

PATSTAT FOUNDATIONS

EPO'S FLAGSHIP PRODUCT FOR STATISTICAL ANALYSIS

GEERT BOEDT | PATENT INTELLIGENCE – DATA TRANSFORMATION | NOVEMBER 2023

“Without data, you're just another person
with an opinion.”

W. Edwards Deming

“Without an opinion, you're just another person
with data.”

Milo Jones and Philippe Silberzahn (Forbes)



Photo courtesy of The W. Edwards Deming Institute®

SEARCHING

Search Report



LANDSCAPING

Analysis Report



Limited list of patents





Unlimited sample of patents

SEARCHING

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	WO 2022/012739 A1 (GENERAL ELECTRIC RENOVBLES ESPANA SL [ES]) 20 January 2022 (2022-01-20)	1-6, 12, 14, 15	INV. F03D7/02 F03D80/00 G01V1/00
Y	* paragraphs [0006] - [0033], [0043] - [0101]; figures 1, 3, 4 *	7-11, 13	
X	US 2022/025862 A1 (WEGMANN HARALD [DE] ET AL) 27 January 2022 (2022-01-27) * the whole document *	1-3, 14, 15	
Y	SUN C ET AL: "Bi-directional vibration control of offshore wind turbines using a 3D pendulum tuned mass damper", MECHANICAL SYSTEMS AND SIGNAL PROCESSING, ELSEVIER, AMSTERDAM, NL, vol. 105, 22 December 2017 (2017-12-22), pages 338-360, XP085334466, ISSN: 0888-3270, DOI: 10.1016/J.YMSSP.2017.12.011 * the whole document *	7-11, 13	
A	CN 113 048 015 A (STATE POWER INVESTMENT CORPORATION SCIENCE & TECH RESEARCH INSTITUTE C) 29 June 2021 (2021-06-29) * the whole document *	1-15	TECHNICAL FIELDS SEARCHED (IPC) F03D G01V



(19)  (11)  EP 4 257 821 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication: 11.10.2023 Bulletin 2023/41 (51) International Patent Classification (IPC): F03D 7/02 (2006.01) F03D 80/00 (2016.01) G01V 1/00 (2006.01)

(21) Application number: 22187313.0 (52) Cooperative Patent Classification (CPC): F03D 7/0295; F03D 80/00; G01V 1/008; G01V 1/288; F03D 17/00; F03D 22/0334

(22) Date of filing: 08.04.2022

(84) Designated Contracting States: AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States: BA ME
Designated Validation States: KH MA MD TN

(72) Inventor: The designation of the inventor has not yet been filed

(74) Representative: SGRE-Association
Siemens Gamesa Renewable Energy GmbH & Co KG
Schlierseestraße 28
81539 München (DE)

(71) Applicant: Siemens Gamesa Renewable Energy A/S
7330 Brande (DK)

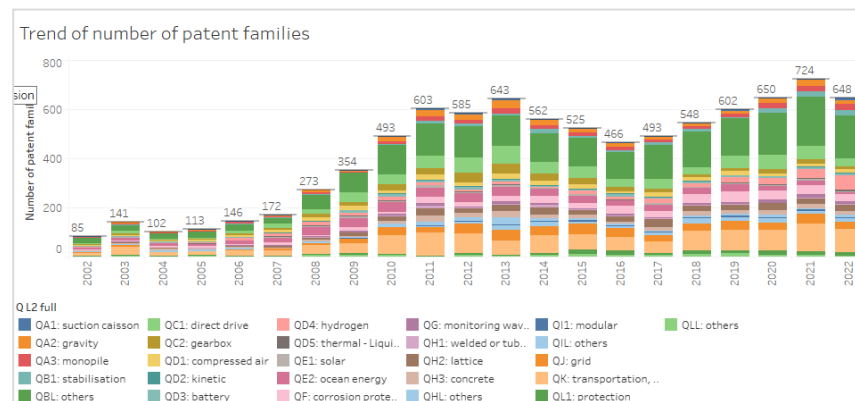
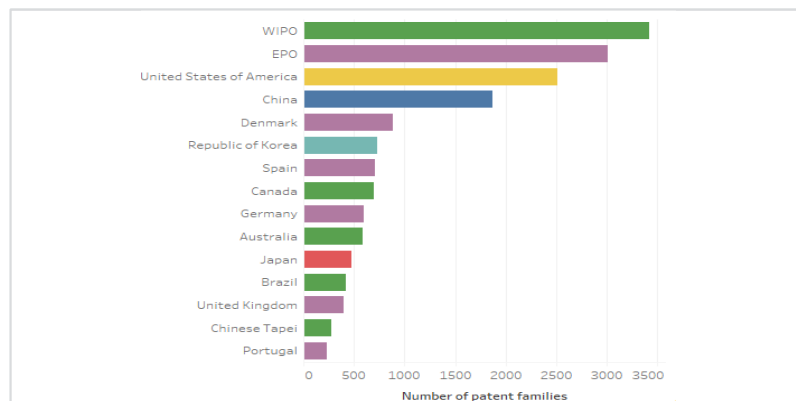
(54) REDUCING SEISMIC LOADS THAT ACT ON A WIND TURBINE

(57) A method of reducing seismic load acting on a wind turbine (100) during a seismic load causing event, wherein the wind turbine (100) comprises a foundation (110), a tower base (112), a tower (120) and a wind rotor (130), which is arranged at a top portion of the tower (120) and which comprises at least one blade (131), the method comprising:
measuring an excitation of the foundation (110), the tower base (112) and/or a proxy thereof,
determining if the measured excitation exceeds an earthquake threshold value (201); and
if the measured excitation exceeds the earthquake threshold value (201), entering an alternate mode of control of the wind turbine (100) for seismic events for reducing the seismic load on the wind turbine (100).

FIG 1

full_label	q_label	application	year	priority	granted	val_etry	applicant	country	st3_name	continent	psn_sector	nuts
Q0: Offshore WT	Q0	EP04728178	2003	DE	Y	DE ES DK FR GB	REPOWER SYSTEMS	DE	Germany	Europe	COMPANY	DE600
QJ: grid	QJ	EP03024222	2002	DK	Y	DE DK GB FR	SIEMENS	DE	Germany	Europe	COMPANY	DE212
Q0: Offshore WT	Q0	EP05741947	2004	GB	Y	IE GB FR	AQUAMARINE POWER	GB	United Kingdom	Europe	COMPANY	UKM34
QBL: floating > others	QBL	EP08000841	2008	EP	N		DANMARKS TEKNISKE UNIVERSITET	DK	Denmark	Europe	UNIVERSITY	DK012
QH3: tower > concrete	QH3	EP04707228	2003	DE	Y	LU CZ CH RO FI BG EE BE G	WOBLEN PROPERTIES	DE	Germany	Europe	COMPANY	DE947
QB: floating	QB	EP03789068	2003	WO	N		KOTT, KLAUS-MANFRED	ES	Spain	Europe	INDIVIDUAL	ES614
QL: submarine cables conductors	QL	EP04250719	2003	US	N		CALIFORNIA AMPLIFIER	US	United States of America	North America	COMPANY	
QD1: energy storage > compressed air	QD1	EP02702652	2001	US	N		ABB (ASEA BROWN BOVERI)	SE	Sweden	Europe	COMPANY	SE125
Q0: Offshore WT	Q0	EP04798574	2003	GB	N		WIND SAVE	GB	United Kingdom	Europe	COMPANY	UKM34
QBL: floating > others	QBL	EP02015395	2001	AT	Y	DK GB DE	RUND-STAHL-BAU	AT	Austria	Europe	COMPANY	AT342
QA: foundation	QA	EP02760380	2001	FR	N		SAIPEM	FR	France	Europe	COMPANY	FR103
QA: foundation	QA	EP02015395	2001	AT	Y	DK GB DE	RUND-STAHL-BAU	AT	Austria	Europe	COMPANY	AT342
QB: floating	QB	EP02015395	2001	AT	Y	DK GB DE	RUND-STAHL-BAU	AT	Austria	Europe	COMPANY	AT342
Q0: Offshore WT	Q0	EP12184141	2002	GB	N		MARINE CURRENT TURBINES	GB	United Kingdom	Europe	COMPANY	UKJ25

Territorial mapping



SEARCHING

Search Report

- Prior-art search
- Novelty search
- Freedom to operate search
- Invalidation search
- Bio sequence search
- Chemical structure searches

Limited list of patents



LANDSCAPING

Analysis Report

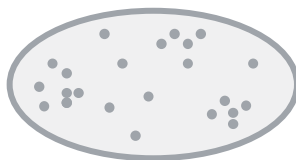
- Technology trend analysis
- Activity monitoring
- Merger & acquisition
- Portfolio valuation
- (Cross) licencing
- Competitor watch
- Territorial mapping

Unlimited sample of patents

THE BASIC PROCEDURE

Basic search

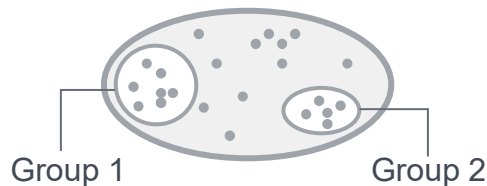
- patent classes
- search concepts
- applicants
- countries of residence
- [...]



Statistical analysis

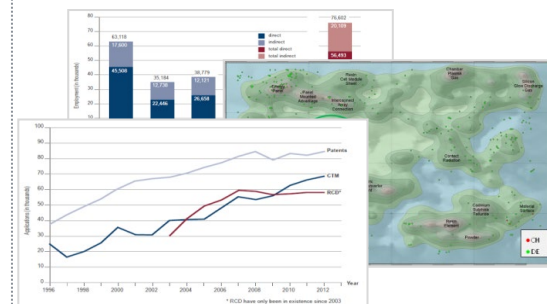
$$q_{ijt} = AL_{ijt}^{\alpha} K_{ijt}^{\beta}$$

Period	(1) 1981-2009	(2) 1981-2001	(3) 1981-2009
Estimation method	Fixed-effects regression	Fixed-effects regression	Fixed-effects regression
	274*** (0202)	10.337*** (1.823)	12.1 (1.823)
	323*** (0850)	93802*** (1.1388)	9.1 (1.1388)
	1018 (07014)	.04791 (0.5102)	1.1 (0.5102)
Other_stock _{it-1}	.0002** (9.7e-05)	.00023* (.00012)	.00023* (.00012)
Other_stock _{it-1}	-5.1e-09** (2.5e-09)	-1.1e-08* (5.0e-09)	-3.6e-09 (5.0e-09)
Green_stock _{it-1}	.08698 (.05791)	.11222** (.05507)	.11222** (.05507)
Green_stock _{it-1}	-.00122** (.00058)	-.00183* (.00093)	-.00183* (.00093)
Green_stock _{it-1}	2.0e-07** (1.0e-07)	5.0e-07* (3.2e-07)	1.4e-07 (3.2e-07)
Year fixed effects	Yes	Yes	Yes
Country-specific industry fixed effects	Yes	Yes	Yes
Industry fixed effects	No	No	No
Country fixed effects	No	No	No
N	2936	1069	1069



Processing results

- further analyses/processing
- visualisation
- reporting



Report



Executive Summary

STEPS IN THE PROCEDURE: BASIC SEARCH

Basic search

Statistical analysis

Processing results

Procedure for **basic search**:

- define goals
- choose database (PATSTAT)
- define query (dates, patent classes, key words, ...)
- collect data and remove noise

STEPS IN THE PROCEDURE: BASIC SEARCH

Basic search

Statistical analysis

Processing results

Procedure for **basic search**:

- **Data coverage** (e.g., with respect to time, patent authorities)
- **Completeness**
- **Harmonisation of data**
- **Accessibility of data**

STEPS IN THE PROCEDURE: BASIC SEARCH

Basic search

Statistical analysis

Processing results

Procedure for **statistical analysis**:

- Earliest filing date
- Application date
- Publication of application
- Date of grant
- Latest publication

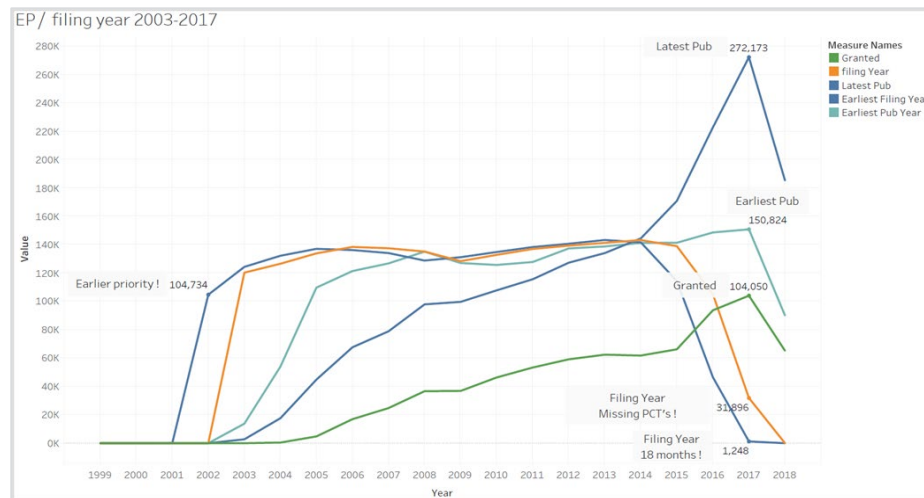
STEPS IN THE PROCEDURE: BASIC SEARCH

Basic search

Statistical analysis

Processing results

Procedure for **statistical analysis**:



STEPS IN THE PROCEDURE: BASIC SEARCH

Basic search

Statistical analysis

Processing results

Procedure for **statistical analysis**:



How many selected items are relevant?

Precision =



How many relevant items are selected?

Recall =



Improve precision by reducing noise

→ remove non-relevant patent applications

Improve recall by checking completeness

→ adding more relevant documents

Revise & refine search strategy if needed !

STEPS IN THE PROCEDURE: BASIC SEARCH

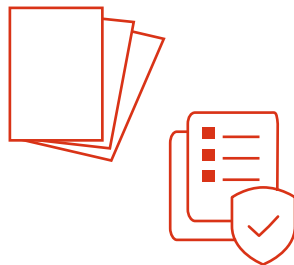
Basic search

Statistical analysis

Processing results

Procedure for **processing result**:

- further analyses/processing
- visualisation
- reporting



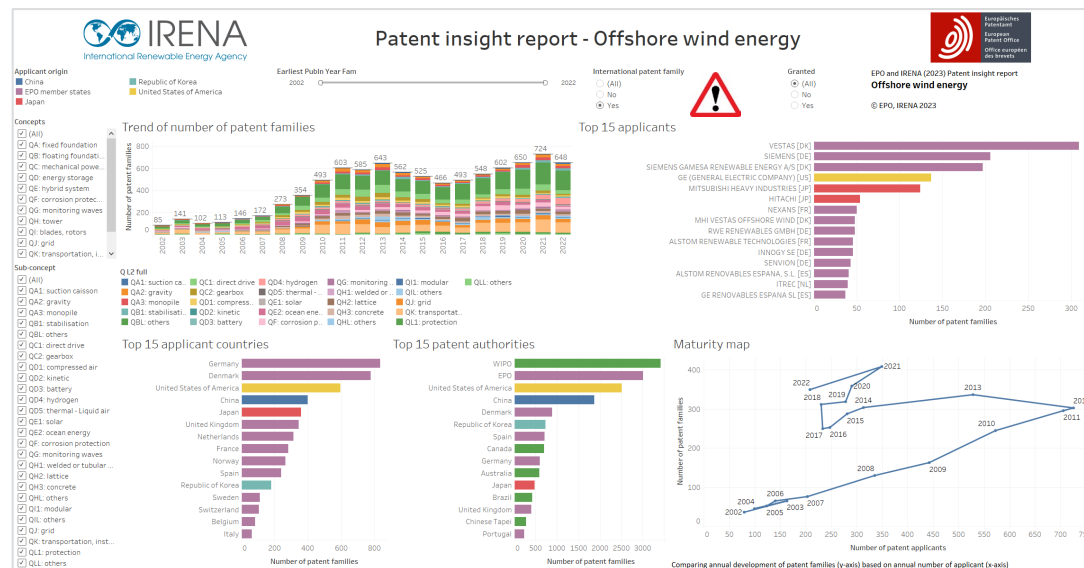
Executive
Summary

STEPS IN THE PROCEDURE: BASIC SEARCH

Basic search

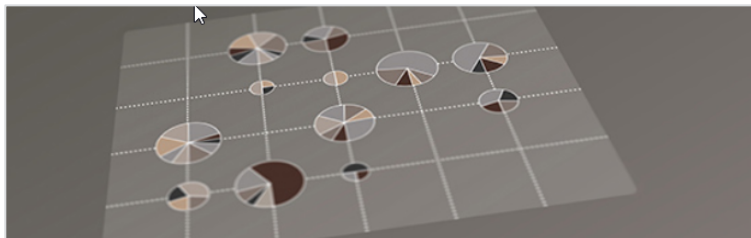
Statistical analysis

Processing results



Offshore wind in Tableau

PATENT STATISTICAL DATABASE → PATSTAT (ONLINE)



Backbone data set for statistical analysis

The EPO's PATSTAT has become a point of reference in the field of patent intelligence and statistics. It helps you perform sophisticated statistical analyses of bibliographical and legal event patent data.

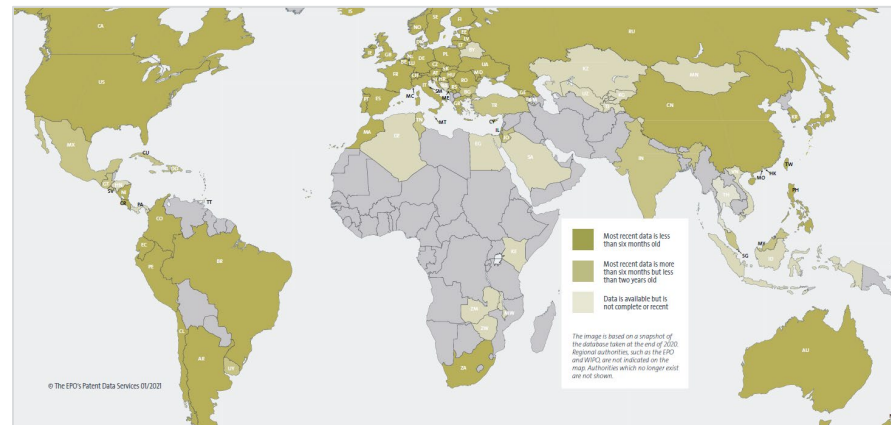
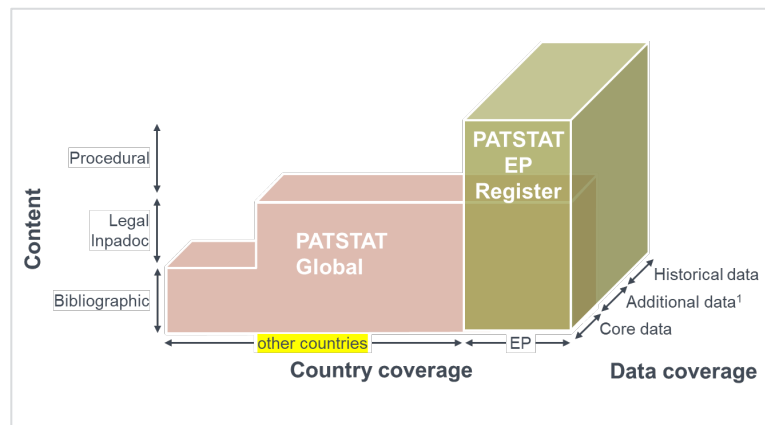
Order

Open PATSTAT Online

› Test PATSTAT Online for free

PATSTAT contains bibliographical and legal event patent data from leading industrialised and developing countries. This is extracted from the EPO's databases and is either provided as bulk data or can be consulted online.

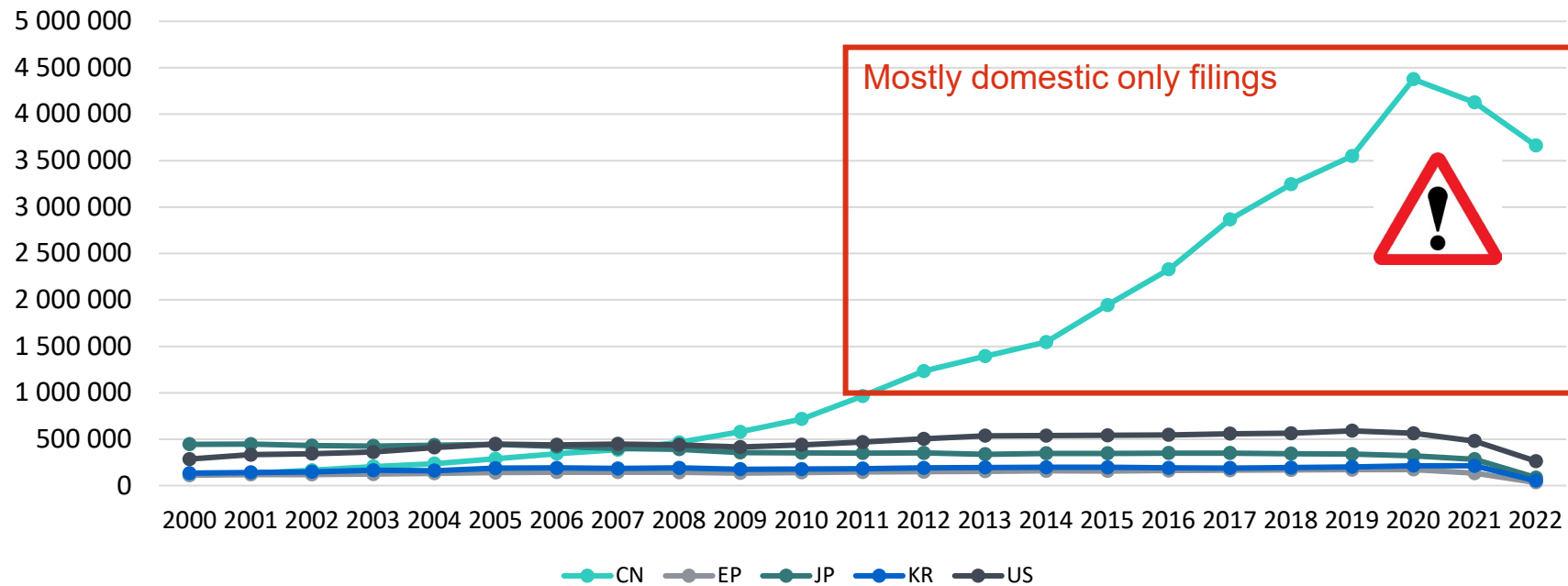
PATENT STATISTICAL DATABASE → PATSTAT: COVERAGE



appln_auth	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
CN	111800	131872	165362	205854	236335	289575	344202	387763	466359	579680	717715	965040	1233264	1393053	1547165	1944160	2328729	2865922	3244207	3549501	4375780	4127144	3662265
EP	113981	120963	120429	125684	132300	140025	145311	144760	143234	136475	141754	147418	150336	155142	159506	158840	162083	166149	168556	172915	174266	133842	35279
JP	446192	446980	430662	426395	436552	443325	422049	401745	391200	356553	353695	350371	352907	338838	348370	348098	350124	350942	344900	339511	322521	284728	87368
KR	134590	142930	147980	166219	161426	188468	191423	185242	190697	177734	178283	183306	190502	195461	197159	197451	191028	189951	194677	202851	215092	213063	53143
US	285632	332875	344946	362453	410916	449257	439816	448096	439594	415223	439404	469691	503271	536941	538027	541391	546447	559432	564611	590283	563702	480364	263495



NUMBER AND TREND OF IP5 APPLICATIONS IN PATSTAT



TOPICS TO BE COVERED

It can provide companies with data to help:

- identify competitors, cooperation partners
- researchers to find peer researchers working in the same technological area
- identification of technological hotspots as well as areas of declining or stagnating innovation

STEPS IN THE PROCEDURE: **BASIC SEARCH**

Procedure for **basic search**:

- patent classes
- search concepts

→ **Offshore wind energy**

- **CPC code**
- **IPC code**



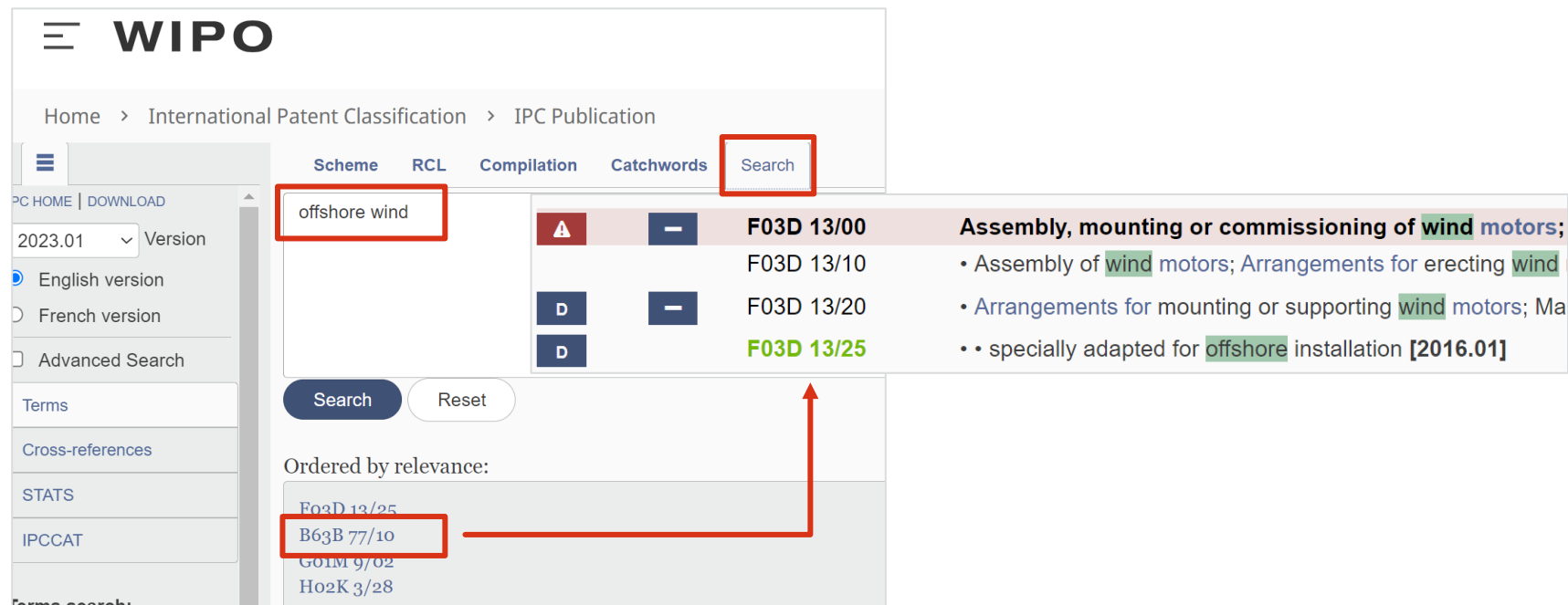
STEPS IN THE PROCEDURE: BASIC SEARCH

Index | A | B | C | D | E | F | G | H | **Y**

« Y02E Y02E20/00 »

Classification symbol	Title and description		
<input type="checkbox"/> Y	GENERAL TAGGING OF NEW TECHNOLOGICAL DEVELOPMENTS; GENERAL TAGGING OF CROSS-SECTIONAL TECHNOLOGIES SPANNING OVER SEVERAL SECTIONS OF THE IPC; TECHNICAL SUBJECTS COVERED BY FORMER USPC CROSS-REFERENCE ART COLLECTIONS [XRACs] AND DIGESTS	<input type="button" value="S"/>	<input type="button" value="🔍"/>
<input type="checkbox"/> Y02	TECHNOLOGIES OR APPLICATIONS FOR MITIGATION OR ADAPTATION AGAINST CLIMATE CHANGE		<input type="button" value="🔍"/>
<input type="checkbox"/> Y02E	REDUCTION OF GREENHOUSE GAS [GHG] EMISSIONS, RELATED TO ENERGY GENERATION, TRANSMISSION OR DISTRIBUTION	<input type="button" value="S"/>	
<input checked="" type="checkbox"/> Y02E 10/00	Energy generation through renewable energy sources		
<input type="checkbox"/> Y02E 10/70	• Wind energy		
<input type="checkbox"/> Y02E 10/72	•• Wind turbines with rotation axis in wind direction		
<input type="checkbox"/> Y02E 10/727	•• Offshore wind turbines		
<input type="checkbox"/> Y02E 10/728	•• Onshore wind turbines		
<input type="checkbox"/> Y02E 10/74	•• Wind turbines with rotation axis perpendicular to the wind direction		
<input type="checkbox"/> Y02E 10/76	•• Power conversion electric or electronic aspects		

STEPS IN THE PROCEDURE: BASIC SEARCH



WIPO

Home > International Patent Classification > IPC Publication

Scheme RCL Compilation Catchwords **Search**

offshore wind

PC HOME | DOWNLOAD

2023.01 Version

English version

French version

Advanced Search

Terms

Cross-references

STATS

IPCCAT

Search Reset

Ordered by relevance:

F03D 13/25

B63B 77/10

G01M 9/02

H02K 3/28

F03D 13/00 Assembly, mounting or commissioning of **wind motors**;

F03D 13/10 • Assembly of **wind motors**; Arrangements for erecting **wind**

F03D 13/20 • Arrangements for mounting or supporting **wind motors**; Ma

F03D 13/25 • specially adapted for **offshore** installation [2016.01]

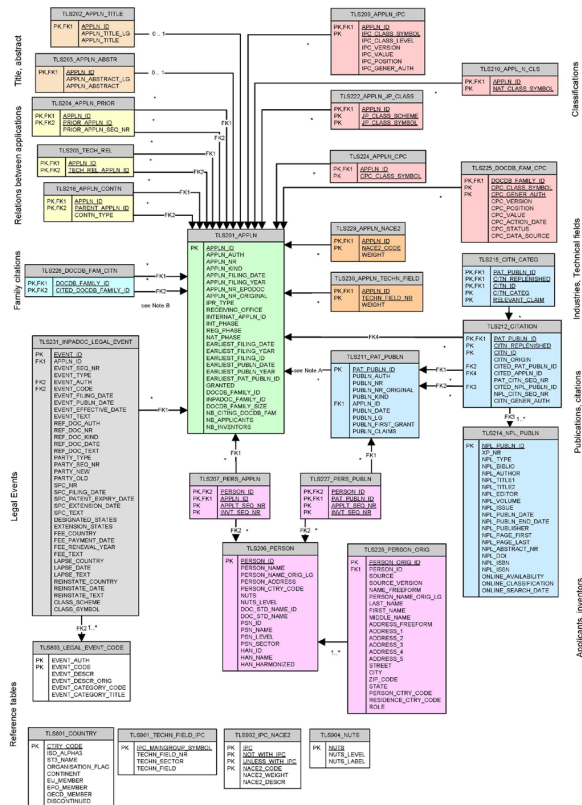
PATSTAT DATA BASE MODEL

ALL INFORMATION IN THE DATA CATALOG

<https://link.epo.org/web/searching-for-patents/business/patstat/data-catalog-patsat-global-en.pdf>

<https://www.epo.org/en/searching-for-patents/business/patstat>

→ Check in documentation

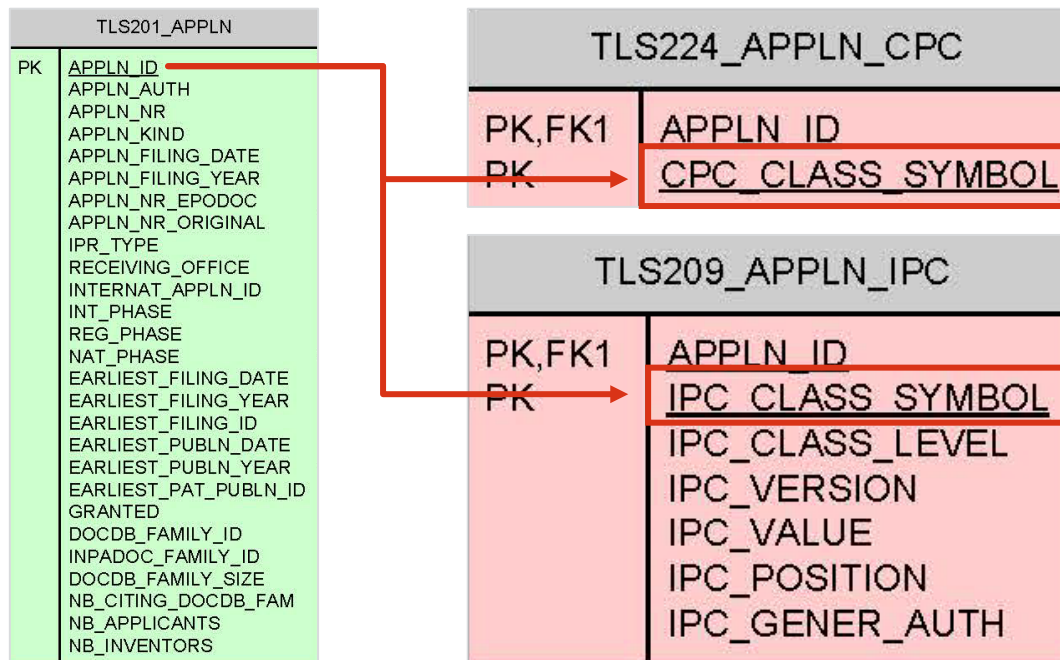


STEPS IN THE PROCEDURE: **BASIC SEARCH**

We need to create an SQL query
to extract data from PATSTAT.

CPC = Y02E10/727

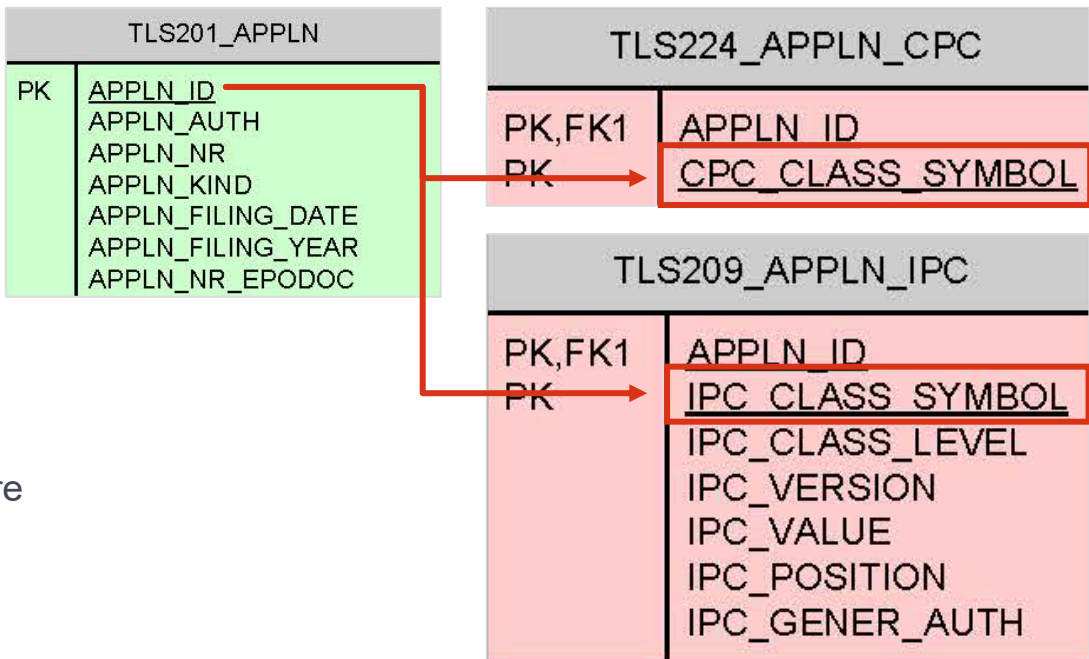
IPC = F03D13/25



STEPS IN THE PROCEDURE: BASIC SEARCH

SELECT appln_id, appln_auth,
 appln_nr, appln_filing_date
FROM tls201_appln
WHERE (tls201_appln.appln_id in
 (SELECT appln_id from
 tls209_appln_ipc where
 ipc_class_symbol = 'F03D 13/25')

or tls201_appln.appln_id in (SELECT
 appln_id from tls224_appln_cpc where
 cpc_class_symbol = 'Y02E 10/727'))
and appln_filing_year > =2010



STEPS IN THE PROCEDURE: BASIC SEARCH

data.epo.org/expert-services/index.html

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[Search](#) [Table](#) [Application](#) [Statist](#)

[Beginner](#) [Expert](#)

Tables

- Global
 - tls201_appln
 - appln_id
 - appln_auth
 - appln_nr
 - appln_kind
 - appln_filing_d...
 - appln_filing_ye...
 - appln_nr_origi...
 - ipr_type
 - receiving_office

Query  10 366 rows   

```

SELECT distinct appln_id, appln_auth, appln_nr, appln_filing_date
FROM tls201_appln
WHERE (tls201_appln.appln_id in (SELECT appln_id from tls209_appln_ipc where ipc_
or tls201_appln.appln_id in (SELECT appln_id from tls224_appln_cpc where cpc_
and appln_filing_year > =2010
    
```

Messages

15:31:23 [SELECT - 10 366 row(s), 0.543 secs, server #0] Result set fetched

Result table 10 / 10 366

Row	appln_id	appln_auth	appln_nr	appln_filing_date
1	335349604	US	81262310	2010-03-31
2	527085588	CN	201911230833	2019-12-05
3	524982699	KR	20197031673	2018-04-26
4	562015094	CN	202022632356	2020-11-14
5	511021214	CN	201910063812	2019-01-23
6	537727888	US	201515362186	2015-05-27
7	583629612	CN	202211211735	2022-09-30
8	529049511	EP	19868821	2019-06-19
9	340296814	CN	201010215260	2010-06-28
10	530489316	WO	2020050117	2020-04-28
11	556229706	CN	202110780644	2021-07-09
12	535896786	CN	201922175653	2019-12-08
13	530133433	US	201816631102	2018-05-24

STEPS IN THE PROCEDURE: **BASIC SEARCH**

appln_auth	appln_nr	appln_filing_date	appln_title
HR	UM20200004	15.07.2020	Floating generator for electric energy production and distribution
IT	UB20159461	26.11.2015	Turbina eolica per imbarcazioni ad asse verticale a pale parallele richiudibili
DE	SC057162	31.12.9999	Windkraftwerk auf schwimmender Basis
BR	PI1015099	26.04.2010	controlador para uma turbina eólica flutuante, estrutura de turbina eólica flutuante e método de controle de uma turbina eólica flutuante
DK	PA202100333	30.03.2021	Floating Foundation for Wind Turbines
HR	P20201510	21.09.2020	Wind Turbine Working Platform
HR	P20200947	15.06.2020	Gasket for Wind Turbine
AR	P170101631	14.06.2017	Métodos y sistemas para el aislamiento eléctrico en una planta de generación de energía en alta mar
DK	BA201900085	01.11.2019	Vindmølle med et styresystem med en rotationshastighedsudelukkelseszone
US	97959610	28.12.2010	Method for constructing a foundation for a wind power generation system
SK	822022	29.06.2022	Multi-rotor Wind Energy System
NZ	73179915	23.09.2015	Floating platform for harnessing Wind Energy
EP	21714957	22.03.2021	Device and method for erecting a wind turbine with a tower and two booms extending from the tower
CN	202221475037	13.06.2022	一种潮位自适应系泊系统及其海上风光发电装置

STEPS IN THE PROCEDURE: **STATISTICAL ANALYSIS**

Basic search

Statistical analysis

Processing results

Procedure for **statistical analysis**:

- Identify competitors:
 - Via applicant ranking
 - Via a forward citation analysis.

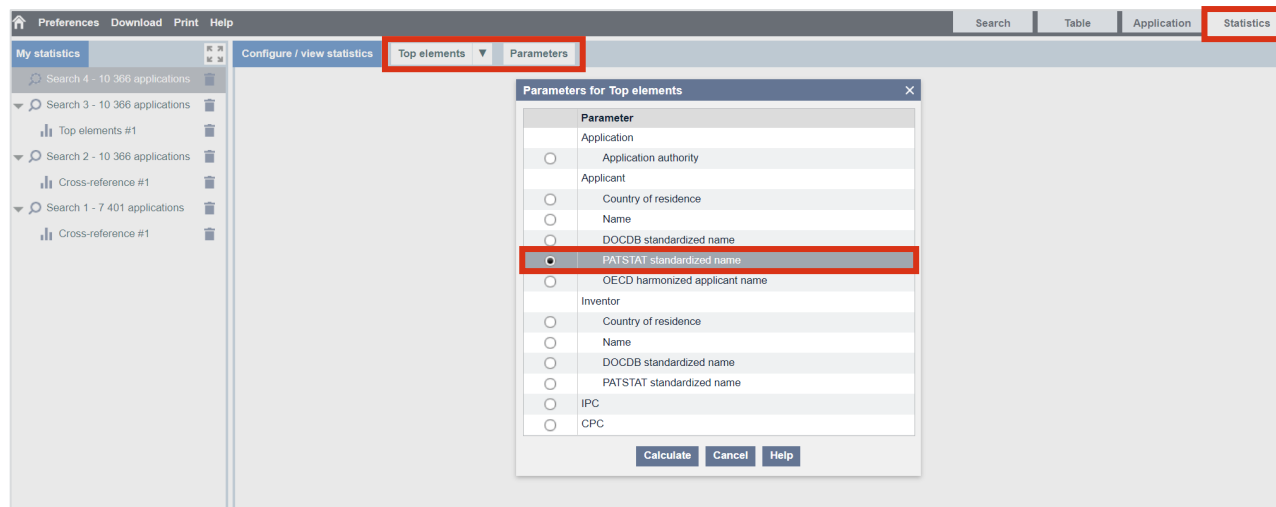
STEPS IN THE PROCEDURE: **STATISTICAL ANALYSIS**

Basic search

Statistical analysis

Processing results

Procedure for **statistical analysis**: applicant ranking



The screenshot displays the PATSTAT Foundations web application interface. The top navigation bar includes 'Preferences', 'Download', 'Print', and 'Help'. The main menu has 'My statistics', 'Configure / view statistics', 'Top elements', and 'Parameters'. The 'Statistics' tab is active, showing a list of searches and their top elements. A dialog box titled 'Parameters for Top elements' is open, allowing users to select parameters for analysis. The 'PATSTAT standardized name' parameter is selected under the 'Applicant' section.

Parameters for Top elements

Parameter	
<input type="radio"/>	Application
<input type="radio"/>	Application authority
<input type="radio"/>	Applicant
<input type="radio"/>	Country of residence
<input type="radio"/>	Name
<input type="radio"/>	DOCDB standardized name
<input checked="" type="radio"/>	PATSTAT standardized name
<input type="radio"/>	OECD harmonized applicant name
<input type="radio"/>	Inventor
<input type="radio"/>	Country of residence
<input type="radio"/>	Name
<input type="radio"/>	DOCDB standardized name
<input type="radio"/>	PATSTAT standardized name
<input type="radio"/>	IPC
<input type="radio"/>	CPC

Buttons: Calculate, Cancel, Help

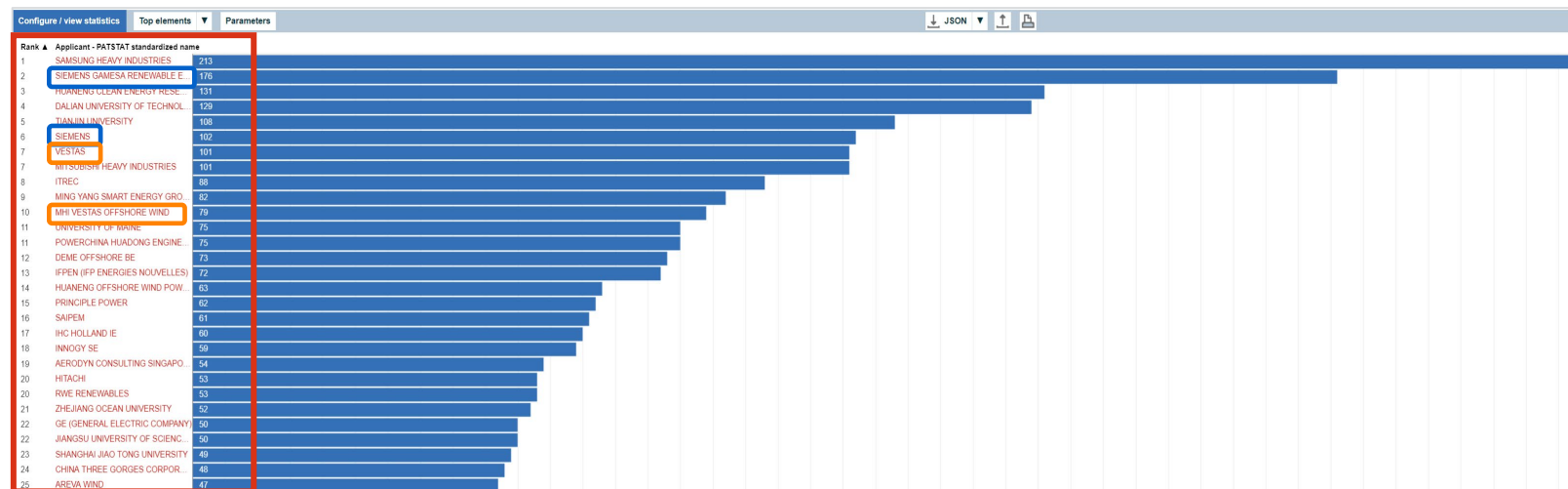
STEPS IN THE PROCEDURE: STATISTICAL ANALYSIS

Basic search

Statistical analysis

Processing results

Procedure for **statistical analysis**: applicant ranking



STEPS IN THE PROCEDURE: **STATISTICAL ANALYSIS**

Basic search

Statistical analysis

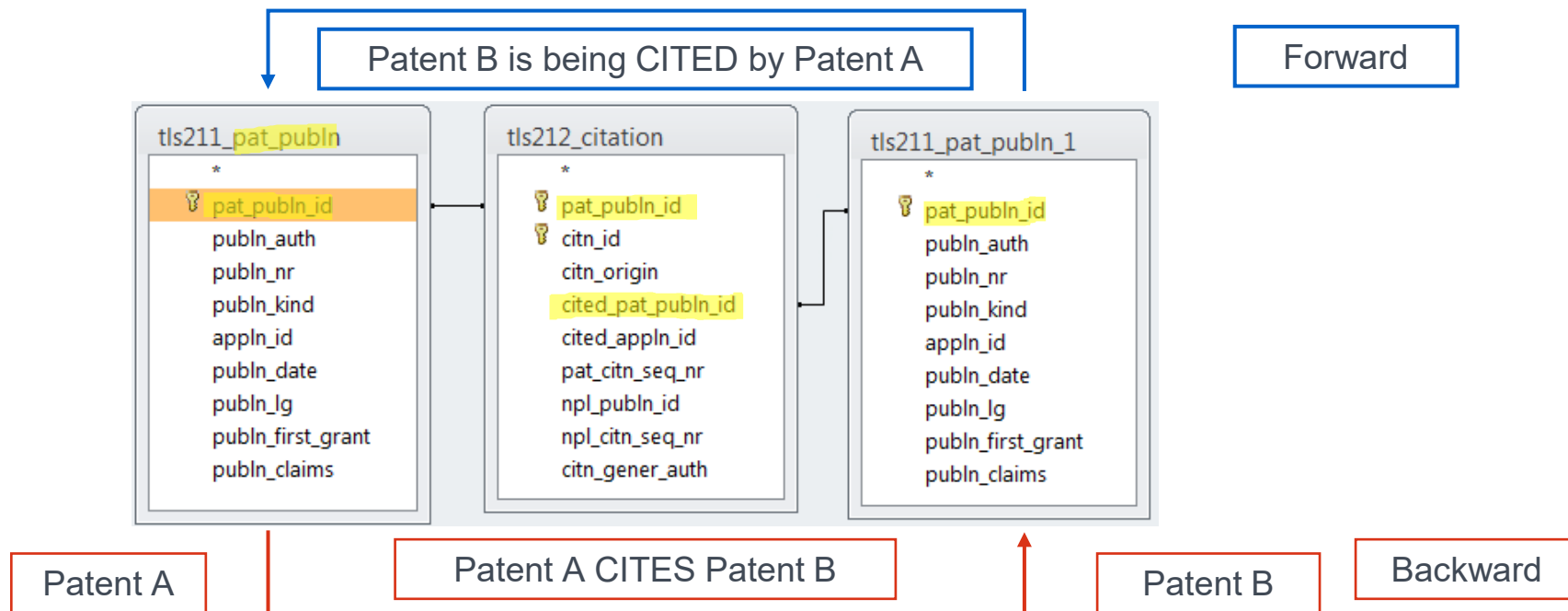
Processing results

Procedure for **statistical analysis**: forward citation

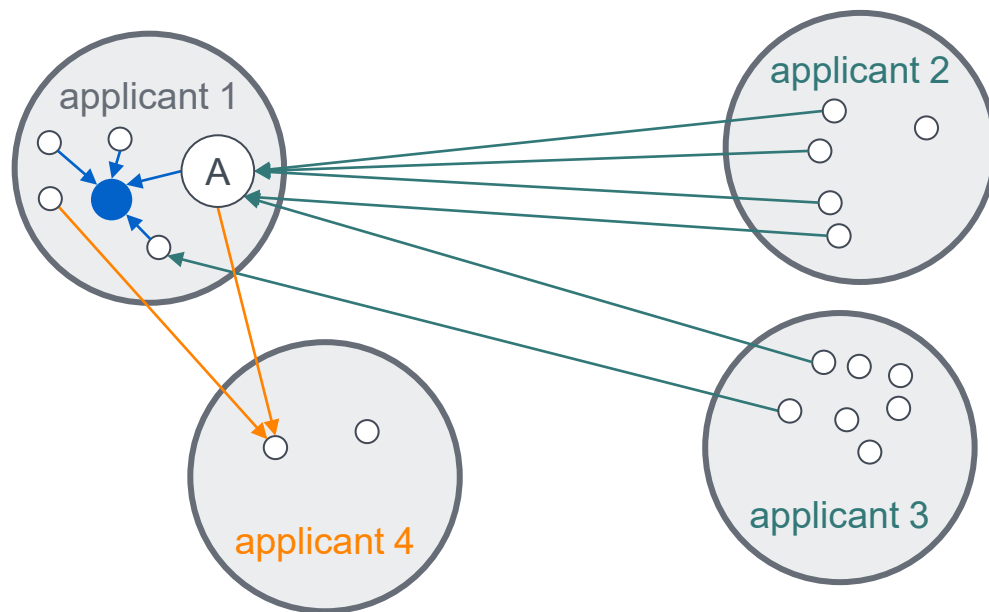
Question: who is citing who?

Question: who is citing my patents, who is building on my IP?

STEPS IN THE PROCEDURE: **STATISTICAL ANALYSIS**



WHO IS CITING WHO? KNOWLEDGE TRANSFER



Applicant 1 (me) = ITREC BV [NL]

Who are the applicants citing me ?
And how many are there ?

A: Which is the most influential patents
of applicant 1?

B: Which applicants site our patents?

C: Which applicants are cited by our
patents (FTO!)?

D: Which patent is our "core technology"
(self citations).

WHO IS CITING WHO? KNOWLEDGE TRANSFER

cited	citing company	families cited
ITREC	ITREC [NL]	19
ITREC	DEME OFFSHORE BE [BE]	8
ITREC	DELTA LABORATORIES HOLDING [NL]	6
ITREC	SAIPEM [IT]	5
ITREC	HEEREMA MARINE CONTRACTORS NEDERLAND SE [NL]	4
ITREC	MACGREGOR NORWAY [NO]	3
ITREC	SIEMENS GAMESA RENEWABLE ENERGY [DK]	3
ITREC	W3G MARINE [GB]	3
ITREC	AIRBUS OPERATIONS [FR]	2
ITREC	AKER OFFSHORE WIND AS [NO]	2
ITREC	DALIAN UNIVERSITY OF TECHNOLOGY []	2
ITREC	JIANGSU GOLDWIND SCIENCE & TECHNOLOGY COMPANY [CN]	2
ITREC	KEPPEL OFFSHORE & MARINE TECHNOLOGY CENTRE [SG]	2
ITREC	REEL [FR]	2
ITREC	SINOVEL WIND GROUP COMPANY [CN]	2
ITREC	ACE E&T (ENGINEERING & TECHNOLOGY) [KR]	1
ITREC	AMPELMANN HOLDING [NL]	1
...
ITREC	DOLFINES [FR]	1
ITREC	ENABL A/S [DK]	1

Observations:

ITREC-ITREC → self citations

85 companies

Monitor the citing applications!

- granted? In what countries?
- Useful inventions? Co-licensing?
- Infringement?
- New markets
- Airbus operations? Inventions used outside offshore wind technology?

WHO IS CITING WHO? KNOWLEDGE TRANSFER

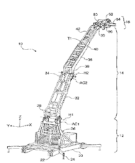
(10) RÉPUBLIQUE FRANÇAISE
 INSTITUT NATIONAL
 DE LA PROPRIÉTÉ INDUSTRIELLE
 COURBEVOIE

(11) N° de publication : **3 105 785**
 (12) N° d'enregistrement :
 (13) Int Cl⁸ : B 66 C 2

STATUT EN FRANCE
 Publication du rapport de recherche préliminaire
 02/07/2021 (BOPI 2021-26)
 Note
 Revendications modifiées après publication de la demande
 Délivrance
 18/02/2022 (BOPI 2022-07)

(14) Date de mise à la disposition du public de la demande : 02.07.21 Bulletin 21/26
 (15) Liste des documents cités dans le rapport de recherche préliminaire : Se reporter à la fin du présent fascicule
 (16) Références à d'autres documents nationaux apparentés :
 Demande(s) d'extension :
 Grue à dispositif de mini pont roulant pour la manutention de composants d'aéronef.

(17) Demande - F/R de et simplifiée
 (18) Inventeur : MERIC BICLI
 LAQUO PIR
 (19) Titulaire(s) : AIRBUS Société par actions simplifiée, AIRBUS OPERATIONS Société par actions simplifiée
 (20) Mandataire(s) : BREVALEX

(21) Figure 1


Airbus operations?
 New market?

EP About this file: EP3615467

Refine search ↓ ST36 Show history Espacenet Submit observations Report error

EP3615467 - A MOTION COMPENSATING CRANE FOR USE ON AN OFFSHORE VESSEL [this link]

Status

Grant of patent is intended
 Status updated on 30.10.2023
 Database last updated on 27.11.2023

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)
 (13) World Intellectual Property Organization
 International Bureau
 (45) International Publication Date
 01 November 2018 (01.11.2018)
 (18) International Publication Number
WO 2018/199743 A2
 WIPO PCT
 (51) International Patent Classification:
 B66C 2/00 (2006.01)
 B66C 2/02 (2006.01)
 B66C 2/04 (2006.01)
 B66C 2/06 (2006.01)
 B66C 2/08 (2006.01)
 B66C 2/10 (2006.01)
 B66C 2/12 (2006.01)
 B66C 2/14 (2006.01)
 B66C 2/16 (2006.01)
 B66C 2/18 (2006.01)
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 B66C 2/22 (2006.01)
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 B66C 2/86 (2006.01)
 B66C 2/88 (2006.01)
 B66C 2/90 (2006.01)
 B66C 2/92 (2006.01)
 B66C 2/94 (2006.01)
 B66C 2/96 (2006.01)
 B66C 2/98 (2006.01)



Does Airbus use
 ITREC technology?
 Check claims!
 (Cross-) Licencing?

2280 GE Rijswijk (NL)
 (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AU, AT, AZ, BA, BB, BG, BR, BY, CA, CH, CL, CN, CO, CU, CZ, DE, DK, DM, DO, EC, EE, EG, ES, FI, GB, GR, GU, HK, HN, IL, IN, JP, KE, KG, KH, KN, KP, KR, KZ, LA, LU, LV, MA, MD, ME, MG, MK, MN, MU, MV, MW, MY, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SG, SI, SK, SL, SV, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.
 (54) Title: A MOTION COMPENSATING CRANE FOR USE ON AN OFFSHORE VESSEL
 (57) Abstract: A motion compensating crane for use on an offshore vessel having a hull with a design waterline, wherein the crane comprises a revolving superstructure, a main boom mounted to the revolving superstructure and pivotally connected at an inner end thereof about a substantially horizontal boom pivot axis to the revolving superstructure, and a main boom having a tip end remote from said inner end, a main boom lifting assembly adapted to set an angle of the main boom relative to the superstructure within a main boom working angle range, a right jib frame pivotally connected to the tip end of the main boom about a substantially horizontal jib frame pivot axis, and a level setting assembly adapted to set the right jib frame in a levelled position within the main boom working angle range, the right jib frame is provided with a set of parallel X-direction tracks which are substantially horizontal in said levelled position of the right jib frame. The crane further has a mobile carrier supported by said X-direction tracks and movable by a motor powered X-motion displacement actuator assembly. The mobile carrier is provided with one or multiple parallel Y-direction tracks and a mobile jib hoist cable suspension member is supported by said one or more Y-direction tracks and movable relative thereto.

Fig. 1

WHO IS CITING WHO? MOST CITED APPLICATION

[illegible]

12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT CO-OPERATION TREATY (PCT) 19) World Intellectual Property Organization International Bureau		 	
(3) International Publication Date 10 March 2011 (2011.03.10)		(10) International Publication Number WO 2011/028102 A2	
(3) International Patent Classification: <i>B63B 5/00</i> (2006.01)		nellis Josefa Maria [NL/NL]; 132, Dreef, NL-2803 HB Gouda (NL)	
(2) International Application Number: PCT/NL2010/005025		(7) Agent: BROOKHUIS, H.A., P.O. Box 3241, NL-2280 GR Rijswijk (NL)	
(2) International Filing Date: 23 August 2010 (23.08.2010)		(81) Designated States (unless otherwise indicated, for every class of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BI, BR, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EG, ES, FI, FR, GB, GR, GM, GT, HN, HU, ID, IL, IN, IS, JP, KG, KH, KM, KN, KP, KR, KZ, LA, LB, LI, LT, LU, LV, LY, MA, MD, ME, MG, MK, MN, MW, MY, MZ, NA, NI, NL, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SD, SE, SG, SI, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, VC, VN, ZA, ZM, ZW.	
(5) Filing Language: English		(84) Designated States (unless otherwise indicated, for every class of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, SD, SI, SG, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK,	
(5) Publication Language: English		(39) International Preliminary Report on Patentability: Not Published	
(5) Priority Date: 7 April 2011 (4 September 2009 (04.09.2009)) NL		(41) Published: Published	
(5) Priority Document(s): 7003441 for all designated states except US: ITREC BV , [NL/NL], Administ. Transpourt 2, NL-3115 HJ Schiedam (NL).		(42) Published with International Search Report: No	
(7) Inventors: 7) Inventors' Application(s) for US only: ROODENBURG, Joop [NL/NL], c/o Instatruutweg 7, NL-2612 HA Delft (NL); WILNING, Diederik [NL/NL]; Gustavus Vasteyus 35, NL-3124 TH Schiedam (NL); BRITZINSKI, Aleard [NL/NL], c/o van Hoeselstein, NL-2625 JP Delft (NL); STIJNMAN, Theodorus Cor-		(43) Published with International Search Report and Written Opinion: No	

[illegible]

WHO IS CITING WHO? MOST CITED APPLICATION (FAMILY/FAMILY = 61)

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
10 March 2011 (10.03.2011)

(21) International Application Number:
PCT/NL2010/050525

(22) International Filing Date:
23 August 2010 (23.08.2010)

(23) Filing Language:
English

(24) Publication Language:
English

(30) Priority Data:
2003441 4 September 2009 (04.09.2009) NL

(71) Applicant (for all designated States except US): **ITREC B.V.** [NL/NL]; Admiral Trompsstraat 2, NL-3115 HH Schiedam (NL)

(72) Inventors; and
Inventors/Applicants (for the US only): **ROODENBURG, Joop** [NL/NL]; St. Eustatiusstraat 7, NL-2612 HA Delft (NL); **WUJING, Diederik Bernardus** [NL/NL]; Gustavus Vauborg 32, NL-3124 TH Schiedam (NL); **BEREZNTSKI, Alexei** [NL/NL]; 650, van Houselien, NL-2625 JP Delft (NL); **STUNMAN, Theodorus Cor-**

(73) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW

(74) Agent: **BROOKHUIS, H.J.A.**; P.O. Box 3241, NL-2280 GE Rijswijk (NL)

(81) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SI, SK, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW)

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SI, SK, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW)

(57) Abstract: An offshore wind turbine installation vessel for installation of an offshore wind turbine, wherein the wind turbine is of the type to be installed on a foundation that is installed on the seabed prior to the installation of the wind turbine on the sea foundation, wherein the wind turbine is of the type with a vertical mast to be fitted with its lower end onto the foundation, and with a nacelle with a hub and blades supported on top of said mast, wherein said vessel comprises: - a hull, preferably a non-jack-up type floating hull, preferably a self-propelled floating hull; - a crane structure extending upward from said hull, wherein the crane structure is provided with a hoisting device having one or more wind turbine suspension elements and a wind turbine engagement device supported by said one or more suspension elements and adapted to engage with said wind turbine, said hoisting device being adapted to support and to raise and lower in controllable manner at least the mast of the wind turbine while in vertical orientation, preferably with the nacelle and preferably also with the hub and blades fitted on top of the mast.

Fig. 1a

cited Applicants citing WO2010NL50525

ITREC	SOLETANCHE FREYSSINET	US201414464346
ITREC	SOLETANCHE FREYSSINET	US81507210
ITREC	SOLETANCHE FREYSSINET	EP10808923
ITREC	KEPPEL FELS	US75903710
ITREC	KEPPEL OFFSHORE & MARINE TECHNOLOGY CENTRE	US75903710
ITREC	OFFSHORE TECHNOLOGY DEVELOPMENT	US75903710
ITREC	SINOVEL WIND GROUP COMPANY	US201013504469
ITREC	IHC HOLLAND IE	US201113807055
ITREC	LIFTRA IP	US201013505083
ITREC	W3G SHIPPING	GB201104093
ITREC	SINOVEL WIND GROUP COMPANY	US201013703008
ITREC	CNOOC (CHINA NATIONAL OFFSHORE OIL CORPORATION)	CN201210059255
ITREC	W3G SHIPPING	US201314419835
ITREC	SAMSUNG HEAVY INDUSTRIES	EP12812108
ITREC	SAMSUNG HEAVY INDUSTRIES	US201214131667
ITREC	MECAL WIND TURBINE DESIGN	US201314440624
ITREC	ENVISION ENERGY (DENMARK)	EP13180542
ITREC	ENVISION ENERGY (DENMARK)	US201314012217
ITREC	SAL HEAVY LIFT	EP13190345
ITREC	SAL OFFSHORE	EP13190345
ITREC	SEAWAY HEAVY LIFTING ENGINEERING	EP14154181
ITREC	SHIP AND OCEAN INDUSTRIES R&D CENTER	US201213676680
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ITREC	H & P OFFSHORE WIND & COMPANY	EP14186945
ITREC	SAMSUNG HEAVY INDUSTRIES	KR20130109166
ITREC	SHANGHAI ZHENHUA HEAVY INDUSTRY GROUP (NANTONG) TRANSMISSION MACHINERY COMPANY	CN201610500558
ITREC	OCEAN SHIFT, S.L.	ES201630385

STEPS IN THE PROCEDURE: **STATISTICAL ANALYSIS**

Basic search

Statistical analysis

Processing results

Procedure for **statistical analysis**: find peer researchers

Question: who are peer researchers working in the same technological area of offshore wind energy?

- Look for inventors at universities?
- Look for inventors at companies?

STEPS IN THE PROCEDURE: **STATISTICAL ANALYSIS**

Basic search

Statistical analysis

Processing results

Procedure for **statistical analysis**: find peer researchers

- In sql terms, we need to find inventors, or more specific, inventors working at academic institutions. Then make a ranking on number of patent applications.

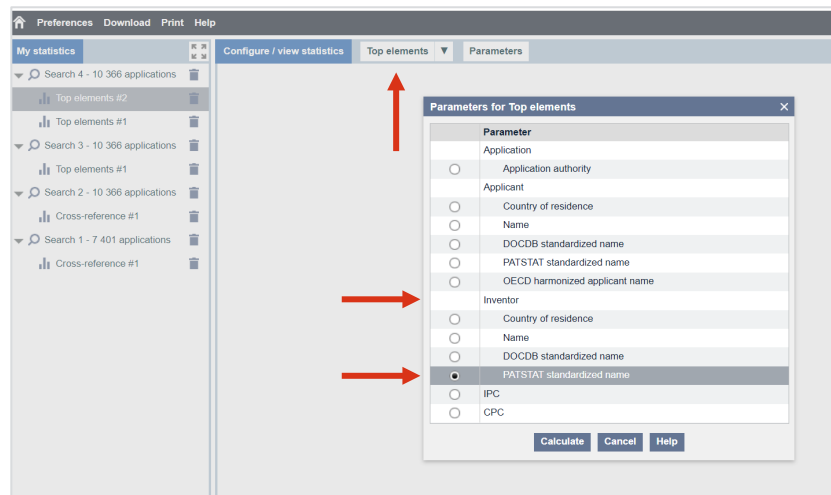
STEPS IN THE PROCEDURE: **STATISTICAL ANALYSIS**

Basic search

Statistical analysis

Processing results

Procedure for **statistical analysis**: find peer researchers



The screenshot shows the PATSTAT web interface. On the left, a sidebar lists various search results and statistics. The main area displays a 'Configure / view statistics' tab with a 'Top elements' dropdown menu. A dialog box titled 'Parameters for Top elements' is open, showing a list of parameters for selection. The parameters are grouped into 'Applicant', 'Inventor', and 'IPC/CPC'. The 'PATSTAT standardized name' option is selected under the 'Inventor' group. Red arrows point to the 'Top elements' dropdown and the selected parameter in the dialog box.

Parameters for Top elements

Parameter
Application
<input type="radio"/> Application authority
Applicant
<input type="radio"/> Country of residence
<input type="radio"/> Name
<input type="radio"/> DOCDB standardized name
<input type="radio"/> PATSTAT standardized name
<input type="radio"/> OECD harmonized applicant name
Inventor
<input type="radio"/> Country of residence
<input type="radio"/> Name
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<input type="radio"/> IPC
<input type="radio"/> CPC

Calculate Cancel Help

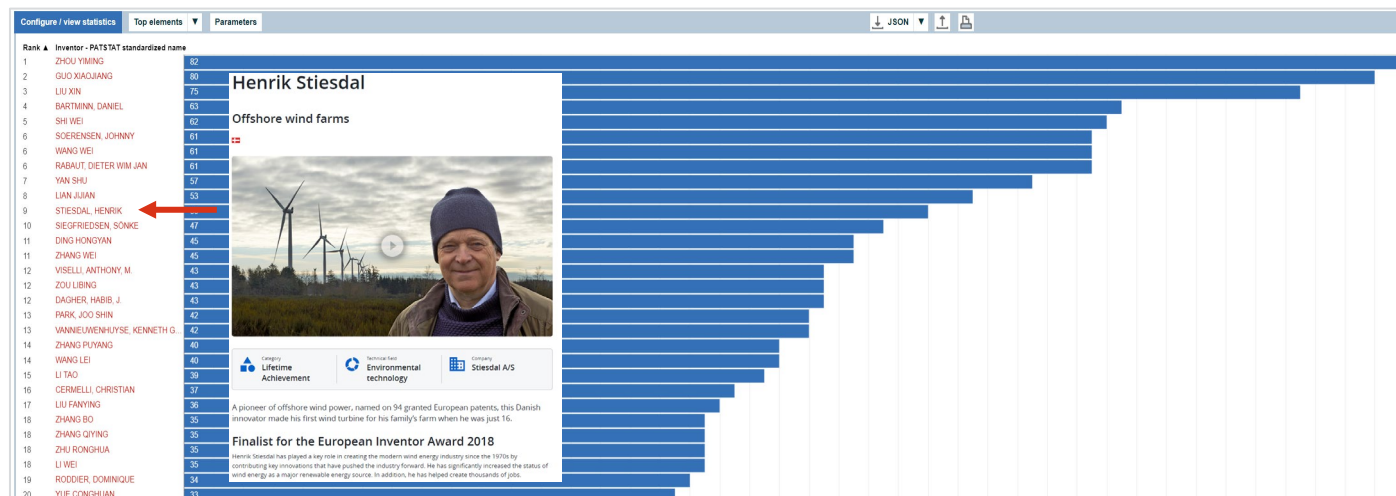
STEPS IN THE PROCEDURE: STATISTICAL ANALYSIS

Basic search

Statistical analysis

Processing results

Procedure for **statistical analysis**: find peer researchers



STEPS IN THE PROCEDURE: **STATISTICAL ANALYSIS**

Basic search

Statistical analysis

Processing results

Procedure for **statistical analysis**: find peer researchers at universities

→ `psn_sector like "%UNIVERSITY%"` in SQL

```
SELECT tls201_appln.appln_id, appln_auth, appln_nr, appln_filing_date
FROM tls201_appln JOIN tls207_pers_appln on tls207_pers_appln.appln_id = tls201_appln.appln_id
join tls206_person on tls206_person.person_id = tls207_pers_appln.person_id
WHERE (tls201_appln.appln_id in (SELECT appln_id from tls209_appln_ipc where ipc_class_symbol = 'F03D 13/25')
      or tls201_appln.appln_id in (SELECT appln_id from tls224_appln_cpc where cpc_class_symbol = 'Y02E 10/727'))
      and tls201_appln.appln_id
      in (select appln_id from tls207_pers_appln join tls206_person on tls207_pers_appln.person_id =
          tls206_person.person_id
          where applt_seq_nr > 0 and psn_sector like "%UNIVERSITY%")
      and appln_filing_year > = 2010
      and invt_seq_nr > 0
```

STEPS IN THE PROCEDURE: STATISTICAL ANALYSIS

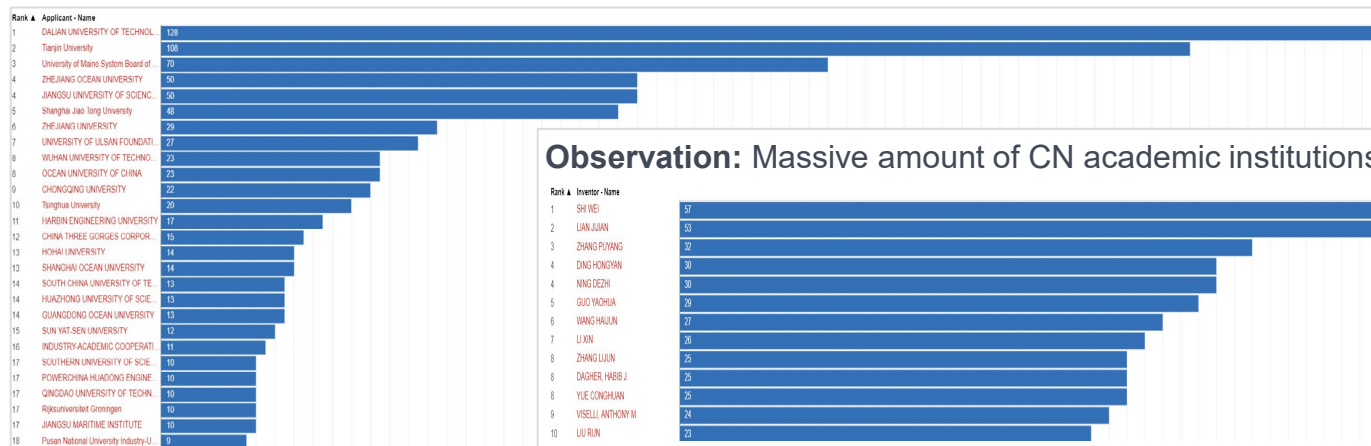
Basic search

Statistical analysis

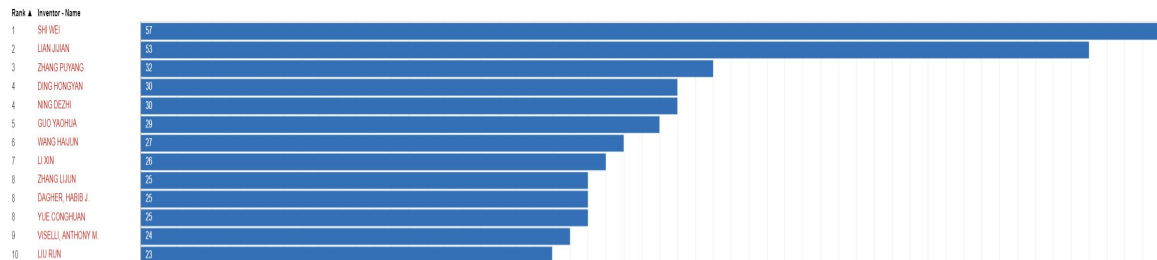
Processing results

Procedure for **statistical analysis**: find peer researchers at universities

→ **psn_sector like "%UNIVERSITY%"** in SQL



Observation: Massive amount of CN academic institutions and ... inventors



STEPS IN THE PROCEDURE: STATISTICAL ANALYSIS

Basic search

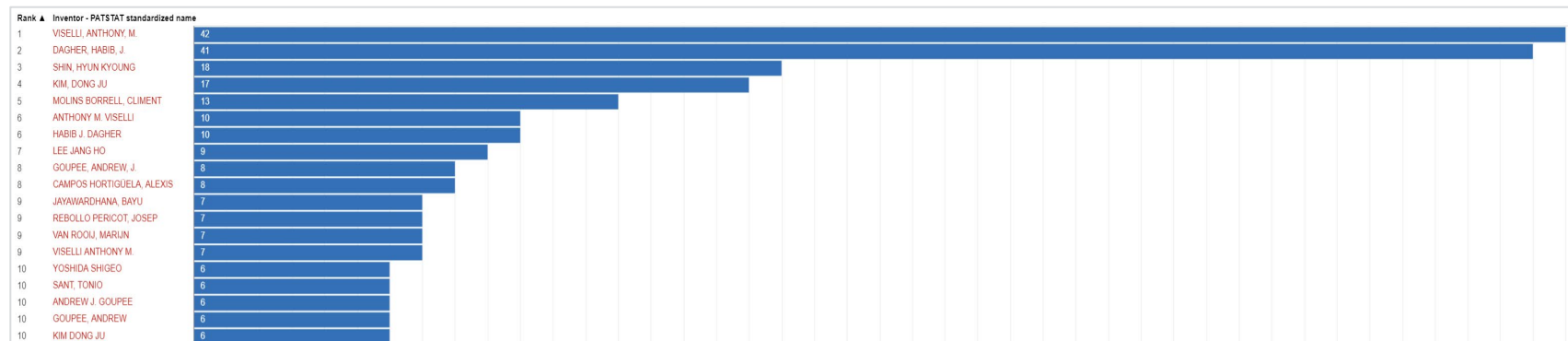
Statistical analysis

Processing results

Procedure for **statistical analysis**: find peer researchers at universities

→ `psn_sector like "%UNIVERSITY%"` in SQL

... tweak SQL to exclude CN universities



STEPS IN THE PROCEDURE: STATISTICAL ANALYSIS

Basic search

Statistical analysis

Processing results

Google Scholar viselli anthony

Articles About 239 results (0,06 sec)

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Since 2023
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Since 2019
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☐ Include patents
☒ Include citations
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Methodology for wind/wave basin testing of floating offshore wind turbines
..., RW Kimball, AM Viselli... - Journal of ..., 2014 - asmedigitalcollection.asme.org
Scale-model wave basin testing is often employed in the development and validation of large-scale offshore vessels and structures by the oil and gas, military, and marine industries. A ...
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IEA wind TCP task 37: definition of the IEA 15-megawatt offshore reference wind turbine
..., H Bredmose, K Dykes, M Shields, C Allen, A Viselli - 2020 - osti.gov
This report describes a 15-megawatt offshore wind turbine with a fixed-bottom monopile support structure. This reference wind turbine is a Class IB direct-drive machine, with a rotor ...
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Model test of a 1: 8-scale floating wind turbine offshore in the gulf of maine
AM Viselli, AJ Goupee... - Journal of ..., 2015 - asmedigitalcollection.asme.org
A new floating wind turbine platform design called VoltumUS developed by the University of Maine uses innovations in materials, construction, and deployment technologies such as a ...
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Estimation of extreme wave and wind design parameters for offshore wind turbines in the Gulf of Maine using a POT method
AM Viselli, GZ Forristall, BR Pearce, HJ Dagher - Ocean Engineering, 2015 - Elsevier
Abstract Design parameters needed for the development of Maine's offshore wind resource are calculated using Gulf of Maine buoy data. Extreme values of the significant wave height ...
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Anthony Viselli ✓
Chief Engineer, Ocean Energy and Engineering at UMaine
Orono, Maine, United States · [Contact info](#)
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 University of Maine
 University of Maine

STEPS IN THE PROCEDURE: **PROCESSING RESULTS**

Basic search

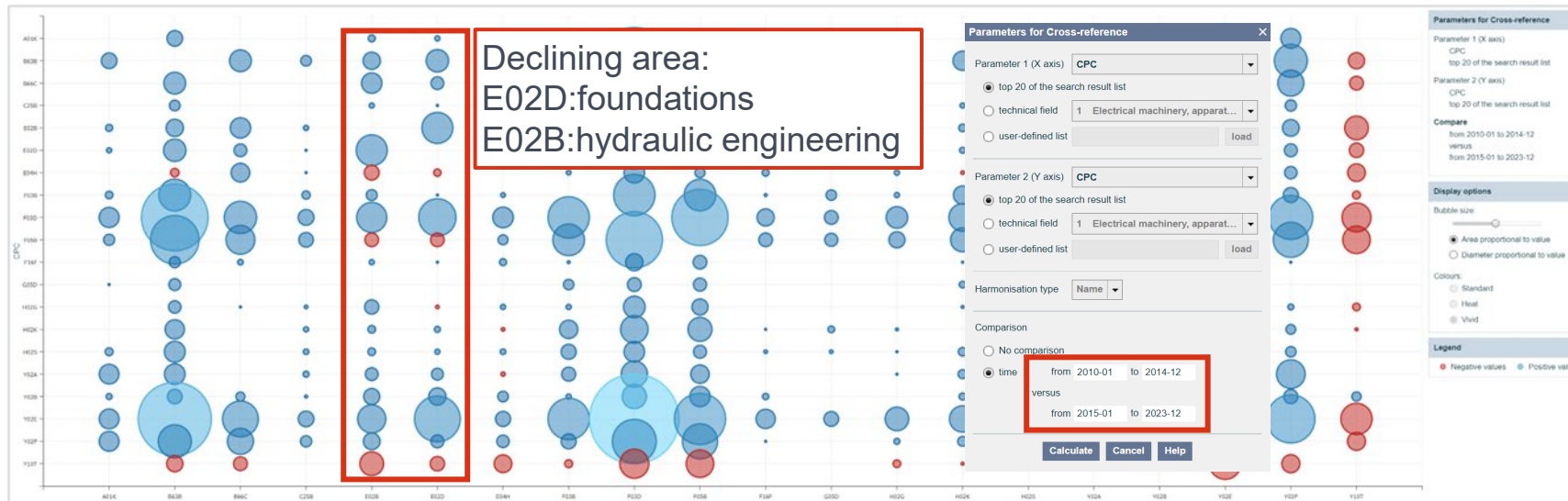
Statistical analysis

Processing results

- further analyses/processing
 - technological hotspots as well as areas of declining or stagnating innovation.
- visualisation
- reporting

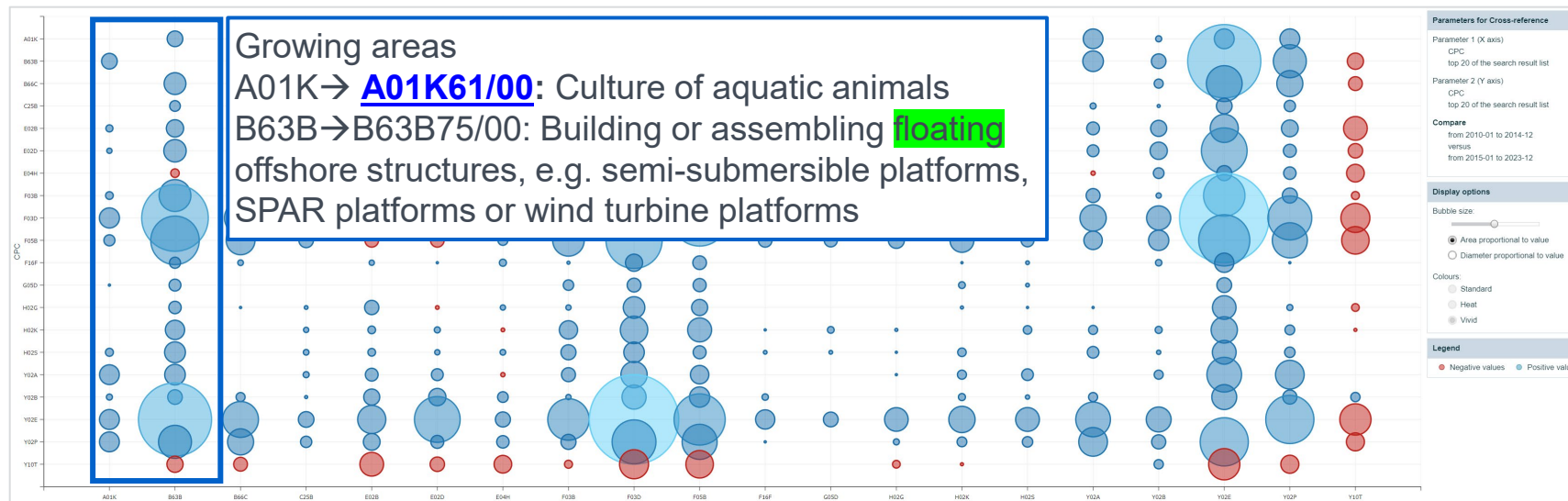
HOTSPOTS AS WELL AS AREAS OF DECLINING

- Cross reference table, using CPC/CPC → co assignment of classification codes.
- Time comparison of 2 timeframes.



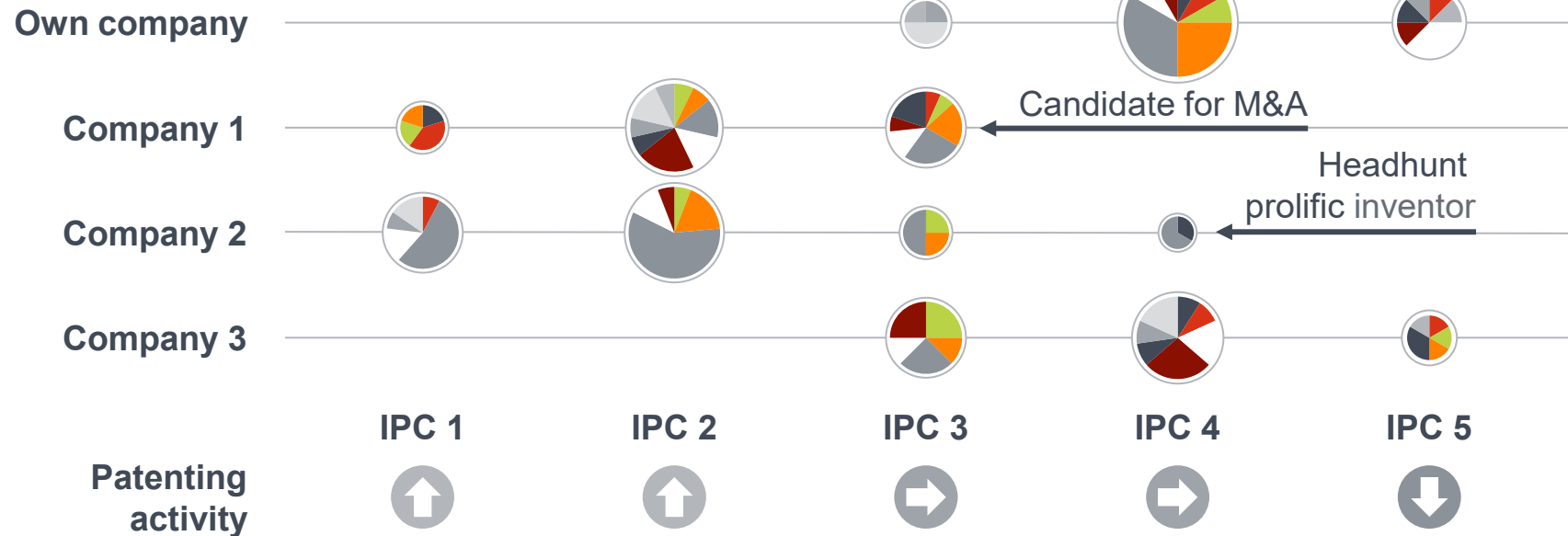
HOTSPOTS AS WELL AS AREAS OF DECLINING

- Cross reference table, using CPC/CPC → co assignment of classification codes.
- Time comparison of 2 timeframes.



PATENT PORTFOLIOS ANALYSIS FOR M&A

One colour per inventor per company



SUMMARY



Patent analytics is an excellent approach to assess large sets of patent data



Data quality, coverage and quality of analysis: Critical prerequisites for reasonable results



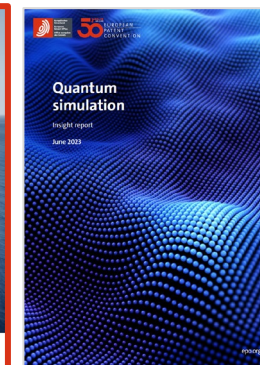
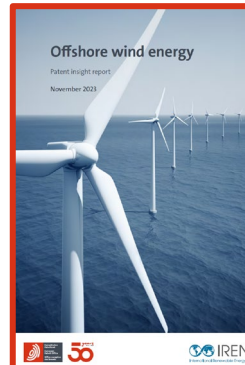
Patent intelligence can be used to reveal business-relevant information, e.g. about

- emerging technologies
- competitive environment (competitors or collaborators ?)
- Prolific inventors
- M&A candidates (synergies ?)

EPO PATENT INSIGHT REPORTS: RECENT AND PLANNED ACTIVITIES

Topic	Status
Electrolysers for hydrogen production	Published (2022)
Space-borne sensing and green applications	Published (2022)
Quantum computing	Published (2023)
Quantum simulation	Published (2023)
mRNA technologies	Published (October 2023)
Offshore wind energy production	Published (November 2023)
Propulsion systems for space	Planned (2024)
Quantum communication	Planned (2024)
Advances in photovoltaics	Planned (2024)

epo.org/insight-reports



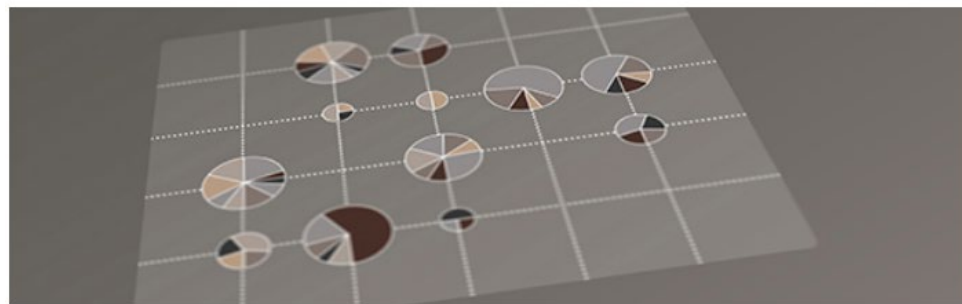
QUESTIONS?

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PATSTAT



Backbone data set for statistical analysis