DATE:  
TITLE: METHOD OF LASER-SCRIBING

APPLICATION NUMBER: 12951108 FILING DATE: 11/22/2010  
PATENT NUMBER: 8119513 ISSUE DATE: 02/21/2012  
TITLE: METHOD FOR MAKING CADMIUM SULFIDE LAYER

APPLICATION NUMBER: 12956761 FILING DATE: 11/30/2010  
PATENT NUMBER: ISSUE DATE:  
TITLE: ELECTRODE, PHOTOVOLTAIC DEVICE, AND METHOD OF MAKING

APPLICATION NUMBER: 12956811 FILING DATE: 11/30/2010  
PATENT NUMBER: ISSUE DATE:  
TITLE: PHOTOVOLTAIC DEVICE AND METHOD FOR MAKING

APPLICATION NUMBER: 12972242 FILING DATE: 12/17/2010  
PATENT NUMBER: ISSUE DATE:  
TITLE: METHOD FOR FORMING CADMIUM TIN OXIDE LAYER AND A PHOTOVOLTAIC  
DEVICE

APPLICATION NUMBER: 12973058 FILING DATE: 12/20/2010  
PATENT NUMBER: ISSUE DATE:  
TITLE: VAPOR DEPOSITION APPARATUS AND PROCESS FOR CONTINUOUS DEPOSITION  
OF A DOPED THIN FILM LAYER ON A SUBSTRATE

APPLICATION NUMBER: 12973093 FILING DATE: 12/20/2010  
PATENT NUMBER: ISSUE DATE:  
TITLE: VAPOR DEPOSITION APPARATUS AND PROCESS FOR CONTINUOUS DEPOSITION  
OF A DOPED THIN FILM LAYER ON A SUBSTRATE

**CORRECTED**

APPLICATION NUMBER: 12975422 FILING DATE: 12/22/2010  
PATENT NUMBER: ISSUE DATE:  
TITLE: VAPOR DEPOSITION APPARATUS AND PROCESS FOR CONTINUOUS DEPOSITION  
OF A THIN FILM LAYER ON A SUBSTRATE

APPLICATION NUMBER: 12975435 FILING DATE: 12/22/2010  
PATENT NUMBER: 8187386 ISSUE DATE: 05/29/2012  
TITLE: TEMPORALLY VARIABLE DEPOSITION RATE OF CDTE IN APPARATUS AND  
PROCESS FOR CONTINUOUS DEPOSITION

APPLICATION NUMBER: 12975493 FILING DATE: 12/22/2010  
PATENT NUMBER: ISSUE DATE:  
TITLE: CONVEYOR ASSEMBLY WITH RELEASABLE DRIVE COUPLING

APPLICATION NUMBER: 12976166 FILING DATE: 12/22/2010  
PATENT NUMBER: 8476105 ISSUE DATE: 07/02/2013  
TITLE: METHOD OF MAKING A TRANSPARENT CONDUCTIVE OXIDE LAYER AND A  
PHOTOVOLTAIC DEVICE

APPLICATION NUMBER: 12977139 FILING DATE: 12/23/2010  
PATENT NUMBER: ISSUE DATE:  
TITLE: INTEGRATED DEPOSITION OF THIN FILM LAYERS IN CADMIUM TELLURIDE  
BASED PHOTOVOLTAIC MODULE MANUFACTURE

APPLICATION NUMBER: 12977161 FILING DATE: 12/23/2010  
PATENT NUMBER: ISSUE DATE:  
TITLE: VAPOR DEPOSITION PROCESS FOR CONTINUOUS DEPOSITION AND TREATMENT  
OF A THIN FILM LAYER ON A SUBSTRATE

APPLICATION NUMBER: 12977416 FILING DATE: 12/23/2010  
PATENT NUMBER: ISSUE DATE:  
TITLE: NON-WEAR SHUTTER APPARATUS FOR A VAPOR DEPOSITION APPARATUS

APPLICATION NUMBER: 12977543 FILING DATE: 12/23/2010  
PATENT NUMBER: ISSUE DATE:  
TITLE: ENTRANCE AND EXIT ROLL SEAL CONFIGURATION FOR A VAPOR DEPOSITION  
SYSTEM

APPLICATION NUMBER: 13005602 FILING DATE: 01/13/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: METHOD FOR MAKING SEMICONDUCTING FILM AND PHOTOVOLTAIC DEVICE

APPLICATION NUMBER: 13018650 FILING DATE: 02/01/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: PHOTOVOLTAIC DEVICE

APPLICATION NUMBER: 13047189 FILING DATE: 03/14/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: SYSTEMS AND METHODS FOR HIGH-RATE DEPOSITION OF THIN FILM LAYERS  
ON PHOTOVOLTAIC MODULE SUBSTRATES

APPLICATION NUMBER: 13052485 FILING DATE: 03/21/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: THIN FILM SOLAR CELL AND METHOD FOR MAKING THE SAME

APPLICATION NUMBER: 13070661 FILING DATE: 03/24/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: DYNAMIC SYSTEM FOR VARIABLE HEATING OR COOLING OF LINEARLY  
CONVEYED SUBSTRATES



**CORRECTED**

APPLICATION NUMBER: 13070673 FILING DATE: 03/24/2011  
PATENT NUMBER: 8247741 ISSUE DATE: 08/21/2012  
TITLE: DYNAMIC SYSTEM FOR VARIABLE HEATING OR COOLING OF LINEARLY  
CONVEYED SUBSTRATES

APPLICATION NUMBER: 13073410 FILING DATE: 03/28/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: THERMAL ENDURANCE TESTING APPARATUS AND METHODS FOR PHOTOVOLTAIC  
MODULES

APPLICATION NUMBER: 13080029 FILING DATE: 04/05/2011  
PATENT NUMBER: 8349084 ISSUE DATE: 01/08/2013  
TITLE: APPARATUS AND SYSTEMS FOR INTERMIXING CADMIUM SULFIDE LAYERS AND  
CADMIUM TELLURIDE LAYERS FOR THIN FILM PHOTOVOLTAIC DEVICES

APPLICATION NUMBER: 13088496 FILING DATE: 04/18/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: PHOTOVOLTAIC DEVICES AND METHOD OF MAKING

APPLICATION NUMBER: 13089797 FILING DATE: 04/19/2011  
PATENT NUMBER: 8207009 ISSUE DATE: 06/26/2012  
TITLE: METHODS OF TEMPORALLY VARYING THE LASER INTENSITY DURING  
SCRIBING A PHOTOVOLTAIC DEVICE

APPLICATION NUMBER: 13089825 FILING DATE: 04/19/2011  
PATENT NUMBER: 8461481 ISSUE DATE: 06/11/2013  
TITLE: METHODS AND APPARATUS FOR REDUCING VARIATIONS IN THE LASER  
INTENSITY DURING SCRIBING A PHOTOVOLTAIC DEVICE

APPLICATION NUMBER: 13149100 FILING DATE: 05/31/2011  
PATENT NUMBER: 8350585 ISSUE DATE: 01/08/2013  
TITLE: SIMULTANEOUS QE SCANNING SYSTEM AND METHODS FOR PHOTOVOLTAIC  
DEVICES

APPLICATION NUMBER: 13149167 FILING DATE: 05/31/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: REFRACTIVE INDEX MATCHING OF THIN FILM LAYERS FOR PHOTOVOLTAIC  
DEVICES AND METHODS OF THEIR MANUFACTURE

APPLICATION NUMBER: 13149395 FILING DATE: 05/31/2011  
PATENT NUMBER: 8188562 ISSUE DATE: 05/29/2012  
TITLE: MULTI-LAYER N-TYPE STACK FOR CADMIUM TELLURIDE BASED THIN FILM  
PHOTOVOLTAIC DEVICES AND METHODS OF MAKING

APPLICATION NUMBER: 13149423 FILING DATE: 05/31/2011  
PATENT NUMBER: 8247686 ISSUE DATE: 08/21/2012  
TITLE: MULTI-LAYER N-TYPE STACK FOR CADMIUM TELLURIDE BASED THIN FILM  
PHOTOVOLTAIC DEVICES AND METHODS OF MAKING

APPLICATION NUMBER: 13149454 FILING DATE: 05/31/2011  
PATENT NUMBER: 8241930 ISSUE DATE: 08/14/2012  
TITLE: METHODS OF FORMING A WINDOW LAYER IN A CADMIUM TELLURIDE BASED  
THIN FILM PHOTOVOLTAIC DEVICE

APPLICATION NUMBER: 13150485 FILING DATE: 06/01/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: PHOTOVOLTAIC DEVICES AND METHOD OF MAKING

**CORRECTED**

APPLICATION NUMBER: 13159558 FILING DATE: 06/14/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: PHOTOVOLTAIC DEVICE WITH REFLECTION ENHANCING LAYER

APPLICATION NUMBER: 13165298 FILING DATE: 06/21/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: METHODS OF MAKING PHOTOVOLTAIC DEVICES AND PHOTOVOLTAIC DEVICES

APPLICATION NUMBER: 13168207 FILING DATE: 06/24/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: NON-BONDED ROTARY SEMICONDUCTING TARGETS AND METHODS OF THEIR  
SPUTTERING

APPLICATION NUMBER: 13188782 FILING DATE: 07/22/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: OXYGEN GETTER LAYER FOR PHOTOVOLTAIC DEVICES AND METHODS OF  
THEIR MANUFACTURE

APPLICATION NUMBER: 13188808 FILING DATE: 07/22/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: STABILIZED BACK CONTACT FOR PHOTOVOLTAIC DEVICES AND METHODS OF  
THEIR MANUFACTURE

APPLICATION NUMBER: 13192545 FILING DATE: 07/28/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: METHOD FOR MAKING PHOTOVOLTAIC DEVICES

APPLICATION NUMBER: 13192578 FILING DATE: 07/28/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: PHOTOVOLTAIC MODULE WITH IMPROVED DEAD CELL CONTACT

APPLICATION NUMBER: 13197233 FILING DATE: 08/03/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: APPARATUS FOR METERING GRANULAR SOURCE MATERIAL IN A THIN FILM  
VAPOR DEPOSITION APPARATUS

APPLICATION NUMBER: 13197251 FILING DATE: 08/03/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: METHOD FOR METERING GRANULAR SOURCE MATERIAL IN A THIN FILM  
VAPOR DEPOSITION APPARATUS

APPLICATION NUMBER: 13217409 FILING DATE: 08/25/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: SEALING LAYER FOR THIN FILM PHOTOVOLTAIC DEVICES AND THEIR  
METHODS OF MANUFACTURE

APPLICATION NUMBER: 13235780 FILING DATE: 09/19/2011  
PATENT NUMBER: 8390122 ISSUE DATE: 03/05/2013  
TITLE: SPUTTERING TARGETS INCLUDING EXCESS CADMIUM FOR FORMING A  
CADMIUM STANNATE LAYER

APPLICATION NUMBER: 13244971 FILING DATE: 09/26/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: METHODS OF MAKING PHOTOVOLTAIC DEVICES

APPLICATION NUMBER: 13244995 FILING DATE: 09/26/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: PHOTOVOLTAIC DEVICES

**CORRECTED**

APPLICATION NUMBER: 13249818 FILING DATE: 09/30/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: IN-LINE DEPOSITION SYSTEM AND PROCESS FOR DEPOSITION OF A THIN  
FILM LAYER

APPLICATION NUMBER: 13249892 FILING DATE: 09/30/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: TEMPORARY ARC INDUCEMENT OF GLASS SUBSTRATE DURING DIFFUSIVE  
TRANSPORT DEPOSITION

APPLICATION NUMBER: 13251851 FILING DATE: 10/03/2011  
PATENT NUMBER: 8283187 ISSUE DATE: 10/09/2012  
TITLE: PHOTOVOLTAIC DEVICE AND METHOD FOR MAKING

APPLICATION NUMBER: 13278464 FILING DATE: 10/21/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: HEAT STRENGTHENING OF A GLASS SUPERSTRATE FOR THIN FILM  
PHOTOVOLTAIC DEVICES

APPLICATION NUMBER: 13280499 FILING DATE: 10/25/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: CONVEYOR ASSEMBLY WITH REMOVABLE ROLLERS FOR A VAPOR DEPOSITION  
SYSTEM

APPLICATION NUMBER: 13284037 FILING DATE: 10/28/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: METHODS OF MAKING A TRANSPARENT LAYER AND A PHOTOVOLTAIC DEVICE

APPLICATION NUMBER: 13285184 FILING DATE: 10/31/2011  
PATENT NUMBER: 8404177 ISSUE DATE: 03/26/2013  
TITLE: SYSTEM FOR RECOVERY OF CADMIUM TELLURIDE (CDTE) FROM SYSTEM  
COMPONENTS USED IN THE MANUFACTURE OF PHOTOVOLTAIC (PV) MODULES

APPLICATION NUMBER: 13285501 FILING DATE: 10/31/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: METHOD FOR DEPOSITION

APPLICATION NUMBER: 13286794 FILING DATE: 11/01/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: PHOTOVOLTAIC DEVICE WITH MANGENESE AND TELLURIUM INTERLAYER

APPLICATION NUMBER: 13290474 FILING DATE: 11/07/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: COMPOSITE ENCAPSULATION MATERIAL FOR PHOTOVOLTAIC DEVICES AND  
METHODS OF THEIR MANUFACTURE

APPLICATION NUMBER: 13290494 FILING DATE: 11/07/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: RIB ELEMENTS FOR PHOTOVOLTAIC DEVICES AND METHODS OF THEIR  
MANUFACTURE

APPLICATION NUMBER: 13291421 FILING DATE: 11/08/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: HIGH EMISSIVITY DISTRIBUTION PLATE IN VAPOR DEPOSITION APPARATUS  
AND PROCESSES

APPLICATION NUMBER: ~~13301162~~ **13601162** FILING DATE: ~~11/21/2011~~ **08/31/2012**  
PATENT NUMBER: ISSUE DATE:  
TITLE: ~~CARDIAC ANODAL ELECTROSTIMULATION DETECTION~~ **PHOTOVOLTAIC DEVICES**

**PATENT**  
**REEL: 032239 FRAME: 0023**

**CORRECTED**

APPLICATION NUMBER: 13305909 FILING DATE: 11/29/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: CADMIUM DOPED TIN OXIDE BUFFER LAYER FOR THIN FILM PHOTOVOLTAIC  
DEVICES AND THEIR METHODS OF MANUFACTURE

APPLICATION NUMBER: 13305924 FILING DATE: 11/29/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: MIXED TARGETS FOR FORMING A CADMIUM DOPED TIN OXIDE BUFFER LAYER  
IN A THIN FILM PHOTOVOLTAIC DEVICES

APPLICATION NUMBER: 13306392 FILING DATE: 11/29/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: METHODS FOR FORMING A TRANSPARENT OXIDE LAYER FOR A PHOTOVOLTAIC  
DEVICE

APPLICATION NUMBER: 13308260 FILING DATE: 11/30/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: SIDE EDGE CLEANING METHODS AND APPARATUS FOR THIN FILM  
PHOTOVOLTAIC DEVICES

APPLICATION NUMBER: 13308288 FILING DATE: 11/30/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: SIDE EDGE CLEANING METHODS AND APPARATUS FOR THIN FILM  
PHOTOVOLTAIC DEVICES

APPLICATION NUMBER: 13308314 FILING DATE: 11/30/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: THREE TERMINAL THIN FILM PHOTOVOLTAIC MODULE AND THEIR METHODS  
OF MANUFACTURE

APPLICATION NUMBER: 13308336 FILING DATE: 11/30/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: THREE TERMINAL THIN FILM PHOTOVOLTAIC MODULE AND THEIR METHODS  
OF MANUFACTURE

APPLICATION NUMBER: 13308355 FILING DATE: 11/30/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: THREE TERMINAL THIN FILM PHOTOVOLTAIC MODULE AND THEIR METHODS  
OF MANUFACTURE

APPLICATION NUMBER: 13308367 FILING DATE: 11/30/2011  
PATENT NUMBER: 8377737 ISSUE DATE: 02/19/2013  
TITLE: METHODS OF SHORT WAVELENGTH LASER SCRIBING OF A THIN FILM  
PHOTOVOLTAIC DEVICE

APPLICATION NUMBER: 13326775 FILING DATE: 12/15/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: SUPPORT INSERT FOR THIN FILM PHOTOVOLTAIC DEVICES AND THEIR  
METHODS OF MANUFACTURE

APPLICATION NUMBER: 13326814 FILING DATE: 12/15/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: SUPPORT INSERT FOR THIN FILM PHOTOVOLTAIC DEVICES AND THEIR  
METHODS OF MANUFACTURE

APPLICATION NUMBER: 13326861 FILING DATE: 12/15/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: METHODS OF SUPPORTING A TRANSPARENT SUBSTRATE OF A THIN FILM  
PHOTOVOLTAIC DEVICE

**PATENT**  
**REEL: 032239 FRAME: 0024**

**CORRECTED**

APPLICATION NUMBER: 13326889 FILING DATE: 12/15/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: ADHESIVE PLUG FOR THIN FILM PHOTOVOLTAIC DEVICES AND THEIR  
METHODS OF MANUFACTURE

APPLICATION NUMBER: 13326945 FILING DATE: 12/15/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: JUNCTION BOX WITH A SUPPORT MEMBER FOR THIN FILM PHOTOVOLTAIC  
DEVICES AND THEIR METHODS OF MANUFACTURE

APPLICATION NUMBER: 13326973 FILING DATE: 12/15/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: REINFORCEMENT ELEMENT FOR THIN FILM PHOTOVOLTAIC DEVICES AND  
THEIR METHODS OF MANUFACTURE

APPLICATION NUMBER: 13329418 FILING DATE: 12/19/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: MANUFACTURING METHODS FOR SEMICONDUCTOR DEVICES

APPLICATION NUMBER: 13334177 FILING DATE: 12/22/2011  
PATENT NUMBER: ISSUE DATE:  
TITLE: PHOTOVOLTAIC DEVICE AND METHOD OF MAKING

APPLICATION NUMBER: 13362813 FILING DATE: 01/31/2012  
PATENT NUMBER: ISSUE DATE:  
TITLE: PHOTOVOLTAIC DEVICES AND METHOD OF MAKING

APPLICATION NUMBER: 13410516 FILING DATE: 03/02/2012  
PATENT NUMBER: ISSUE DATE:  
TITLE: DOPING AN ABSORBER LAYER OF A PHOTOVOLTAIC DEVICE VIA DIFFUSION  
FROM A WINDOW LAYER

APPLICATION NUMBER: 13426011 FILING DATE: 03/21/2012  
PATENT NUMBER: ISSUE DATE:  
TITLE: ACCELERATED LIFETIME TESTING APPARATUS AND METHODS FOR  
PHOTOVOLTAIC MODULES

APPLICATION NUMBER: 13429545 FILING DATE: 03/26/2012  
PATENT NUMBER: ISSUE DATE:  
TITLE: SYSTEM AND PROCESS FOR FORMING THIN FILM PHOTOVOLTAIC DEVICE

APPLICATION NUMBER: 13429699 FILING DATE: 03/26/2012  
PATENT NUMBER: ISSUE DATE:  
TITLE: APPARATUS AND METHOD FOR EVALUATING CHARACTERISTICS OF A  
PHOTOVOLTAIC DEVICE

APPLICATION NUMBER: 13433940 FILING DATE: 03/29/2012  
PATENT NUMBER: ISSUE DATE:  
TITLE: GLASS HANDLING ASSEMBLY

APPLICATION NUMBER: 13434911 FILING DATE: 03/30/2012  
PATENT NUMBER: ISSUE DATE:  
TITLE: SYSTEM AND METHOD FOR GAPPING CONVEYED SUBSTRATES

APPLICATION NUMBER: 13441126 FILING DATE: 04/06/2012  
PATENT NUMBER: ISSUE DATE:  
TITLE: SHIELD MESH FOR SPUTTERING OF A THIN FILM ON A SUBSTRATE

**CORRECTED**

APPLICATION NUMBER: 13447534 FILING DATE: 04/16/2012  
PATENT NUMBER: 8207006 ISSUE DATE: 06/26/2012  
TITLE: VAPOR DEPOSITION APPARATUS AND PROCESS FOR CONTINUOUS DEPOSITION  
OF A THIN FILM LAYER ON A SUBSTRATE

APPLICATION NUMBER: 13476414 FILING DATE: 05/21/2012  
PATENT NUMBER: ISSUE DATE:  
TITLE: HEATING SYSTEM AND METHODS FOR CONTROLLING THE HEATERS OF A  
HEATING SYSTEM

APPLICATION NUMBER: 13538352 FILING DATE: 06/29/2012  
PATENT NUMBER: ISSUE DATE:  
TITLE: MANUFACTURING METHODS FOR SEMICONDUCTOR DEVICES

APPLICATION NUMBER: 13538415 FILING DATE: 06/29/2012  
PATENT NUMBER: ISSUE DATE:  
TITLE: PHOTOVOLTAIC DEVICE AND METHOD OF MAKING

APPLICATION NUMBER: 13554423 FILING DATE: 07/20/2012  
PATENT NUMBER: ISSUE DATE:  
TITLE: VAPOR DEPOSITION APPARATUS FOR CONTINUOUS DEPOSITION AND  
TREATMENT OF A THIN FILM LAYER ON A SUBSTRATE

APPLICATION NUMBER: 13558770 FILING DATE: 07/26/2012  
PATENT NUMBER: ISSUE DATE:  
TITLE: APPARATUS FOR FORMING A CONDUCTIVE TRANSPARENT OXIDE FILM LAYER  
FOR USE IN A CADMIUM TELLURIDE BASED THIN FILM PHOTOVOLTAIC  
DEVICE

APPLICATION NUMBER: 13560155 FILING DATE: 07/27/2012  
PATENT NUMBER: 8597430 ISSUE DATE: 12/03/2013  
TITLE: MODULAR SYSTEM AND PROCESS FOR CONTINUOUS DEPOSITION OF A THIN  
FILM LAYER ON A SUBSTRATE

APPLICATION NUMBER: 13560354 FILING DATE: 07/27/2012  
PATENT NUMBER: ISSUE DATE:  
TITLE: DUAL LASERS FOR REMOVING GLASS-SIDE DEBRIS DURING THE  
MANUFACTURE OF THIN FILM PHOTOVOLTAIC DEVICES

APPLICATION NUMBER: 13561575 FILING DATE: 07/30/2012  
PATENT NUMBER: ISSUE DATE:  
TITLE: APPARATUS FOR TREATING THIN FILM LAYERS DURING PHOTOVOLTAIC  
MODULE MANUFACTURE

APPLICATION NUMBER: 13600272 FILING DATE: 08/31/2012  
PATENT NUMBER: ISSUE DATE:  
TITLE: PHOTOVOLTAIC DEVICE AND METHOD OF MAKING

APPLICATION NUMBER: 13600815 FILING DATE: 08/31/2012  
PATENT NUMBER: ISSUE DATE:  
TITLE: DIRECT CONNECTION OF LEAD BAR TO CONDUCTIVE RIBBON IN A THIN  
FILM PHOTOVOLTAIC DEVICE

APPLICATION NUMBER: 13600846 FILING DATE: 08/31/2012  
PATENT NUMBER: ISSUE DATE:  
TITLE: DIRECT CONNECTION OF LEAD BAR TO CONDUCTIVE RIBBON IN A THIN  
FILM PHOTOVOLTAIC DEVICE

**CORRECTED**

APPLICATION NUMBER: 13600940                      FILING DATE: 08/31/2012  
PATENT NUMBER:                                      ISSUE DATE:  
TITLE: BACK CONTACT PASTE WITH TE ENRICHMENT CONTROL IN THIN FILM  
          PHOTOVOLTAIC DEVICES

APPLICATION NUMBER: 13600987                      FILING DATE: 08/31/2012  
PATENT NUMBER:                                      ISSUE DATE:  
TITLE: METHOD OF CONTROLLING THE AMOUNT OF CU DOPING WHEN FORMING A  
          BACK CONTACT OF A PHOTOVOLTAIC CELL

APPLICATION NUMBER: 13601022                      FILING DATE: 08/31/2012  
PATENT NUMBER:                                      ISSUE DATE:  
TITLE: USE OF AN INERT GRAPHITE LAYER IN A BACK CONTACT OF A  
          PHOTOVOLTAIC CELL

APPLICATION NUMBER: 13601110                      FILING DATE: 08/31/2012  
PATENT NUMBER:                                      ISSUE DATE:  
TITLE: METHODS OF TREATING A SEMICONDUCTOR LAYER

APPLICATION NUMBER: 13607912                      FILING DATE: 09/10/2012  
PATENT NUMBER:                                      ISSUE DATE:  
TITLE: SUPPORT STRUCTURE FOR PHOTOVOLTAIC MODULE MOUNTING AND METHODS  
          OF ITS USE

APPLICATION NUMBER: 13607917                      FILING DATE: 09/10/2012  
PATENT NUMBER:                                      ISSUE DATE:  
TITLE: RACKING SYSTEM FOR SUPPORTING PHOTOVOLTAIC MODULE MOUNTING AND  
          METHODS OF ITS USE

APPLICATION NUMBER: 13630231                      FILING DATE: 09/28/2012  
PATENT NUMBER:                                      ISSUE DATE:  
TITLE: METHOD OF PROCESSING A SEMICONDUCTOR ASSEMBLY

APPLICATION NUMBER: 13654461                      FILING DATE: 10/18/2012  
PATENT NUMBER:                                      ISSUE DATE:  
TITLE: METHODS FOR DEPOSITING A HOMOGENEOUS FILM VIA SPUTTERING FROM AN  
          INHOMOGENEOUS TARGET

APPLICATION NUMBER: 13654465                      FILING DATE: 10/18/2012  
PATENT NUMBER:                                      ISSUE DATE:  
TITLE: CYLINDRICAL TARGET HAVING AN INHOMOGENEOUS SPUTTERING SURFACE  
          FOR DEPOSITING A HOMOGENEOUS FILM

APPLICATION NUMBER: 13654470                      FILING DATE: 10/18/2012  
PATENT NUMBER:                                      ISSUE DATE:  
TITLE: NON-BONDED ROTATABLE TARGETS AND THEIR METHODS OF SPUTTERING

APPLICATION NUMBER: 13658920                      FILING DATE: 10/24/2012  
PATENT NUMBER:                                      ISSUE DATE:  
TITLE: CONVEYOR ASSEMBLY WITH GEARED, REMOVABLE ROLLERS FOR A VAPOR  
          DEPOSITION SYSTEM

APPLICATION NUMBER: 13673097                      FILING DATE: 11/09/2012  
PATENT NUMBER:                                      ISSUE DATE:  
TITLE: METHODS OF ANNEALING A CONDUCTIVE TRANSPARENT OXIDE FILM LAYER  
          FOR USE IN A THIN FILM PHOTOVOLTAIC DEVICE

**CORRECTED**

APPLICATION NUMBER: 13676550 FILING DATE: 11/14/2012  
PATENT NUMBER: ISSUE DATE:  
TITLE: SPATIALLY DISTRIBUTED CDS IN THIN FILM PHOTOVOLTAIC DEVICES AND  
THEIR METHODS OF MANUFACTURE

APPLICATION NUMBER: 13681822 FILING DATE: 11/20/2012  
PATENT NUMBER: ISSUE DATE:  
TITLE: APPARATUS AND A METHOD FOR DETECTING DEFECTS WITHIN PHOTOVOLTAIC  
MODULES

APPLICATION NUMBER: 13682876 FILING DATE: 11/21/2012  
PATENT NUMBER: ISSUE DATE:  
TITLE: METHOD FOR TREATING A SEMICONDUCTOR

APPLICATION NUMBER: 13713697 FILING DATE: 12/13/2012  
PATENT NUMBER: ISSUE DATE:  
TITLE: METHODS OF FABRICATING A PHOTOVOLTAIC MODULE, AND RELATED SYSTEM

APPLICATION NUMBER: 13719440 FILING DATE: 12/19/2012  
PATENT NUMBER: ISSUE DATE:  
TITLE: PHOTOVOLTAIC DEVICE

APPLICATION NUMBER: 13751761 FILING DATE: 01/28/2013  
PATENT NUMBER: ISSUE DATE:  
TITLE: VAPOR DEPOSITION APPARATUS AND PROCESS FOR CONTINUOUS INDIRECT  
DEPOSITION OF A THIN FILM LAYER ON A SUBSTRATE

APPLICATION NUMBER: 13751852 FILING DATE: 01/28/2013  
PATENT NUMBER: ISSUE DATE:  
TITLE: PROCESS FOR CONTINUOUS DEPOSITION OF A SUBLIMATED SOURCE  
MATERIAL TO FORM A THIN FILM LAYER ON A SUBSTRATE

APPLICATION NUMBER: 13758185 FILING DATE: 02/04/2013  
PATENT NUMBER: ISSUE DATE:  
TITLE: OVERSIZED BACK PANEL FOR PHOTOVOLTAIC DEVICES

APPLICATION NUMBER: 13775613 FILING DATE: 02/25/2013  
PATENT NUMBER: ISSUE DATE:  
TITLE: METHODS AND APPARATUS FOR CONTROLLING DOPANT CONCENTRATION IN  
THIN FILMS FORMED VIA SPUTTERING DEPOSITION

APPLICATION NUMBER: 13782176 FILING DATE: 03/01/2013  
PATENT NUMBER: ISSUE DATE:  
TITLE: PHOTOVOLTAIC DEVICES AND METHOD OF MAKING

APPLICATION NUMBER: 13866132 FILING DATE: 04/19/2013  
PATENT NUMBER: ISSUE DATE:  
TITLE: MONOLITHICALLY INTEGRATED SOLAR MODULES AND METHODS OF  
MANUFACTURE

APPLICATION NUMBER: 13873317 FILING DATE: 04/30/2013  
PATENT NUMBER: ISSUE DATE:  
TITLE: INTEGRATED POWER CONNECTORS FOR PV MODULES AND THEIR METHODS OF  
MANUFACTURE

APPLICATION NUMBER: 13875739 FILING DATE: 05/02/2013  
PATENT NUMBER: ISSUE DATE:  
TITLE: PHOTOVOLTAIC DEVICES AND METHOD OF MAKING



**CORRECTED**

APPLICATION NUMBER: 13893494 FILING DATE: 05/14/2013  
PATENT NUMBER: ISSUE DATE:  
TITLE: PHOTOVOLTAIC MODULES WITH A CONTROLLED COLOR ON THEIR WINDOW  
SURFACE AND ARRAYS THEREOF

APPLICATION NUMBER: 13912782 FILING DATE: 06/07/2013  
PATENT NUMBER: ISSUE DATE:  
TITLE: PHOTOVOLTAIC DEVICES AND METHOD OF MAKING

APPLICATION NUMBER: 13923644 FILING DATE: 06/21/2013  
PATENT NUMBER: ISSUE DATE:  
TITLE: PHOTOVOLTAIC DEVICES

APPLICATION NUMBER: 13937765 FILING DATE: 07/09/2013  
PATENT NUMBER: ISSUE DATE:  
TITLE: MODULAR SYSTEM FOR CONTINUOUS DEPOSITION OF A THIN FILM LAYER ON  
A SUBSTRATE

APPLICATION NUMBER: 13950605 FILING DATE: 07/25/2013  
PATENT NUMBER: ISSUE DATE:  
TITLE: BACK CONTACT PASTE WITH TE ENRICHMENT AND COPPER DOPING CONTROL  
IN THIN FILM PHOTOVOLTAIC DEVICES

APPLICATION NUMBER: 13951768 FILING DATE: 07/26/2013  
PATENT NUMBER: ISSUE DATE:  
TITLE: VAPOR DEPOSITION APPARATUS FOR CONTINUOUS DEPOSITION OF MULTIPLE  
THIN FILM LAYERS ON A SUBSTRATE

APPLICATION NUMBER: 13951783 FILING DATE: 07/26/2013  
PATENT NUMBER: ISSUE DATE:  
TITLE: VAPOR DEPOSITION APPARATUS FOR CONTINUOUS DEPOSITION OF MULTIPLE  
THIN FILM LAYERS ON A SUBSTRATE

APPLICATION NUMBER: 60994813 FILING DATE: 09/24/2007  
PATENT NUMBER: ISSUE DATE:  
TITLE: LASER RECRYSTALLIZATION AND SURFACE ABLATION OF CDTE FILMS FOR  
SOLAR CELLS

APPLICATION NUMBER: 60994939 FILING DATE: 09/24/2007  
PATENT NUMBER: ISSUE DATE:  
TITLE: IN SITU RESISTIVE HEATING OF A CONDUCTIVELY-COATED GLASS  
SUBSTRATE DURING THIN FILM DEPOSITION AND PROCESSING

APPLICATION NUMBER: 61705546 FILING DATE: 09/25/2012  
PATENT NUMBER: ISSUE DATE:  
TITLE: VARYING CADMIUM TELLURIDE GROWTH TEMPERATURE DURING DEPOSITION  
TO INCREASE SOLAR CELL RELIABILITY

ASSIGNMENT RECORDATION BRANCH  
PUBLIC RECORDS DIVISION



United States Patent and Trademark Office

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Electronic Version v1.1  
Stylesheet Version v1.2

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
FIRST SOLAR MALAYSIA SDN. BHD.	08/05/2013
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	FIRST SOLAR, INC.
<b>Street Address:</b>	350 WEST WASHINGTON STREET
<b>Internal Address:</b>	6TH FLOOR
<b>City:</b>	TEMPE
<b>State/Country:</b>	ARIZONA
<b>Postal Code:</b>	85281
<b>PROPERTY NUMBERS Total: 212</b>	
<b>Property Type</b>	<b>Number</b>
<b>Application Number:</b>	12415267
<b>Application Number:</b>	12503390
<b>Application Number:</b>	12645618
<b>Application Number:</b>	12415275

**PATENT**

**CORRECTED**

<b>Application Number:</b>	12612271
<b>Application Number:</b>	12844931
<b>Application Number:</b>	12915671
<b>Application Number:</b>	12608455
<b>Application Number:</b>	12010919
<b>Application Number:</b>	60994813
<b>Application Number:</b>	60994939
<b>Application Number:</b>	13052485
<b>Application Number:</b>	12635767
<b>Application Number:</b>	12639093
<b>Application Number:</b>	12645802
<b>Application Number:</b>	12893288
<b>Application Number:</b>	12645660
<b>Application Number:</b>	12818669
<b>Application Number:</b>	12683831
<b>Application Number:</b>	12765268
<b>Application Number:</b>	12826234
<b>Application Number:</b>	12639037
<b>Application Number:</b>	12765316
<b>Application Number:</b>	13751852
<b>Application Number:</b>	12639043
<b>Application Number:</b>	13447534
<b>Application Number:</b>	12841489
<b>Application Number:</b>	12638713
<b>Application Number:</b>	12828359
<b>Application Number:</b>	12638772
<b>Application Number:</b>	12639048
<b>Application Number:</b>	12638749
<b>Application Number:</b>	12818717
<b>Application Number:</b>	12639053
<b>Application Number:</b>	12828378
<b>Application Number:</b>	12639073
<b>Application Number:</b>	12825815
<b>Application Number:</b>	12639099
<b>Application Number:</b>	12649621
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**PATENT**

**CORRECTED**

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Application Number:	12683807
Application Number:	12766135
Application Number:	13561575
Application Number:	12828408
Application Number:	12828421
Application Number:	12638731
Application Number:	12827029
Application Number:	12770027
Application Number:	13751761
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Application Number:	13005602
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Application Number:	12894242
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Application Number:	12771515
Application Number:	12765295
Application Number:	12750096
Application Number:	12765340
Application Number:	12770055
Application Number:	12750116
Application Number:	12770078
Application Number:	12750136
Application Number:	13235780
Application Number:	12638653
Application Number:	12638687
Application Number:	13560155
Application Number:	13937765
Application Number:	12770102
Application Number:	12768929
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Application Number:	12765225
Application Number:	12894901
Application Number:	12894916
Application Number:	12894926

**PATENT**

**CORRECTED**

<b>Application Number:</b>	12827053
<b>Application Number:</b>	12825800
<b>Application Number:</b>	12826966
<b>Application Number:</b>	12829544
<b>Application Number:</b>	13558770
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<b>Application Number:</b>	12892360
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<b>Application Number:</b>	12977543
<b>Application Number:</b>	13018650
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<b>Application Number:</b>	13088496

**PATENT**

**CORRECTED**

<b>Application Number:</b>	12975422
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<b>Application Number:</b>	12973093
<b>Application Number:</b>	13149100
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<b>Application Number:</b>	13165298
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<b>Application Number:</b>	13159558
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<b>Application Number:</b>	13197251
<b>Application Number:</b>	13168207
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<b>Application Number:</b>	13217409
<b>Application Number:</b>	13192578
<b>Application Number:</b>	13334177
<b>Application Number:</b>	13326775
<b>Application Number:</b>	13244971
<b>Application Number:</b>	13244995
<b>Application Number:</b>	13326945

**PATENT**

**CORRECTED**

<b>Application Number:</b>	13326973
<b>Application Number:</b>	13308288
<b>Application Number:</b>	13290474
<b>Application Number:</b>	13290494
<b>Application Number:</b>	13308260
<b>Application Number:</b>	13308367
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<b>Application Number:</b>	13305909
<b>Application Number:</b>	13362813
<b>Application Number:</b>	13433940
<b>Application Number:</b>	13308314
<b>Application Number:</b>	13600815
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<b>Application Number:</b>	13476414
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<b>Application Number:</b>	13329418
<b>Application Number:</b>	13280499
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<b>Application Number:</b>	13607917
<b>Application Number:</b>	13600940
<b>Application Number:</b>	13560354
<b>Application Number:</b>	13308355
<b>Application Number:</b>	13305924
<b>Application Number:</b>	13326814
<b>Application Number:</b>	13326861
<b>Application Number:</b>	13326889
<b>Application Number:</b>	13601110

**PATENT**

**CORRECTED**

Application Number:	<del>13301162</del> 13/601162
Application Number:	13538415
Application Number:	13658920
Application Number:	13538352
Application Number:	13630231
Application Number:	13676550
Application Number:	13600272
Application Number:	13600987
Application Number:	13713697
Application Number:	13601022
Application Number:	13673097
Application Number:	13719440
Application Number:	13682876
Application Number:	13758185
Application Number:	13681822
Application Number:	13782176
Application Number:	13775613
Application Number:	13600846
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Application Number:	13893494
Application Number:	13875739
Application Number:	13912782
Application Number:	13923644
Application Number:	13951768
Application Number:	13950605
Application Number:	13951783
Application Number:	61705546
Application Number:	13866132

**CORRESPONDENCE DATA**

Fax Number: (419)255-9639  
 Phone: 4192555900  
 Email: docketing@mstfirm.com  
*Correspondence will be sent via US Mail when the email attempt is unsuccessful.*  
 Correspondent Name: MACMILLAN, SOBANSKI & TODD, LLC  
 Address Line 1: 720 WATER STREET  
 Address Line 2: ONE MARITIME PLAZA FIFTH FLOOR  
 Address Line 4: TOLEDO, OHIO 43604

**PATENT**



**CORRECTED**

<b>ATTORNEY DOCKET NUMBER:</b>	1-55116
<b>NAME OF SUBMITTER:</b>	CHRISTOPHER J. WORREL
<b>Signature:</b>	/Christopher J. Worrel/
<b>Date:</b>	01/14/2014
<b>Total Attachments: 17</b> source=3649_55116_Assignment_FirstSolar#page1.tif source=3649_55116_Assignment_FirstSolar#page2.tif source=3649_55116_Assignment_FirstSolar#page3.tif source=3649_55116_Assignment_FirstSolar#page4.tif source=3649_55116_Assignment_FirstSolar#page5.tif source=3649_55116_Assignment_FirstSolar#page6.tif source=3649_55116_Assignment_FirstSolar#page7.tif source=3649_55116_Assignment_FirstSolar#page8.tif source=3649_55116_Assignment_FirstSolar#page9.tif source=3649_55116_Assignment_FirstSolar#page10.tif source=3649_55116_Assignment_FirstSolar#page11.tif source=3649_55116_Assignment_FirstSolar#page12.tif source=3649_55116_Assignment_FirstSolar#page13.tif source=3649_55116_Assignment_FirstSolar#page14.tif source=3649_55116_Assignment_FirstSolar#page15.tif source=3649_55116_Assignment_FirstSolar#page16.tif source=3649_55116_Assignment_FirstSolar#page17.tif	
<b>RECEIPT INFORMATION</b>  <b>EPAS ID:</b> PAT2681333 <b>Receipt Date:</b> 01/14/2014	

[Return to home page](#)

| [HOME](#) | [INDEX](#) | [SEARCH](#) | [eBUSINESS](#) | [CONTACT US](#) | [PRIVACY STATEMENT](#)

**PATENT**

## PATENT ASSIGNMENT

**THIS PATENT ASSIGNMENT** (“Assignment”), dated as of August 5, 2013 (the “Effective Date”), is entered into by and between First Solar Malaysia Sdn. Bhd., a Malaysian corporation (“Assignor”) and First Solar, Inc. (“Assignee”). Assignor and Assignee are sometimes referred to herein individually as a “Party” and collectively as the “Parties.”

WHEREAS, Assignor owns the patents and patent applications listed in the attached Schedule A (the “Assigned Patents”);

WHEREAS, Assignor and Assignee have entered into an Intercompany Agreement, dated as of August 5, 2013 and an Agency Agreement, dated as of August 5, 2013, which contemplate that Assignor shall assign the US IP (as such term is defined in the Intercompany Agreement) to Assignee, as soon as practicable upon receipt of the US IP from General Electric Company and Primestar Solar, Inc., but in any event before September 30, 2013;

WHEREAS, Assignee desires to acquire the Assigned Patents, and Assignor desires to assign its rights in the Assigned Patents to Assignee; and

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Assignor hereby assigns, sells, conveys, delivers and transfers to Assignee the Assigned Patents, including all damages for infringement of any of the Assigned Patents accruing on and after the Effective Date and the sole right to sue therefor under such Assigned Patents, for the full term or terms of all such Assigned Patents.

This Assignment shall be binding upon, and shall inure to the benefit of, the Parties hereto and their respective successors and assigns, and may be executed in two or more counterparts, each of which shall be deemed an original, and it shall not be necessary in making proof of this Assignment to produce or account for more than one set of counterparts signed by all of the Parties.

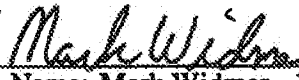
No waiver, modification, or change of any of the provisions of this Assignment shall be valid unless in writing and signed by the Party against whom such claimed waiver, modification, or change is sought to be enforced.

\*\*\*\*\*

IN WITNESS WHEREOF, the Parties have caused this Agreement to be duly executed as of the date first above written.

FIRST SOLAR, INC.,

By

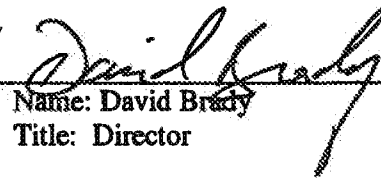


Name: Mark Widmar

Title: Chief Financial Officer and  
Chief Accounting Officer

FIRST SOLAR MALAYSIA SDN. BHD.

By



Name: David Brady

Title: Director

Assigned Patents

<b>Owner</b>	<b>Country Id</b>	<b>Application Number</b>	<b>Application Date</b>	<b>Patent Date</b>	<b>Patent Number</b>
GE	US	12/415267	31-MAR-09	NA	NA
GE	US	12/503390	15-JUL-09	NA	NA
GE	US	12/645618	23-DEC-09	NA	NA
GE	US	12/415275	31-MAR-09	NA	NA
GE	US	12/612271	04-NOV-09	NA	NA
GE	US	12/844931	28-JUL-10	NA	NA
GE	US	12/915671	29-OCT-10	NA	NA
GE	US	12/608455	29-OCT-09	NA	NA
PrimeStar	US	12/010919	31-JAN-08	NA	NA
PrimeStar	US	60/994813	24-SEP-07	NA	NA
PrimeStar	US	60/994939	24-SEP-07	NA	NA

## SCHEDULE 1

Owner	Country Id	Application Number	Application Date	Patent Date	Patent Number
GE	US	13/052485	21-MAR-11	NA	NA
GE	US	12/635767	11-DEC-09	NA	NA
GE	US	12/639093	16-DEC-09	NA	NA
GE	US	12/645802	23-DEC-09	30-OCT-12	8301409
GE	US	12/893288	29-SEP-10	NA	NA
GE	US	12/645660	23-DEC-09	NA	NA
PrimeStar	US	12/818669	18-JUN-10	NA	NA
PrimeStar	US	12/683831	07-JAN-10	28-AUG-12	8252117
PrimeStar	US	12/765268	22-APR-10	02-APR-13	8409407
GE	US	12/826234	29-JUN-10	NA	NA
PrimeStar	US	12/639037	16-DEC-09	21-AUG-12	8247683
PrimeStar	US	12/765316	22-APR-10	29-JAN-13	8361229
PrimeStar	US	13/751852	28-JAN-13	NA	NA
PrimeStar	US	12/639043	16-DEC-09	24-APR-12	8163089

## SCHEDULE 1

<b>Owner</b>	<b>Country Id</b>	<b>Application Number</b>	<b>Application Date</b>	<b>Patent Date</b>	<b>Patent Number</b>
PrimeStar	US	13/447534	16-APR-12	26-JUN-12	8207006
PrimeStar	US	12/841489	22-JUL-10	26-MAR-13	8402628
PrimeStar	US	12/638713	15-DEC-09	29-MAY-12	8189198
PrimeStar	US	12/828359	01-JUL-10	NA	NA
PrimeStar	US	12/638772	15-DEC-09	NA	NA
PrimeStar	US	12/639048	16-DEC-09	06-NOV-12	8303779
PrimeStar	US	12/638749	15-DEC-09	27-MAR-12	8143515
PrimeStar	US	12/818717	18-JUN-10	NA	NA
PrimeStar	US	12/639053	16-DEC-09	30-APR-13	8430966
PrimeStar	US	12/828378	01-JUL-10	NA	NA
PrimeStar	US	12/639073	16-DEC-09	NA	NA
PrimeStar	US	12/825815	29-JUN-10	11-JUN-13	8460765
GE	US	12/639099	16-DEC-09	18-OCT-11	8039290
PrimeStar	US	12/649621	30-DEC-09	11-DEC-12	8328946

## SCHEDULE 1

Owner	Country Id	Application Number	Application Date	Patent Date	Patent Number
PrimeStar	US	12/639085	16-DEC-09	01-NOV-11	8048194
PrimeStar	US	13/285184	31-OCT-11	26-MAR-13	8404177
PrimeStar	US	12/683807	07-JAN-10	30-APR-13	8430963
PrimeStar	US	12/766135	23-APR-10	28-AUG-12	NA
PrimeStar	US	13/561575	30-JUL-12	NA	NA
PrimeStar	US	12/828408	01-JUL-10	NA	NA
PrimeStar	US	12/828421	01-JUL-10	NA	NA
PrimeStar	US	12/638731	15-DEC-09	29-MAY-12	8187555
PrimeStar	US	12/827029	30-JUN-10	NA	NA
PrimeStar	US	12/770027	29-APR-10	29-JAN-13	8361232
PrimeStar	US	13/751761	28-JAN-13	NA	NA
PrimeStar	US	12/638807	15-DEC-09	28-AUG-12	NA
GE	US	13/005602	13-JAN-11	NA	NA

## SCHEDULE 1

Owner	Country Id	Application Number	Application Date	Patent Date	Patent Number
GE	US	12/894217	30-SEP-10	NA	NA
GE	US	12/894242	30-SEP-10	25-OCT-11	8044477
GE	US	13/251851	03-OCT-11	09-OCT-12	8283187
PrimeStar	US	12/750056	30-MAR-10	04-SEP-12	8257561
PrimeStar	US	12/771515	30-APR-10	08-MAY-12	8173482
PrimeStar	US	12/765295	22-APR-10	NA	NA
PrimeStar	US	12/750096	30-MAR-10	10-NOV-11	8053350
PrimeStar	US	12/765340	22-APR-10	NA	NA
PrimeStar	US	12/770055	29-APR-10	NA	NA
PrimeStar	US	12/750116	30-MAR-10	25-OCT-11	8043954
PrimeStar	US	12/770078	29-APR-10	NA	NA
PrimeStar	US	12/750136	30-MAR-10	25-OCT-11	8043955
PrimeStar	US	13/235780	19-SEP-11	05-MAR-13	8390122
PrimeStar	US	12/638653	15-DEC-09	21-AUG-12	8247255



## SCHEDULE 1

Owner	Country Id	Application Number	Application Date	Patent Date	Patent Number
PrimeStar	US	12/638687	15-DEC-09	09-JUL-13	8481355
PrimeStar	US	13/560155	27-JUL-12	NA	NA
PrimeStar	US	13/937765	09-JUL-13	NA	NA
PrimeStar	US	12/770102	29-APR-10	NA	NA
GE	US	12/768929	28-APR-10	NA	NA
GE	US	12/790689	28-MAY-10	NA	NA
GE	US	12/765225	22-APR-10	NA	NA
GE	US	12/894901	30-SEP-10	NA	NA
GE	US	12/894916	30-SEP-10	NA	NA
GE	US	12/894926	30-SEP-10	NA	NA
PrimeStar	US	12/827053	30-JUN-10	NA	NA
PrimeStar	US	12/825800	29-JUN-10	21-AUG-12	8247682
PrimeStar	US	12/826966	30-JUN-10	NA	NA

## SCHEDULE 1

<b>Owner</b>	<b>Country Id</b>	<b>Application Number</b>	<b>Application Date</b>	<b>Patent Date</b>	<b>Patent Number</b>
PrimeStar	US	12/829544	02-JUL-10	07-AUG-12	8236601
PrimeStar	US	13/558770	26-JUL-12	NA	NA
PrimeStar	US	12/829563	02-JUL-10	14-AUG-12	8241938
PrimeStar	US	13/429699	26-MAR-12	NA	NA
PrimeStar	US	12/892360	28-SEP-10	08-JAN-13	8349144
PrimeStar	US	12/870013	27-AUG-10	NA	NA
PrimeStar	US	12/825495	29-JUN-10	NA	NA
PrimeStar	US	12/857810	17-AUG-10	NA	NA
PrimeStar	US	12/975493	22-DEC-10	NA	NA
PrimeStar	US	13/089797	19-APR-11	26-JUN-12	8207009
PrimeStar	US	12/913419	27-OCT-10	NA	NA
PrimeStar	US	12/913454	27-OCT-10	NA	NA
PrimeStar	US	12/829652	02-JUL-10	NA	NA
PrimeStar	US	12/842106	23-JUL-10	NA	NA

## SCHEDULE 1

Owner	Country Id	Application Number	Application Date	Patent Date	Patent Number
PrimeStar	US	12/870055	27-AUG-10	25-DEC-12	8338698
PrimeStar	US	12/870092	27-AUG-10	29-MAY-12	8187912
GE	US	12/913296	27-OCT-10	10-MAY-11	7939363
GE	US	13/080029	05-APR-11	08-JAN-13	8349084
PrimeStar	US	12/842352	23-JUL-10	NA	NA
PrimeStar	US	12/913357	27-OCT-10	NA	NA
PrimeStar	US	12/913390	27-OCT-10	17-MAY-11	7943415
PrimeStar	US	12/977139	23-DEC-10	NA	NA
GE	US	12/972242	17-DEC-10	NA	NA
GE	US	13/306392	29-NOV-11	NA	NA
GE	US	12/956761	30-NOV-10	NA	NA
GE	US	12/951108	22-NOV-10	21-FEB-12	8119513
PrimeStar	US	12/977161	23-DEC-10	NA	NA
PrimeStar	US	13/047189	14-MAR-11	NA	NA

## SCHEDULE 1

<b>Owner</b>	<b>Country Id</b>	<b>Application Number</b>	<b>Application Date</b>	<b>Patent Date</b>	<b>Patent Number</b>
PrimeStar	US	12/892414	28-SEP-10	11-JUN-13	8460521
PrimeStar	US	12/977543	23-DEC-10	NA	NA
GE	US	13/018650	01-FEB-11	NA	NA
PrimeStar	US	13/070661	24-MAR-11	NA	NA
GE	US	13/088496	18-APR-11	NA	NA
PrimeStar	US	12/975422	22-DEC-10	NA	NA
PrimeStar	US	13/070673	24-MAR-11	21-AUG-12	8247741
PrimeStar	US	12/973058	20-DEC-10	NA	NA
PrimeStar	US	12/973093	20-DEC-10	NA	NA
PrimeStar	US	13/149100	31-MAY-11	08-JAN-13	8350585
PrimeStar	US	12/975435	22-DEC-10	29-MAY-12	8187386
GE	US	12/976166	22-DEC-10	02-JUL-13	8476105
PrimeStar	US	13/089825	19-APR-11	11-JUN-13	8461481
PrimeStar	US	12/977416	23-DEC-10	NA	NA
PrimeStar	US	13/073410	28-MAR-11	NA	NA

## SCHEDULE 1

Owner	Country Id	Application Number	Application Date	Patent Date	Patent Number
GE	US	12/956811	30-NOV-10	NA	NA
GE	US	13/165298	21-JUN-11	NA	NA
GE	US	13/150485	01-JUN-11	NA	NA
PrimeStar	US	13/249818	30-SEP-11	NA	NA
PrimeStar	US	13/149167	31-MAY-11	NA	NA
GE	US	13/159558	14-JUN-11	NA	NA
PrimeStar	US	13/197233	03-AUG-11	NA	NA
PrimeStar	US	13/197251	03-AUG-11	NA	NA
PrimeStar	US	13/168207	24-JUN-11	NA	NA
PrimeStar	US	13/149395	31-MAY-11	29-MAY-12	8188562
PrimeStar	US	13/149423	31-MAY-11	21-AUG-12	8247686
PrimeStar	US	13/149454	31-MAY-11	14-AUG-12	8241930
GE	US	13/285501	31-OCT-11	NA	NA
PrimeStar	US	13/249892	30-SEP-11	NA	NA
GE	US	13/284037	28-OCT-11	NA	NA

## SCHEDULE 1

<b>Owner</b>	<b>Country Id</b>	<b>Application Number</b>	<b>Application Date</b>	<b>Patent Date</b>	<b>Patent Number</b>
PrimeStar	US	13/278464	21-OCT-11	NA	NA
GE and Alliance for Sustainable Energy LLC	US	13/192545	28-JUL-11	NA	NA
PrimeStar	US	13/188782	22-JUL-11	NA	NA
PrimeStar	US	13/188808	22-JUL-11	NA	NA
PrimeStar	US	13/217409	25-AUG-11	NA	NA
PrimeStar	US	13/192578	28-JUL-11	NA	NA
GE	US	13/334177	22-DEC-11	NA	NA
PrimeStar	US	13/326775	15-DEC-11	NA	NA
GE	US	13/244971	26-SEP-11	NA	NA
GE	US	13/244995	26-SEP-11	NA	NA
PrimeStar	US	13/326945	15-DEC-11	NA	NA
PrimeStar	US	13/326973	15-DEC-11	NA	NA
PrimeStar	US	13/308288	30-NOV-11	NA	NA

## SCHEDULE 1

Owner	Country Id	Application Number	Application Date	Patent Date	Patent Number
PrimeStar	US	13/290474	07-NOV-11	NA	NA
PrimeStar	US	13/290494	07-NOV-11	NA	NA
PrimeStar	US	13/308260	30-NOV-11	NA	NA
PrimeStar	US	13/308367	30-NOV-11	19-FEB-13	8377737
PrimeStar	US	13/308336	30-NOV-11	NA	NA
PrimeStar	US	13/305909	29-NOV-11	NA	NA
GE	US	13/362813	31-JAN-12	NA	NA
PrimeStar	US	13/433940	29-MAR-12	NA	NA
PrimeStar	US	13/308314	30-NOV-11	NA	NA
PrimeStar	US	13/600815	31-AUG-12	NA	NA
PrimeStar	US	13/426011	21-MAR-12	NA	NA
PrimeStar	US	13/476414	21-MAY-12	NA	NA
PrimeStar	US	13/434911	30-MAR-12	NA	NA
GE	US	13/286794	01-NOV-11	NA	NA
GE	US	13/329418	19-DEC-11	NA	NA
PrimeStar	US	13/280499	25-OCT-11	NA	NA
PrimeStar	US	13/291421	08-NOV-11	NA	NA

## SCHEDULE 1

<b>Owner</b>	<b>Country Id</b>	<b>Application Number</b>	<b>Application Date</b>	<b>Patent Date</b>	<b>Patent Number</b>
PrimeStar	US	13/654465	18-OCT-12	NA	NA
PrimeStar	US	13/654461	18-OCT-12	NA	NA
PrimeStar	US	13/429545	26-MAR-12	NA	NA
PrimeStar	US	13/554423	20-JUL-12	NA	NA
PrimeStar	US	13/654470	18-OCT-12	NA	NA
PrimeStar	US	13/410516	02-MAR-12	NA	NA
PrimeStar	US	13/441126	06-APR-12	NA	NA
PrimeStar	US	13/607912	10-SEP-12	NA	NA
PrimeStar	US	13/607917	10-SEP-12	NA	NA
PrimeStar	US	13/600940	31-AUG-12	NA	NA
PrimeStar	US	13/560354	27-JUL-12	NA	NA
PrimeStar	US	13/308355	30-NOV-11	NA	NA
PrimeStar	US	13/305924	29-NOV-11	NA	NA
PrimeStar	US	13/326814	15-DEC-11	NA	NA
PrimeStar	US	13/326861	15-DEC-11	NA	NA
PrimeStar	US	13/326889	15-DEC-11	NA	NA
GE	US	13/601110	31-AUG-12	NA	NA
GE	US	13/601162	31-AUG-12	NA	NA



## SCHEDULE 1

Owner	Country Id	Application Number	Application Date	Patent Date	Patent Number
GE	US	13/538415	29-JUN-12	NA	NA
PrimeStar	US	13/658920	24-OCT-12	NA	NA
GE	US	13/538352	29-JUN-12	NA	NA
GE	US	13/523059	14-JUN-12	NA	NA
GE	US	13/630231	28-SEP-12	NA	NA
PrimeStar	US	13/676550	14-NOV-12	NA	NA
GE	US	13/600272	31-AUG-12	NA	NA
PrimeStar	US	13/600987	31-AUG-12	NA	NA
GE	US	13/713697	13-DEC-12	NA	NA
PrimeStar	US	13/601022	31-AUG-12	NA	NA
PrimeStar	US	13673097	09-NOV-12	NA	NA
GE	US	13/719440	19-DEC-12	NA	NA
GE	US	13/682876	20-NOV-12	NA	NA
PrimeStar	US	13/758185	04-FEB-13	NA	NA
PrimeStar	US	13/681822	20-NOV-12	NA	NA
GE	US	13/782176	01-MAR-13	NA	NA
PrimeStar	US	13/775613	25-FEB-13	NA	NA
PrimeStar	US	13/600846	31-AUG-12	NA	NA

## SCHEDULE 1

<b>Owner</b>	<b>Country Id</b>	<b>Application Number</b>	<b>Application Date</b>	<b>Patent Date</b>	<b>Patent Number</b>
PrimeStar	US	13/873317	30-APR-13	NA	NA
PrimeStar	US	13/893494	14-MAY-13	NA	NA
GE	US	13/875739	02-MAY-13	NA	NA
GE	US	13/912782	07-JUN-13	NA	NA
GE	US	13/923644	21-JUN-13	NA	NA
PrimeStar	US	13/951768	26-JUL-13	NA	NA
PrimeStar	US	13/950605	25-JUL-13	NA	NA
PrimeStar	US	13/951783	26-JUL-13	NA	NA
GE and Alliance for Sustainable Energy LLC	US	61/705,546	25-SEP-12	NA	NA
GE	US	13/866,132	19-APR-13	NA	NA