

## PATENT DATABASE TESTING:

Database	Type	Openness	Responsible organisation
Espacenet	International	Yes	EPO
PATENTSCOPE	International	Yes	WIPO
Patent Public Search	National	Yes	USPTO
Lens	International	Yes	Lens
SIPO-DS	National	Yes	SIPO
DZIV	National	Yes	DZIV
Patstat	International	No	EPO

### CONCLUSION:

We tested some national and international databases. Most of them enable free access. They are mostly administered by national, regional or international offices, one belongs to a private company.

We will first compare *Espacenet* and *Patstat*, which are both administered by the EPO: both include the same data - and this is currently the largest patent data collection in the world. However, *Espacenet* has very limited functionalities, but **we would certainly recommend it to inventors who have to do the state-of-the-art search for their inventions**. We would recommend *Patstat* **to professionals (patent attorneys) and to researchers who are doing statistical analyses on patent data**. Since it requires knowledge of the SQL query language it is not very user-friendly.

*PATENTSCOPE*, administered by WIPO, is an excellent tool with several functions included and every year it is supplemented with new functions and possibilities of use, so it is constantly developing. However, data is very limited in comparison to *Espacenet*. Not all patent offices are updating *Patentscope* with their data. We would recommend the use of *PATENTSCOPE* **only for statistical**

**analyses on PCT patent applications and we especially recommend it to students who are working on their seminar papers or graduate or master theses which are connected to patent data.**

**Lens**, if what they claim is correct, has a database of comparable size to *Espacenet* (currently 146,5 million records). It is a very user-friendly tool, intuitive and with nice visualisation options (different charts and maps connected to our query appear immediately), the legal status of a patent is also clearly marked already on the first page and you don't have to look for it separately like in *Espacenet*. **We would recommend this database to all entrepreneurs who have to perform freedom-to-operate searches, checking competitors and the legal status of their patents.**

**National databases** are something that any entrepreneur or researcher who is interested in patents should start with. Above all, they are in our national languages. **We would recommend them to those who are thinking about applying for a patent and would maybe also like to start with patent drafting.** We suggest they search for some patent applications in their national databases and analyse how they are designed. Only after can they better understand patents written or translated into the English language.

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# 1. ESPACENET (EPO)

## 1.1. Search engine functions:

### BASIC "SMART" SEARCH

The smart search combines multiple functions in a single search field. Allows entering queries with or without field identifiers.

### ADVANCED SEARCH

Allows combining multiple search fields through the use of boolean operators AND, OR and NOT. Certain search fields can be further defined through the use of in-field operators ANY, ALL, PROXIMITY and =. Search fields can be grouped together and groups can be connected with boolean operators.

By: all (text fields or names; title, abstract or names), text fields (title; abstract; description; claims; title or abstract; title, abstract or claims; all text fields), names (inventors, applicants, inventors or applicants), dates (publication date), numbers (priority number, publication number, application number, all numbers), classification (IPC, CPC, CPC C-sets, IPC or CPC), other (cited documents).

### CLASSIFICATION SEARCH

A user can search by entering a keyword or a classification symbol (number). They can see the classifications, title and description.

## 1.2. Analytics functions:

ESPACENET offers a range of analytics tools to help users analyse patent data and trends, including: statistical reports (on patent applications and grants, broken down by country, technology field, and more.), citation analysis (forward, backward citations, family citations) and a map view that enables users to view the geographic distribution of patent filings and grants across different countries and regions.

### 1.3. Additional functions:

- Advanced Search
- Popup tips
- Image Viewer
- Patent documents, including patent specifications and drawings, through its image viewer.
- An “Alert” feature that enables users to receive notifications when new patents or patent applications that meet their search criteria are added to the database.

## Database search page:

The screenshot shows the Espacenet patent search interface. The search term 'solar panel' is entered in the search bar. The results page displays 580,269 results found. The top navigation bar includes 'My Espacenet', 'Help', 'Classification search', 'Results', 'Advanced search', 'Filters', and 'Popup tips'. The search results are listed in a table with columns for 'List view', 'List content', and 'Sort by'. The first four results are:

- 1. Method for the mechanical and electrical integration of at least two solar panel assemblies**  
DE3528970A1 (C2) • 1987-02-26 • LICENTIA GMBH [DE]  
Earliest priority: 1985-08-13 • Earliest publication: 1987-02-26  
Method for the mechanical and electrical integration of at least two solar panel assemblies to form a flexible, foldable solar generator, one solar panel assembly preferably consisting of four folding areas equipped with solar cells. In the folded-together state of the solar generator, two adjacent solar cell areas are preferably located opposite one another in each case. Between two ...
- 2. SOLAR ENERGY USAGE**  
WO2009149572A2 (A3) • 2009-12-17 • IDS HOLDING AG [CH]  
Earliest priority: 2008-06-10 • Earliest publication: 2009-12-18  
...The solar combination panel, comprising a solar panel and a heat exchange, has a tubular heat exchanger at the back of a solar panel (10), whereby the solar panel can always be operated in the optimal temperature range so as ... attached by gluing, are located at the rear cover film of the solar panel. Fluted metal adhesive plates (5), which ...
- 3. SOLAR AIR HEATER**  
CA2643573A1 (C) • 2007-09-07 • DOHERTY PAUL M [US]  
Earliest priority: 2006-02-28 • Earliest publication: 2007-08-30  
...This invention provides novel devices and methods for the heating of air with solar radiant energy. The devices of the ... partitions comprising a plurality of channels, increase the temperature achieved by the solar heater by 1) creating multiple, sequential sections ... the mixing of incoming cold air with the heated air of the solar air heater. La présente invention concerne des ...
- 4. Power supply for an apparatus of the entertainment sector with remote control in stand-by mode.**  
EP0685975A1 (B1) • 1995-12-06 • GRUNDIG EMV [DE]  
Earliest priority: 1994-06-03 • Earliest publication: 1995-12-06  
... contained in the television receiver, in a state of readiness. It uses a solar panel (1) coupled to an energy store (2), eg. a battery, or an electrolytic capacitor. The solar ...

Total database record coverage: (140 million patent documents; 4 AUG 2023)

The screenshot shows the top navigation bar of the Espacenet website. It includes the Espacenet logo, the search bar with the placeholder text 'Enter your search terms', and the 'Office/Language' dropdown menu. The navigation bar also contains links for 'My Espacenet', 'Help', 'Classification search', 'Results', 'Advanced search', and 'Feedback'.

Espacenet: free access to over 140 million patent documents

## Search Example:

1. *Open the database:*  
ESPACENET (14 APR 2023)
2. *Use keywords in the search field:*  
SOLAR PANEL (564 470 results)
3. *Too many hits to check, try to limit your search - use quotation marks in the search field:*  
"SOLAR PANEL" (318 457)
4. *Further filter, toggle FILTERS, select COUNTRIES (toggle Publication) and then select:*  
"EP" (European Patent Office) [country codes] (6 747)

Family  Publication



Countries (family)	▼
Languages (family)	▼
Earliest publication date (family)	▼

#### Family

Earliest priority date	▼
IPC main groups	▼
IPC subgroups	▼
CPC main groups	▼
CPC subgroups	▼
CPC assigning offices	▼
Applicants	▼
Inventors	▼

#### Publication

Applicants - country	▼
Inventors - country	▼

5. *Further filter by selecting PUBLICATION – APPLICANTS (Country) and selecting: SI (5)*
6. *Select the relevant patent to see its information:  
Building Element with Integrated Solar Heating Element (selected at random)*

The screenshot shows the Espacenet patent search interface. The search term "SOLAR PANEL" is entered in the search bar. The results page shows 6 results found. The selected patent is SI331922811, titled "AN INTEGRATED SOLAR PANEL TO A TILED ROOF". The detailed view of this patent includes the following information:

- Applicants/Inventors:** SOLARSTONE OUE [EE] + JURIMAE MATTIS [EE], KUKK MAIT [EE], AEDNIK SILVER [EE] +
- Classifications:**
  - IPC: F24S20/00; F24S25/00; H02S20/00; H02S30/00;
  - CPC: F24S20/07 (EP); F24S25/20 (EP); F24S25/33 (EP); F24S25/32 (EP); F24S25/07 (EP); H02S20/23 (EP); H02S30/10 (EP); F24S20/13 (EP); F24S20/25/016 (EP); F24S20/25/016 (EP); F24S20/25/016 (EP).
- Priorities:** EEU201600048U 2016-11-08; EP17001817A 2017-11-07
- Application:** SI2017301047 2017-11-07
- Publication:** SI33192281 2019-12-31
- Published as:** DK3319228T3; EE01446U1; EP3319228A1; EP3319228B1; ES2750207T3; LT3319228T; PL3319228T3; PT3319228T; SI331922811

The selected patent contains information on:

1. Bibliographic Data
  - 1.1. Applicants
  - 1.2. Inventors
  - 1.3. Classifications
    - 1.3.1. IPC
    - 1.3.2. CPC
  - 1.4. Priorities (Number, Date)
  - 1.5. Application (Number, Date)
  - 1.6. Publication (Number, Date)
  - 1.7. Published as (Number)
  - 1.8. Abstract (in ENG, GER, FRE)
  - 1.9. Drawings and images
2. Description
  - 2.1. Links to "Register" (European Patent Register) and "Global Dossier" (More documentation and details)
  - 2.2. Field of the Invention
  - 2.3. Technical Problem
  - 2.4. State of the Art
  - 2.5. Description of the Invention
3. Claims
  - 3.1. Original Claims
  - 3.2. Claims Tree
4. Drawings
5. Original Document
  - 5.1. Bibliographic Data
  - 5.2. Description
  - 5.3. Claims
  - 5.4. Drawings

- 5.5. Search Report
- 6. Citations
  - 6.1. Cited Documents
    - 6.1.1. The Patent Itself
    - 6.1.2. The Patent Family
- 7. Legal events
- 8. Patent family
  - 8.1. [Link to CCD Viewer \[citation viewer\]](#)
  - 8.2. Simple Family
  - 8.3. INPADOC Family
  - 8.4. Latest Legal Events



## 2. PATENTSCOPE (WIPO)

### 2.1. Search engine functions:

#### SIMPLE SEARCH

Search by keywords, phrases, numbers on the front page, any field, full text, ID/number, international class. (IPC), names, or publication date.

#### ADVANCED SEARCH

Allows building complex queries with an unlimited number of search terms, boolean, proximity and range operators, as well as wildcards which allow users to refine their searches to find the most relevant documents.

#### FIELD COMBINATION SEARCH

Allows combining many different predefined search fields by using the operators AND or OR.

#### CROSS-LINGUAL EXPANSION

Allows searching with the help of automatic translation and synonym proposal. The user defines the search term, the engine provides synonyms and translations and then searches through all the available documents, regardless of the language of the query.

#### CHEMICAL COMPOUNDS *[WIPO account required]*

- *convert structure: search by compound name (accepted, commercial, CAS, IUPAC), int. nonproprietary name, InChI, SMILES*
- *upload structure: search by uploading a structure file (MOL) or an image*
- *structure editor: search by drawing the formula of the chemical*

### 2.2. Analytics functions: yes

The PATENTSCOPE engine includes several tools for analysing patent documents, including the ability to generate patent family trees, view legal status information, and perform citation analysis.

## 2.3. Additional functions: yes

- Provides translation into several other languages (English, French, Spanish, Chinese, Japanese, and Korean).
- Once a user has identified a patent document of interest, the engine allows them to view, retrieve and download the full text of the document, including any drawings or diagrams.
- Has features for collaboration and sharing, such as the ability to save and organise patent documents into folders, share documents with colleagues, and create alerts for new publications that match specific search criteria.

### Database search page:

The screenshot shows the WIPO PATENTSCOPE search results page. The search query is "FP:(\"SOLAR PANEL\")". The results are sorted by Relevance, and there are 69,944 results. The first result is for patent 215528943, titled "MOVABLE FOLDING SOLAR PANEL", with an international class of H02S 30/20 and an applicant of SHENZHEN SUNGOLD SOLAR CO., LTD. The second result is for patent 210807141, titled "SOLAR PANEL MECHANISM", with an international class of H02S 20/00 and an applicant of SHENZHEN NB-INNOVATIONS TECHNOLOGY CO., LTD.

Total database record coverage: 112 million patent documents (AUG 2023)

The screenshot shows the PATENTSCOPE Simple Search page. It includes a search bar with a dropdown menu for "Field" set to "Front Page" and a search input field containing "Search terms...". Below the search bar, there is a "Query Examples" link. The page also contains a paragraph of text: "Using PATENTSCOPE you can search 112 million patent documents including 4.7 million published international patent applications (PCT). Detailed coverage information PCT publication 31/2023 (03.08.2023) is now available here. The next PCT publication 32/2023 is scheduled for 10.08.2023. More Check out the latest PATENTSCOPE news and features PATENTSCOPE Live Chat : every Monday from 1:00 PM to 5:00 PM CET".

### Search Example:

1. *Open the database*  
WIPO PATENTSCOPE (14 APR 2023)

2. Select "ANY FIELD" next to the search bar, use keywords:  
SOLAR PANEL (351 392)
3. Too many hits to check, try to limit your search by using quotation marks:  
"SOLAR PANEL" (163 564)
4. Try to use filters to reduce the number of results or use the advanced search:

PATENTSCOPE Advanced Search ∨

"SOLAR PANEL"

Query Assistant  Query Examples

Expand with related terms

Offices All	▼
Languages English	▼
<input checked="" type="checkbox"/> Stemming	
<input type="checkbox"/> Single Family Member	
<input type="checkbox"/> Include NPL	

5. To further filter the results, click Offices underneath the search bar and select Italy from among the Asia-Europe offices list, then click Apply. This should display a manageable amount of hits (14).
6. Select the relevant patent to see its information:  
WO2022022778 - SOLAR ARRAY WITH SERVICE ROBOT THAT CAN TRAVEL BETWEEN SOLAR PANELS (selected at random)

WIPO PATENTSCOPE Search

14. WO2022022778 - SOLAR ARRAY WITH SERVICE ROBOT THAT CAN TRAVEL BETWEEN SOLAR PANELS

PCT Biblio. Data Description Claims Drawings ISR/WOSA/A17[2][a] National Phase Patent Family Notices Documents

Publication Number: WO/2022/022778  
 Title: [EN] SOLARFIELD MIT ZWISCHEN SOLARPANELN VERFÜGBAREN SERVICEROBOTER  
 [DE] SOLAR ARRAY WITH SERVICE ROBOT THAT CAN TRAVEL BETWEEN SOLAR PANELS  
 [FR] PAYSAN SOLAIRE POUR UN ROBOT DE SERVICE POURANT SE DEPLACER ENTRE DES PAINCEAUX SOLAIRES

Publication Date: 02.02.2022

International Application No.: PCT/DE2021/100844

International Filing Date: 28.07.2021

IPC: F24S 40/20 (2018.1) F24S 30/425 (2018.1)  
 H02S 40/70 (2014.1) H02S 20/32 (2014.1)

CPC: B08B 1/00 B26J 11/008 B25J 11/008 F24S 30/425  
 F24S 40/20 H02S 20/30

Applicants: FREINELL OMNIS (DE/DE)  
 Ludwigstraße 9 79189 Karlsruhe, DE

Inventors: HEITING, Max

Agents: DEITZ TRUCKENHÖLLER LUCHT CHEIST PATENTANWÄLTE  
 PACTORSTR. 109 WILHELM 3/7 72764 Heudingen, DE

Priority Data: 10 2020 120 0302.1 29.07.2020 DE

Publication Language: German (de)

Filing Language: German (de)

Designated States: View all

Abstract: [EN] Die vorliegende Erfindung bezieht sich auf einen an den Seitenrändern der Solarpaneele (2) angeordneten Fahrbahn, auf welcher der Serviceroboter (3) auffahren, sich mithilfe geeigneter Drehmittel auf der Stelle drehen und eine Zeile weiterfahren kann. Auf diese Weise kann der Serviceroboter (3) vollständig autonom verfahren. Dabei ist der Fahrbahn für jede Reihe angrenzender Solarpaneele (2) eine Drehöffnung (7) zugeordnet, wobei der Serviceroboter (3) einen in diese Drehöffnung (7) austretenden Drehmechanismus (12) aufweist, oder ist der Fahrbahn aus mehreren Teilbahnen gebildet, welche im Bereich der Seitenränder der Solarpaneele (2) jeweils einen Drehring (8) bilden und der Drehring (8) um eine durch denselben verlaufende, senkrechte Drehachse drehbar ist. [DE] Die Erfindung bezieht sich auf eine Fahrbahn, die an den Endrändern der Solarpaneele (2) angeordnet ist und auf der ein Serviceroboter (3) auffahren, sich mithilfe geeigneter Drehmittel an der Stelle drehen und eine Zeile weiterfahren kann. Auf diese Weise kann der Serviceroboter (3) vollständig autonom verfahren. Dabei ist der Fahrbahn für jede Reihe angrenzender Solarpaneele (2) eine Drehöffnung (7) zugeordnet, wobei der Serviceroboter (3) einen in diese Drehöffnung (7) austretenden Drehmechanismus (12) aufweist, oder ist die Fahrbahn aus mehreren Teilbahnen gebildet, welche im Bereich der Seitenränder der Solarpaneele (2) jeweils einen Drehring (8) bilden und der Drehring (8) um eine durch denselben verlaufende, senkrechte Drehachse drehbar ist. [FR] L'invention concerne un trajet de déplacement agencé sur les faces d'extrémité des panneaux solaires (2) et sur lequel un robot de service (3) peut se déplacer, peut tourner en place au moyen de moyens de rotation appropriés et peut continuer sur une ligne. De cette manière, le robot de service (3) peut se déplacer de manière totalement autonome. Pour chaque rangée de panneaux solaires adjacents (2), une ouverture de centrage (7) est associée au trajet de déplacement, le robot de service (3) présentant une broche de centrage (12) qui peut pénétrer dans l'ouverture de centrage (7) ou le trajet de déplacement est constitué de multiples sous-sources qui forment une table rotative respective (8) dans la région des faces d'extrémité des panneaux solaires (2) et la table rotative (8) peut tourner autour d'un axe de rotation perpendiculaire s'étendant à travers la table rotative.

Fig 5

PermaLink Machine translation

The selected patent contains information on:

1. PCT biblio. Data
  - 1.1. Title
  - 1.2. Abstract
  - 1.3. Publication Number
  - 1.4. Publication Date
  - 1.5. International Application No.
  - 1.6. International Filing Date
  - 1.7. IPC
  - 1.8. CPC
  - 1.9. Applicants
  - 1.10. Inventors
  - 1.11. Agents
  - 1.12. Priority Data
  - 1.13. Publication Language
  - 1.14. Filing Language
  - 1.15. Designated States
2. Description
3. Claims
4. Drawings (*This specific case has 3 drawings.*)
5. ISR/WOSA/A17[2][a] (*International search report and a Written opinion of the International Searching Authority*)
6. National Phase
7. Patent Family
8. Notices
9. Documents
  - 9.1. International Application Status

- 9.2. Published International Application
- 9.3. Search and Examination-Related Documents
- 9.4. Related Documents on file at the International Bureau

## 3. Patent Public Search (USPTO)

### 3.1. Search engine functions:

#### QUICK LOOKUP

The simplest way to search for a patent in the databases covered by the USPTO Patent Public Search.

By: Patent or Publication Number

#### BASIC SEARCH

Allows users to combine up to two search criteria (one-word only respectively) by using boolean operators "AND", "OR" or "NOT". The search defaults to "everything", which will search all fields in patents and published patent applications that can be found in all the databases covered by the USPTO Patent Public Search.

By: Everything, Applicant Name, Assignee Name, Attorney Agent/Firm, Attorney Name, Patent/Application Publication Number, Inventor Name, Publication Date

#### ADVANCED SEARCH

Allows formulation of complex queries that can search for very specific or very loose strings of information. Boolean operators ("AND", "OR", "NOT", "XOR"), wildcards (?, \$, \*), and proximity operators (SAME, NEAR, ADJACENT, WITH) are all allowed.

### 3.2. Analytics functions: yes

The database offers various analysis tools that can help users analyse patent data and trends. For example, users can view patent statistics and trends by classification, inventor, assignee, and more.

### 3.3. Additional functions: yes

- Advanced Search
- Users can search for patents based on their classification, which is a system used to organise patents based on the subject matter they cover.
- The database provides an image viewer that allows users to view patent images and drawings.
- Citation searching
- Advanced Search provides information on how many hits per each term used in the search field

## Database search page:

uspto Patents Trademarks Fees and payment Contact Us MyUSPTO Sign in

Patent Public Search

Go to Advanced Search Resources

### Patent Public Search Basic (PPUBS Basic)

**Quick lookup**

Patent or Publication number  
For example: 0123456 or 20210123456

**OR**

**Basic search**

Search  For

Operator

Search  For

**Query building guidance**

To start a quick lookup, enter a single patent or publication number and select the Search button. To start a basic search, select a search field, enter your search term, and select the Search button.

For example, to search for the keywords 'horse blanket', select Everything from both of the Basic Search dropdowns. Type 'horse' in the top text box, select 'AND' from the Operator dropdown, type 'blanket' in the bottom text box, and select the Search button.

Formatting rules for searching are as follows:

1. One word per text box
2. If using the Patent/Application Publication number field, add leading zeros:  
Before Patent Numbers with 6 digits or less to make 7 total digits  
-ex: 123456 should be entered as 0123456  
-ex: 12345 should be entered as 0012345  
After the year to make 11 total digits for Application Publication numbers:  
-ex: 2021123456 should be entered as 20210123456
3. If using Publication Date, the date format should be YYYYMMDD (e.g. 20221230)

Total database record coverage: uncertain

### Search Example:

1. *Open the database (25 APR 2023)*  
[Uspto - Patent Public Search Database of the USA](#)
2. *Go to basic search and use a keyword (PPUBS does not allow more than one keyword per text box):*  
SOLAR and PANEL (142 724)
3. *Get too many results to check, try to limit your search by using the advanced search which you can access in the upper-right corner of the website. Use the same keywords as before (not that advanced search allows using multiple keywords and phrases at the same time), but add the apostrophes:*  
"SOLAR PANEL" (77 170)
4. *Let's say you are interested specifically in self-cooling solar panels, make sure to select the Default Operator AND under Options and add keywords to the text box:*  
"SOLAR PANEL" "SELF-COOLING" (57)
5. *You can further reduce the number of results by changing the Default Operator to SAME\* (11) or NEAR\*\* (3)*
6. *Select the relevant patent to see its information*  
[US 20230087626 A1 Recyclable and Self-cooling Solar Panels](#)

\* SAME returns hits for the keywords or keyword combinations that occur within the same paragraph.

\*\* NEAR returns hits for the keywords or keyword combinations that are adjacent to each other in whatever word order. For example, [solar panel self-cooling] or [self-cooling solar panel] would both count as a hit.



The screenshot displays the Patent Public Search 2.1.1 interface. The search term 'SOLAR PANEL' is entered in the search bar. The search results table shows 16 results, with the selected patent being US 20230087626 A1. The detailed view of this patent includes the following information:

**RECYCLABLE AND SELF-COOLING SOLAR PANELS**

**DOCUMENT ID**: US 20230087626 A1  
**DATE PUBLISHED**: 2023-03-23

**INVENTOR INFORMATION**

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kim, Young-Hwa	Hudson	WI	N/A	US

**APPLICATION NO**: 17/795988  
**DATE FILED**: 2021-01-28

**DOMESTIC PRIORITY (CONTINUITY DATA)**  
 us-provisional-application US 62968460 20200131  
 us-provisional-application US 63062866 20200807

**US CLASS CURRENT:**  
 136/246

**CPC CURRENT**

TYPE	CPC	DATE
CPCI	H 02 S 20/23	2014-12-01
CPCI	H 01 L 31/0488	2013-01-01
CPCI	H 01 L 31/048	2013-01-01
CPCI	H 02 S 30/10	2014-12-01
CPCI	H 02 S 40/425	2014-12-01
CPCA	Y 02 E 10/50	2013-01-01
CPCA	H 02 S 20/10	2014-12-01
CPCA	Y 02 B 10/10	2013-01-01

The selected patent contains information on:

1. Bibliographic Data
  - 1.1. Title
  - 1.2. Document ID
  - 1.3. Date Published
  - 1.4. Inventor Information
    - 1.4.1. Name
    - 1.4.2. City
    - 1.4.3. State
    - 1.4.4. ZIP Code
    - 1.4.5. Country
  - 1.5. Application Number
  - 1.6. Date Filed
  - 1.7. Domestic Priority (Continuity Data)
  - 1.8. US Class Current
  - 1.9. CPC Current
    - 1.9.1. Type
    - 1.9.2. CPC
    - 1.9.3. Date
2. Abstract
3. Background/Summary
  - 3.1. Cross-reference to Related Applications
  - 3.2. Background
  - 3.3. Summary
4. Description
  - 4.1. Brief Description of the Figures
  - 4.2. Detailed Description
5. Claims

## 4. Lens

### 4.1. Search engine functions:

#### BASIC SEARCH

The basic search field can be accessed directly on the front page. Easy access to CPC, IPC and US classifications display and search.

Search by keyword or patent field, limit the search by date, flag, and/or jurisdiction.

#### STRUCTURED SEARCH

Allows selecting from the provided search fields and combining them with AND or OR.

By: keywords in specific fields, date range (published, filed, priority), classification (CPC, IPC, US), ORCID lookup, jurisdictions, document type, query language, and other options.

#### QUERY TEXT EDITOR

Allows formulation of long strings of search queries through the use of boolean operators and wildcards, fuzziness and proximity searches.

#### PROFILES TAB

Allows users to search for authors and inventors with an ORCID ID to see their profiles.

### 4.2. Analytics functions: yes

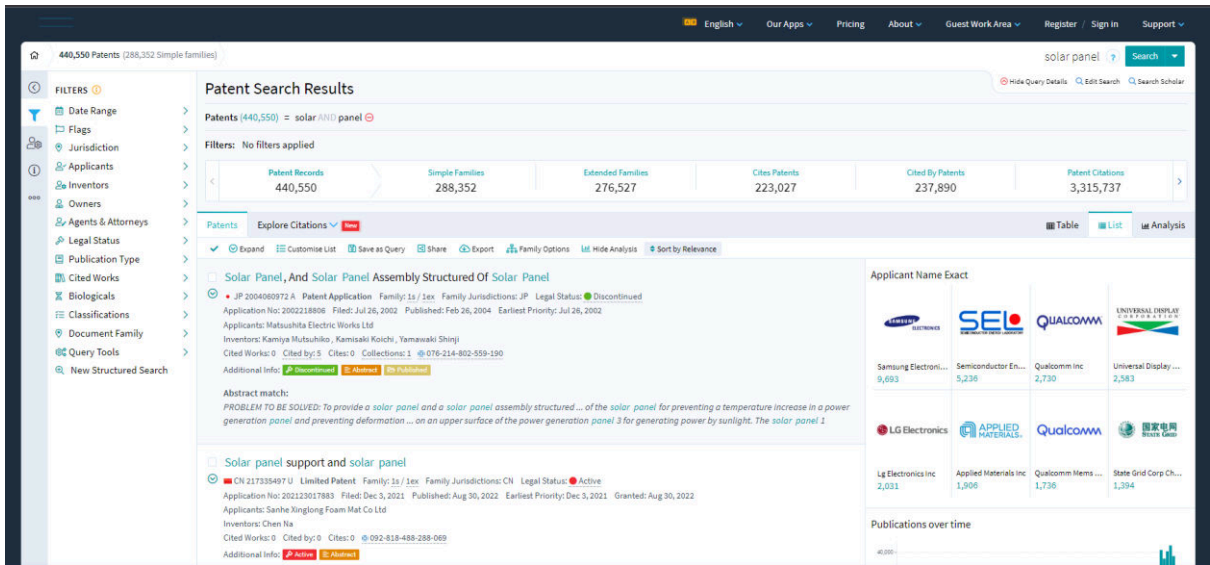
Lens offers analytics tools that enable users to analyse and visualise research data, including citation analysis and trends, co-authorship networks, and more. In the Analysis tab of the Search Results page, several tools for analysing patent documents are included: patent document over time, patent document by published, filed and granted date, patent document by type, patent document by legal status, top applicants, top owners, top CPC classification codes, patent document by Jurisdiction, top inventors, top agents and attorneys, top cited patents.

### 4.3. Additional functions:

It provides a range of useful functions for patent research, including advanced search capabilities (using a wide range of criteria, including author, publication date, keywords, and more), translation features (enables users to translate research papers and patents into multiple languages) and API (Application Programming Interface) Access (enables developers to build custom applications and tools using Lens data). Lens also offers a patent search feature that

enables users to search for records for patents from various countries and regions, including the US, Europe, and Japan.

*Database search page:*



Total database record coverage: 16 231 616 (4 AUG 2023)



**Search Example:**

1. *Open the database:*  
The Lens
2. *Use keywords:*  
Solar panel (or reusable AND\* (plastic AND\* bag )) (428 794)  
Limit your search by selecting Publication type under Filters and then selecting: Granted patents (90 226) and clicking Refine.

\* Note that AND, if capitalised, acts as a boolean operator and not a keyword.

**FILTERS** ⓘ

- 📅 Date Range >
- 🚩 Flags >
- 📍 Jurisdiction >
- 👤 Applicants >
- 👤 Inventors >
- 👤 Owners >
- 👤 Agents & Attorneys >
- 🔗 Legal Status >
- 📄 Publication Type >
- 📖 Cited Works >
- 🧬 Biologicals >
- 📋 Classifications >
- 📍 Document Family >
- ⚙️ Query Tools >
- 🔍 New Structured Search

3. Further refine the results list by selecting the Filter “Jurisdiction” and then: Slovenia (28)

4. Select the relevant patent to see its information  
SI 24909 A Bionic Cleaner of Photovoltaic and Solar Panels

Patent Results 140-156-068-489-357

Explore Science, Technology & Innovation... Search

**Bionic cleaner of photovoltaic and solar panels**

SI 24909 A Granted Patent Family: 11 / 1ex Family Jurisdictions: SI Legal Status: Active

Application No: 201500180 Filed: Jun 30, 2015 Published: Jul 29, 2016 Earliest Priority: Jun 30, 2015 Granted: Jul 29, 2016

Applicants: Visoka šola Na Ptuju

Inventors: Franc Jus, Marjan Bezjak

Cited Works: 0 Cited by: 0 Cites: 0 140-156-068-489-357

Additional Info: Active | Released

Summary Family Info Legal Info Citations Collections

Share Patent Search Family Add to Collection Download Citation

The full document isn't yet available to us from the patent office.

**Abstract**

Bionski čistilec: foto-napetostnih in solarnih panelov je sestavljen iz nosilnega ohišja, oprijemal, nosilca oprijemal, distančnika nosilca oprijemal, pomočnega mehanizma, servo elektromotorja, akumulatorja in elektronike. Na vrhu je lahko nameščen lastni fotovoltaični panel, ki nam služi za delno samooskrbo. Pomočni mehanizem nam preko sistema vodi mehansko povezuje pogonski servo elektromotor z nosilci oprijemal. Na sprednji strani se nahaja nosilec čistilnega sistema in na njega nameščen čistilnisistem. Za pomik bionskega čistilca panelov se uporabi vakuumski sistem oprijema, ki je ponazorjen z oprijemom kuščarja, podvrste gekon. Pomik čistilca se izvede tako, da servo elektromotor premakne pomočni mehanizem. Najprej se pritrdita priveska (3) in (6), medtem ko servo elektromotor (14) s pomočnim mehanizmom (13) poskrbi za premik priveskov (4) in (5). V skrajnem položaju se aktivnost priveskov zamenja in servo elektromotor (17) premakne mehanski sistem v drugo skrajno lego. To se dogaja izmenjeje intako se čistilec pomika.

**Claims**

Information currently unavailable.

**Applicants**

Visoka šola Na Ptuju

**Inventors**

Franc Jus  
Marjan Bezjak

**IPC Classifications**

A47L11/00

**Document Preview**

No image yet

**History**

Publication: Jul 29, 2016

SI 24909 A

Application: Jun 30, 2015

SI 24909 A

Priority: Jun 30, 2015

Feedback

The selected patent contains information on:

1. Bibliographic information
  - 1.1. Title
  - 1.2. Patent Number at the office of the selected jurisdiction
  - 1.3. Publication Type
  - 1.4. Family
  - 1.5. Family Jurisdiction
  - 1.6. Legal Status
  - 1.7. Application Number
  - 1.8. Filing Date
  - 1.9. Publishing Date
  - 1.10. Earliest Priority Date
  - 1.11. Grant Date
  - 1.12. Applicant(s) Name(s)
  - 1.13. Inventor(s) Name(s)
  - 1.14. Cited Works
  - 1.15. Cited By
  - 1.16. Cites
  - 1.17. Lens.org Number
  - 1.18. Additional Info
2. Summary
  - 2.1. Abstract
  - 2.2. Claims
  - 2.3. Applicants
  - 2.4. IPC Classification
  - 2.5. Inventors
3. Family Info
  - 3.1. Simple Family
  - 3.2. Extended Family
4. Legal Info
  - 4.1. INPADOC Legal Events
5. Citations
6. Collections

## 5. SIPO-DS - Information database of SIPO (Urad Republike Slovenije za intelektualno lastnino) (Slovenian Intellectual Property Office)

### 5.1. Search engine functions:

#### BASIC (FIELD) SEARCH

Allows execution of a basic search from among the granted patents by using a single criterion or a combination of criteria that are, by default, combined with the boolean operator AND.

By: International Patent Classification (IPC), Number (Application, Publication), Document Kind, Publication Date, Title, Abstract, Owner, and Inventor.

#### ADVANCED SEARCH (= query builder)

Allows searching by combining various criteria with the use of boolean operators AND, OR, and/or NOT.

By: IPC, Publication Number, Document Kind, Publication Date, Application Number, Application Date, Legal Status, Title, Abstract, Inventor, Inventor Country, Owner, Owner Country, and Representative.

### 5.2. Analytics functions: no

No analytics functions are immediately available on the website, but users can still extract data from the database and analyse it using external tools or software.

### 5.3. Additional functions: yes

Provides a range of useful functions for patent research, including advanced search capabilities, legal status information, and image viewing.

***Information database landing page:***



## Information databases of Slovenian Intellectual Property Office

[Patents](#)

**Granted patents**  
[Last update: 04 August 2023]

[Supplementary Protection Certificates](#)

**Published applications and granted SPCs**  
[Last update: 04 August 2023]

[Industrial Designs](#)

**Published applications and registered industrial designs**  
[Last update: 04 August 2023]

[Marks](#)

**Applications and registered marks**  
[Last update: 04 August 2023]

Type of query:  Simple  Advanced

### Patent database search page:

#### Patents - Information database contains bibliographic data of granted patents

Query:

Field Name	Code	Term
<a href="#">Int. Patent Class.</a>	IPC =	
<a href="#">Number</a>	NUM =	
<a href="#">Document Kind</a>	KD =	
<a href="#">Publication Date</a>	PD =	
<a href="#">Title, Abstract</a>	TI, AB =	SOLAR PANEL
<a href="#">Owner</a>	HLD =	
<a href="#">Inventor</a>	IN =	

Last update: 30 April 2023



Clear

Select

Access to other information databases: [SPC](#) | [Industrial Designs](#) | [Marks](#)

Total database record coverage: uncertain

### Search Example:

1. *Open the database (26 APR 2023)*  
[Sipo.ds](#)
2. *In the "Title, Abstract" field, use keywords*  
SOLAR PANEL (17)

✓ Hit 1 through 17 out of 17 selected records

[New query](#)

Query: TI,AB=solar panel

1. [21528](#) AD **PANEL** WITH ON/OFF SENSOR FOR ILLUMINANTS AND MEASURING THROUGHPUT AS WELL AS ILLUMINATION BASED ON **SOLAR** CELLS  
KOBILCA OLIVER, SI (Slovenia)
2. [21769](#) ROADSIDE PYLON WITH LIGHT-REFLECTORS AND ADDITIONAL ILLUMINATION  
VALANT JANEZ S.P., SI (Slovenia)
3. [22069](#) AD **PANEL** WITH ON/OFF SENSOR FOR ILLUMINANTS, FLOW-RATE SENSOR, INCLUDING OPERATION CONTROLLER, MODEM FOR THE TRANSFER OF INFORMATION, AND **SOLAR** CELL BASED ILLUMINATION  
OLIVER KOBILCA, SI (Slovenia)
4. [22418](#) HEAT INDUCED PANEL  
Trimo d.d., SI (Slovenia)
5. [22641](#) SOLAR COLLECTOR WITH ABSORPTION PIPE  
Jereb Janez, SI (Slovenia)
6. [23441](#) HYBRID SYSTEM FOR POSITIONING PHOTOVOLTAIC PANELS  
PROMAH, projektiranje vetrnih elektram in malih hidroelektram, d.o.o., SI (Slovenia)
7. [1811245](#) Modular **solar panel**  
Hydro Aluminium Deutschland GmbH, DE (Germany)
8. [2032299](#) DEVICE FOR VACUUM TIGHT SOLDERING AN EVACUATED FLAT **PANEL SOLAR** COLLECTOR  
SRB Energy Research SARL, CH (Switzerland)  
European Organisation for Nuclear Research CERN Education & Technology Transfer, CH (Switzerland)
9. [2310763](#) EVACUATED **SOLAR PANEL** WITH A NON EVAPORABLE GETTER PUMP  
SRB Energy Research SARL, CH (Switzerland)  
European Organization For Nuclear Research Cern, CH (Switzerland)
10. [2517265](#) **SOLAR PANEL** COMPRISING A PRINTED CIRCUIT AND METHOD OF PRODUCTION AND USE THEREOF  
Energetica Holding GmbH, AT (Austria)
11. [2519765](#) **SOLAR PANEL TUBE**  
Aktarus Group S.r.l., IT (Italy)

### 3. Select the relevant patent to see its information

#### Hybrid Solar Panel for Producing Electrical Energy and Thermal Energy

✓ Hit 14 out of 17 selected records

[Hit list](#) [Previous hit](#) [Next hit](#)**Patent in force**

- (51) Int. Cl.: **H02S 40/00 H01L 31/048**
- (11) Publication Number: **3866335**
- (21) Application Number: 201930368
- (22) Application Date: 20.12.2019
- (86) PCT Application: 20.12.2019 WO PCT/ES2019/070870
- (96) EP Application: 20.12.2019 EP 19856449.4 [European patent register](#)
- (87) PCT Publication: WO 2020/141241, 09.07.2020 [Patentscope](#)
- (97) EP Publication: EP 3866335 A1, 18.08.2021 [European publication server PDF](#)  
EP 3866335 B1, 03.08.2022 [European publication server PDF](#)
- (30) Priority: 04.01.2019 ES 201930007
- (46) Claims Published: 30.12.2022 (T1 - Translation of claims of European patent) [PDF](#)
- (72) Inventor: DEL AMO SANCHO Alejandro, 50196 La Muela / Zaragoza, ES (Spain);  
CANADA GRACIA Marta, 50196 La Muela / Zaragoza, ES (Spain);  
ZARATE AVILA Vicente, 50196 La Muela / Zaragoza, ES (Spain)
- (73) Owner: **ABORA ENERGY, S.L.**,  
P.I. Malpica, Calle C. Parcela 102-B, 50016 Zaragoza, ES (Spain)
- (74) Representative: ITEM d.o.o. Zastopniška pisarna za patente in blagovne znamke,  
Resljeva 16, 1000 Ljubljana, SI (Slovenia)
- (54) Title: **HYBRID SOLAR PANEL FOR PRODUCING ELECTRICAL ENERGY AND THERMAL ENERGY**

## Additional information:

Filed by SIPO on 28.10.2022

Renewal fee for the patent for the 4th year is due on 20.12.2022

The selected patent contains information on:

1. International Classification
2. Publication Number
3. Application Number
4. Application Date
5. PCT Application
6. EP Application
7. PCT Publication
8. EP Publication
9. Priority



10. Claims Published
11. Inventor
12. Owner
13. Representative
14. Title
15. Additional Information

## 6. DZIV - e-Register of the DZIV (Državni zavod za intelektualno vlasništvo Republike Hrvatske) (State Intellectual Property Office of the Republic of Croatia)

### 6.1. Search engine functions:

#### ADVANCED SEARCH

Search by combining up to six conditionals from the provided list of criterions.

By: Registration number, Croatian title, English title, patent application publication date, european patent publication date, IPC, inventor, applicant/holder, applicant/holder (country), filing date, former FPO application date/number, European patent application number/publication number/date/publication date, priority country/organisation/app. number/app. date, PCT - application number/application date/publication number/publication date, representative, abstract in Croatian

### 6.2. Analytics functions: yes

The database also provides some analytics tools that can help users analyse patent data and trends. For example, the database offers a graphical representation of the number of patent and utility model filings over time, as well as a breakdown of patent filings by technology field.

### 6.3. Additional functions: yes

Provides a range of useful functions for patent research, including advanced search capabilities (based on various criteria, such as title, applicant name, inventor name, filing date, and more), legal status information (including information on their grant, expiry, and renewal), and image viewing (patent specifications and drawings), alerts, statistics on patent and utility model filings (number of filings, grant rates) as well as some analytics tools to help users analyse patent data and trends.

## Patent database search page:

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Search  
Search by topic: Choose topic

ABOUT SIPO INTELLECTUAL PROPERTY PROTECTION SIPO INFORMATION SERVICES **E-SERVICES** EDUCATION NEWS AND NOTIFICATIONS IP LEGISLATION FORMS AND PUBLICATIONS FREQUENTLY ASKED QUESTIONS (FAQ)

e-services / e-Registers of Industrial Property / Patents / Utility Models

### Patents and Utility Models

Data last revised on 04 August 2023

**Search instructions**

Query:

English Title	=	solar panel	Example
Croatian Title	=		Example
Patent Application Public	=		Example
European Patent Public	=		Example
IPC	=		Example
Former FPO Application	=		Example

Search Clear

E-mail Print

Information Services for Industrial Property Database Search  
Classifications  
The Croatian Intellectual Property Gazette  
Guidelines for search and examination

Total database record coverage: uncertain

### Search Example:

1. *Open the database:*  
[Patents and Utility Models](#)
2. *From a drop-down menu, select "English Title" and use keywords:*  
SOLAR PANEL\* (3)  
*[note that the search will not display any results if you omit the asterisk at the end of the keyword]*
3. *Select the relevant patent to see its information*

P20180205: Solar Panel Comprising a Printed Circuit and Method of Production And Use Thereof

[Open in HR Espacent](#)**(54) SOLARNA PLOČA KOJA SADRŽI TISKANU PLOČICU, TE POSTUPAK NJEZINE PROIZVODNJE I UPOTREBE****Basic data**

(11) Registration Number:	<b>P20180205</b> (Validated european patent)	(10) HR P20180205 T1
(21) File number:	<b>P20180205T</b>	
(22) Date of filing the request:	<b>05.02.2018</b>	
(54) English Title:	<b>SOLAR PANEL COMPRISING A PRINTED CIRCUIT AND METHOD OF PRODUCTION AND USE THEREOF</b>	
(51) IPC:	<b>H01L 31/02</b> (2006.01) <b>H02S 40/34</b> (2014.01)	
(73) Holder(s):	<b>1. Energetica Holding GmbH</b> , Adi-Dassler-Gasse 6, 9073 Klagenfurt-Viktring, AT	
(72) Inventor(s):	<b>1. René Battistutti</b> , Paulinenstraße 7/4, 9020 Klagenfurt, AT	
(74) Representative:	<b>ZMP IP d.o.o.</b> , Baruna Trenka 7, 10000 Zagreb, HR	
(30) Priority Data:	(31) 102009060604 (32) 23.12.2009 (33) DE	
(86) PCT Application Number and Date:	<b>PCT/EP2010007910</b> ; 23.12.2010	
(87) PCT Publication Number and Date:	<b>WO2011078418</b> ; 30.06.2011	
(96) Number of the European patent application:	<b>EP 10803242.6</b> ; 23.12.2010	
(97) Publication data of the European patent:	<b>EP 2517265</b> , 08.11.2017, de	
(46) Publication Date of Translation of a European Patent Claims and the Gazette Number:	<b>01.06.2018, HGIV 11/2018</b>	
Annual fee:	<b>16.12.2022</b> for the 13th year	

**Additional data**

The selected patent contains information on:

1. Office
2. Date of last data revision
3. Title
4. Basic Data
  - 4.1. Registration Number
  - 4.2. File Number
  - 4.3. Date of Filing the Request
  - 4.4. English Title
  - 4.5. IPC
  - 4.6. Holder(s)
  - 4.7. Inventor(s)
  - 4.8. Representative
  - 4.9. Priority Data
  - 4.10. PCT Application Number and Date
  - 4.11. PCT Publication Number and Date
  - 4.12. Number of the European Patent Application
  - 4.13. Publication Data of the European Patent
  - 4.14. Publication Date of Translation of a European Patent Claims and the Gazette Number
  - 4.15. Annual Fee
5. Additional Data

## 7. PATSTAT online (free trial, partially tested) (EPO)

### 7.1. Search engine functions:

The PATSTAT product line consists of two individual databases. They are available as a bulk data set or via PATSTAT Online, a web-based interface to the databases - only accessible through prior registration for a free trial or a paid version. With PATSTAT Online, users can run queries in the databases, conduct statistical analyses, visualise the data and download it for offline use.

While PATSTAT enables all possible statistical analyses, knowledge of SQL query language is mandatory, which might be a limiting factor to most basic users.

### 7.2. Analytics functions:

Analytics: PATSTAT Online offers a range of analytics tools to help users analyse patent data and trends, including:

- **Statistical Reports:** PATSTAT Online provides statistical reports on patent applications and grants, broken down by technology field, applicant type, and more.
- **Citation Analysis:** PATSTAT Online enables users to view and analyse citation data for patents, including forward and backward citations, family citations, and more.
- **Co-assignee Network:** PATSTAT Online provides a co-assignee network tool that enables users to visualise the connections between inventors, applicants, and other assignees of patents, helping to identify potential collaboration opportunities or infringement risks.

### 7.3. Additional functions:

- **Advanced Search** (Database provides a powerful search engine that enables users to search for patents from over 100 countries worldwide based on various criteria, such as inventor name, applicant name, publication date, and more.)
- The database also provides information on the legal status of patents, including information on their grant, expiry, and renewal. And it allows users to download patent data in various formats, including Excel, CSV, and XML, for further analysis and integration with other tools.