MINISTERIO
DE ENERGÍA, TURISMO
Y AGENDA DIGITAL

Oficina Española
de Patentes y Marcas

Europäisches
Patentamt
European
Patent Office
Office européen
des brevets

Patenting procedures relating to climate change mitigation technologies

Imprimir todas las ponencias

7 March 2018

Spanish Patent and Trademark Office (SPTO)
Paseo de la Castellana, 75. 28046 Madrid, Spain

A joint SPTO-EPO initiative, organised by SPTO in cooperation with the European Patent Academy

Roundtable: Spanish industry, academia and patent attorneys - Spanish Patent and Trademark Office (SPTO) – European Patent Office (EPO)

08.45 Registration

09.15 **Welcome speech**

MªJosé de Concepción, Director Patent and Technological Information Department, SPTO

Niels Stevnsborg, Senior content expert, European Patent Academy EPO

Moderator of the roundtable*: Luis Sanz, Head of Division Applied Mechanics*, SPTO

09.30 **Inventions in the field of climate change mitigation technologies: how to retrieve data and find prior art.**
What is "climate change mitigation technology"? Classification and accessibility of data; Filing figures and their evolution over time; Technological trends
Alessandro Colombo and Victor Veefkind, Patent examiners, EPO

José Antonio Peces, Patent examiner, SPTO

10.30 Break

11.00 **Prosecution of patent applications in the field of climate change mitigation technologies: how to meet the patentability requirements. Search and examination practice at the EPO and at the SPTO - résumé of the procedures (main steps)**

Alessandro Colombo and Victor Veefkind, Patent examiners, EPO

Luis Sanz, Head of Division Applied Mechanics, SPTO

11.45 **Patents and patent applications in the field of climate change mitigation technologies at the EPO: legal aspects.** Opposition procedures; Decisions of the EPO's Boards of Appeal

Alessandro Colombo and Victor Veefkind, Patent examiners, EPO

12.15 **Experience of a Spanish company in the field of climate change mitigation technologies**

Karl-Georg Aspacher, Siemens Gamesa Renewable Energy S.A.

12.35 **Experience of a Spanish research group in the field of climate change mitigation technologies**

Prof. J. Carlos Abanades, Spanish Research Council. CSIC-INCAR

13.00 **Discussion with the floor on patenting activities in the field of climate change mitigation technologies.**

Patenting practices and field-specific hurdles as perceived by the audience; Oppositions: recent trends as perceived by the audience; Communication between examiners and applicants, etc.

Chair: Luis Sanz, SPTO

13.15 **Wrap-up by the moderator and Closing remarks**

Luis Sanz, SPTO

Niels Stevnsborg, EPO

13.30 **Closing of the event**

13.45 **Closing snacks** on the premises of the SPTO

Speakers

EPO

Alessandro Colombo
Examiner
Sector Information and Communication Technology
European Patent Office, Munich

Alessandro Colombo graduated in electrical engineering at the University Politecnico di Milano (IT).
He worked for 10 years as a project manager in major electrical industries (Enel, ABB).
In 2003 he joined the EPO to work as search expert and examiner in the fields of electrical power distribution and protection.
He is currently a chairman of examining divisions as well as a member of opposition divisions.
He obtained the EQE qualification in 2010.
Since 2011 he has been an instructor and coach of new examiners and a trainer in various workshops on search and examination, as well as in CPC training events for the USPTO, JPO, SIPO and KIPO.
He is a member of the development team for Y02-Y04 codes relating to climate change mitigation technologies, where he is responsible for the classes Y04S (Smart Grids), Y02E (Energy) and Y02P (Production).

Victor Veefkind
Examiner
Sector Healthcare, Biotechnology and Chemistry
European Patent Office, The Hague

Victor Veefkind joined the EPO in 1999. He has a degree in chemistry and a PhD in chemical engineering with emphasis on catalysis and materials science. He furthermore holds a Master's degree in Intellectual Property and Technology Law and passed the EQE exam.
As examiner he has been responsible for several technical fields in industrial chemistry. Furthermore he has been initiator and project leader for nanotechnology classification B82Y and the climate change mitigation technologies classification Y02.
Currently, Victor is examiner in the Healthcare, Biotech and Chemistry sector and member of an opposition directorate.

SPTO

Luis Sanz
Head of Division Applied Mechanics
Patent and Technological Information Department
Spanish Patent and Trademark Office (SPTO)

Luis Sanz is currently the Head of Division Applied Mechanics of the Spanish Patent and Trademark Office (SPTO).
After finishing his studies at the Polytechnic University in Madrid, where he obtained his Degree in Rural and Agronomical Engineering, he worked in the Automotive, Logistics and the Biotechnology industries.
In 2001 he joined the SPTO as a patent examiner in mechanics and since then he has grown to lead the Applied Mechanics Division. During his career at the SPTO he has been seconded as an IP expert to the European Commission in the ITER project and thus lived in Brussels travelling throughout Europe dealing with the use of IP in the European Nuclear Fusion Program.

Luis participates in international meetings and is a regular speaker and trainer at IP seminars both indoor and at Academia and Industry. Currently, he is involved in stablishing the basis to regulate the forthcoming oral proceedings under the new Spanish Patent Act.

José Antonio Peces
Patent Examiner
Technological Information Area, Patent and Technological Information Department
Spanish Patent and Trademark Office (SPTO)

José Antonio Peces graduated in Chemistry by Universidad Complutense in Madrid. He joined the SPTO in 2003 as a Patent Examiner. His previous jobs have been in the in the precious metals industry for 5 years and in the microelectronics IC manufacturing for 13 years.
He now works at the SPTO in the Technological Information Area covering several fields such as materials, sensors, renewable energies, inorganic chemistry, metallurgy, etc. He is involved in search and examination of patent applications, as well as in Patentability Reports and Technological Information.

Karl-Georg Aspacher
Chief IP Counsel
Siemens Gamesa Renewable Energy S.A.

Karl-Georg Aspacher – German and European Patent Attorney, studied electrical engineering at RWTH Aachen (Dipl.-Ing.). Mr. Aspacher is Chief IP Counsel for Siemens Gamesa Renewable Energy (SGRE) and has more than 15 years of experience in the field of intellectual property (IP) thereof 10 years in the field of renewable energies. His main areas of interest are IP strategy, patents and IP litigation. In addition Mr. Aspacher is member in various committees and organizations in the field of IP.

Professor J. Carlos Abanades
Spanish Research Council (CSIC-INCAR)

Professor in the CSIC. Bachelor of Science (1987) and PhD. in Chemical Engineering (1991) by the University of Zaragoza. He works on climate change mitigation processes based on the reduction of CO2 emissions by using high temperature thermochemical cycles to capture CO2 and energy storage. Author of more than 140 scientific publications (index h 44 (scopus) and 51 (google scholar). As inventor he has participated in 6 international patent applications. He was coordinator of the Special Report of the IPCC on CO2 Capture and Storage. Associate Editor of the magazine "International Journal of Greenhouse Gas Control" published by the Greenhouse Gas Control Program of the International Energy Agency (IEAGHG) and Elsevier. Principal researcher in the CSIC in several European projects FP6, FP7 and H2020 in the field of emission reduction of CO2 and energy storage. Scientific responsible in an group of Economic Interest called "La Pereda CO2" participated by the CSIC, to demonstrate its patented technology for the capture of CO2 in a pilot plant of 1.7 MW. Current representative of the CSIC in the "Joint Program" on CO2 capture and storage of the "European Energy Research Alliance".

Oficina Española de Patentes y Marcas

GOBIERNO DE ESPAÑA

MINISTERIO DE ENERGÍA, TURISMO Y AGENDA DIGITAL

Oficina Española de Patentes y Marcas

Patenting procedures relating to Climate Change Mitigation Technologies CCMTs

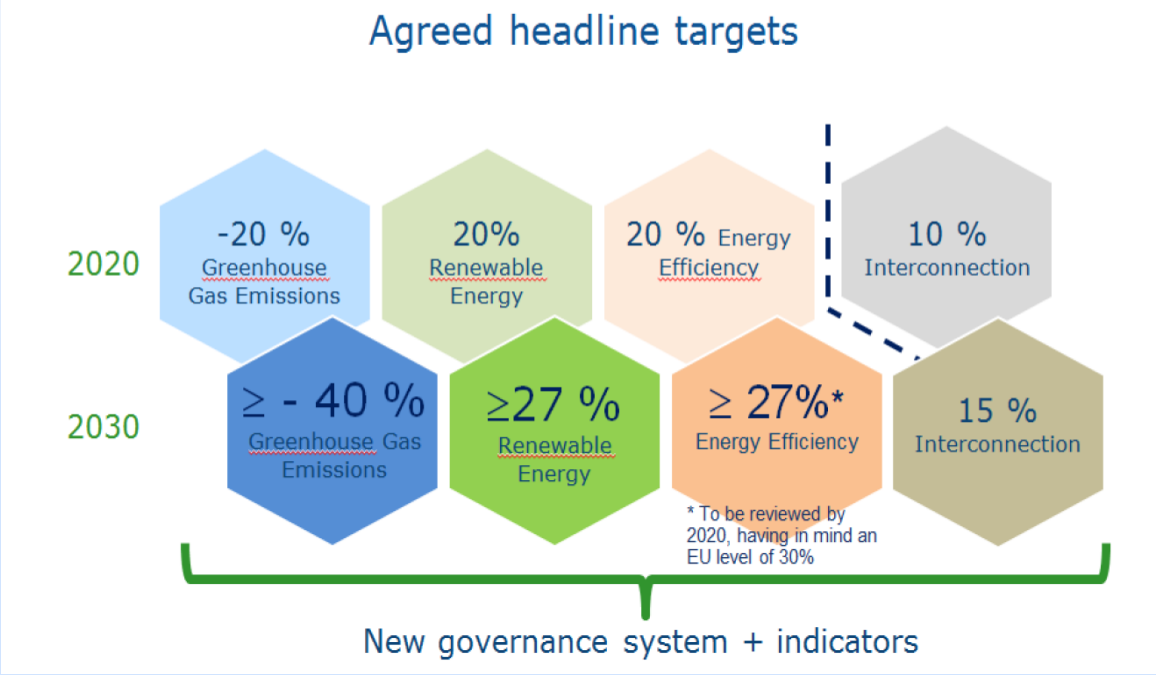
-Patenting and Technological Trends
-OEPM Patent Information on CCMTs

José Antonio Peces – Patent Examiner – OEPM

UNEP-UNFCCC-IPCC

1 1995: COP 1, Berlin, Germany
2 1996: COP 2, Geneva, Switzerland
3 1997: COP 3, The Kyoto Protocol on Climate Change
4 1998: COP 4, Buenos Aires, Argentina
5 1999: COP 5, Bonn, Germany
6 2000: COP 6, The Hague, Netherlands
7 2001: COP 6, Bonn, Germany
8 2001: COP 7, Marrakech, Morocco
9 2002: COP 8, New Delhi, India
10 2003: COP 9, Milan, Italy
11 2004: COP 10, Buenos Aires, Argentina
12 2005: COP 11/CMP 1, Montreal, Canada
13 2006: COP 12/CMP 2, Nairobi, Kenya
14 2007: COP 13/CMP 3, Bali, Indonesia
15 2008: COP 14/CMP 4, Poznań, Poland
16 2009: COP 15/CMP 5, Copenhagen, Denmark
17 2010: COP 16/CMP 6, Cancún, Mexico
18 2011: COP 17/CMP 7, Durban, South Africa
19 2012: COP 18/CMP 8, Doha, Qatar
20 2013: COP 19/CMP 9, Warsaw, Poland
21 2014: COP 20/CMP 10, Lima, Peru
22 2015: COP 21/CMP 11, Paris, France
23 2016: COP 22/CMP 12/CMA 1, Marrakech, Morocco
24 2017: COP 23/CMP 13/CMA 2, Bonn, Germany
25 2018: COP 24/CMP 14/CMA 3, Katowice, Poland

UE: 2030 Framework for Climate Energy



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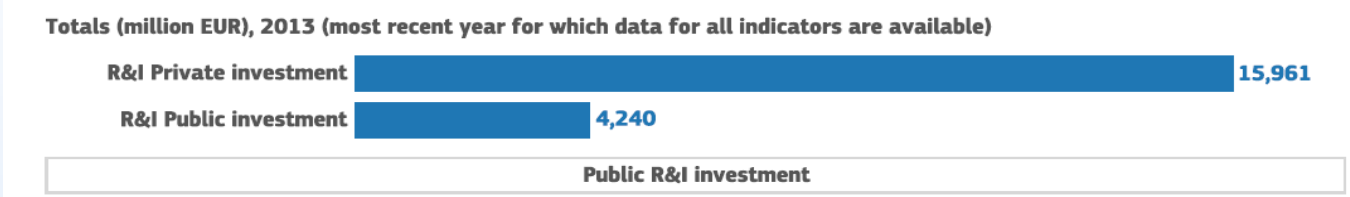
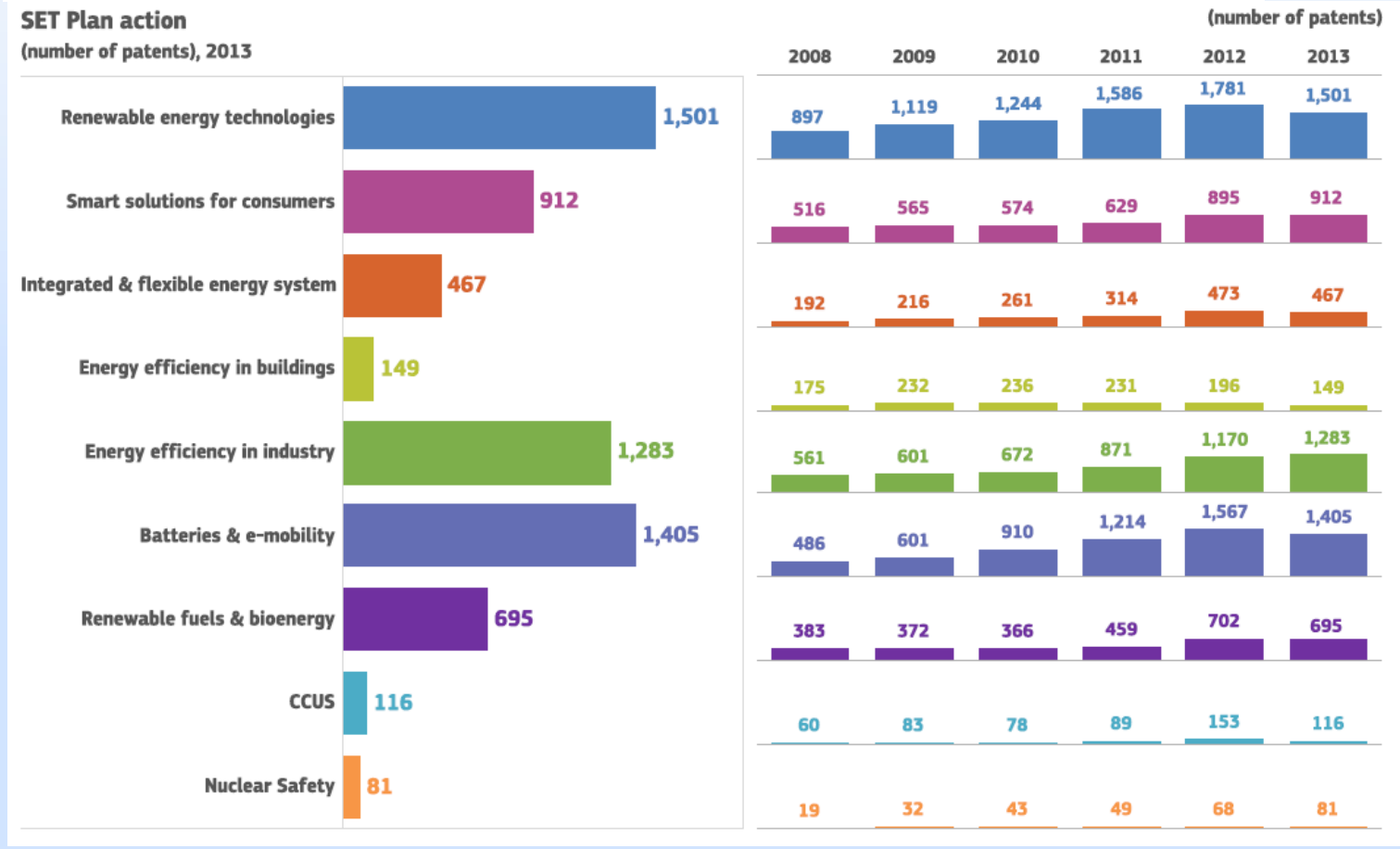
Monitoring R&I Low Carbon Energy Technologies

Oficina Española de Patentes y Marcas

European Union



Putting together R&D Input (€) and Output (patents)



- **Input:**
  EIA and many other sources…
- **Output:**
  EPO PATSTAT

Source: Energy R&I financing and patenting trends in the EU

MINISTERIO DE ENERGÍA, TURISMO Y AGENDA DIGITAL

Monitoring R&I Low Carbon Energy Technologies

Oficina Española de Patentes y Marcas

Spain

Totals (million EUR), 2013 (most recent year for which data for all indicators are available)

R&I Private investment	456
R&I Public investment	72

Trends in Patents

SET Plan action (number of patents), 2013	Share in EU28 2013	(number of patents) 2008	2009	2010	2011	2012	2013
Renewable energy technologies	111.8	7.4%	60.8	95.8	81.4	98.7	128.4	111.8
Smart solutions for consumers	16.8	1.8%	13.0	11.7	10.8	16.6	17.3	16.8
Integrated & flexible energy system	11.1	2.4%	4.6	5.8	9.1	6.1	12.2	11.1
Energy efficiency in buildings	8.2	5.5%	5.3	14.6	7.4	5.2	11.0	8.2
Energy efficiency in industry	32.2	2.5%	13.0	13.9	17.5	21.9	19.3	32.2
Batteries & e-mobility	9.3	0.7%	3.6	2.8	4.2	5.5	7.3	9.3
Renewable fuels & bioenergy	21.7	3.1%	7.7	7.3	13.3	11.6	16.1	21.7
CCUS	2.5	2.2%	2.9	4.2	1.1	3.3	4.7	2.5
Nuclear Safety	3.0	3.7%	0.1	1.8	0.0	1.0	2.2	3.0

Source: Energy R&I financing and patenting trends in the EU

Monitoring R&I Low Carbon Energy Technologies

Patent Count INDICATORS

As close as possible to the time and place of the invention:

- Use of priority date →drawback: recent years still lack data
- Inventor (or applicant) country of residence

Avoid double counts by:

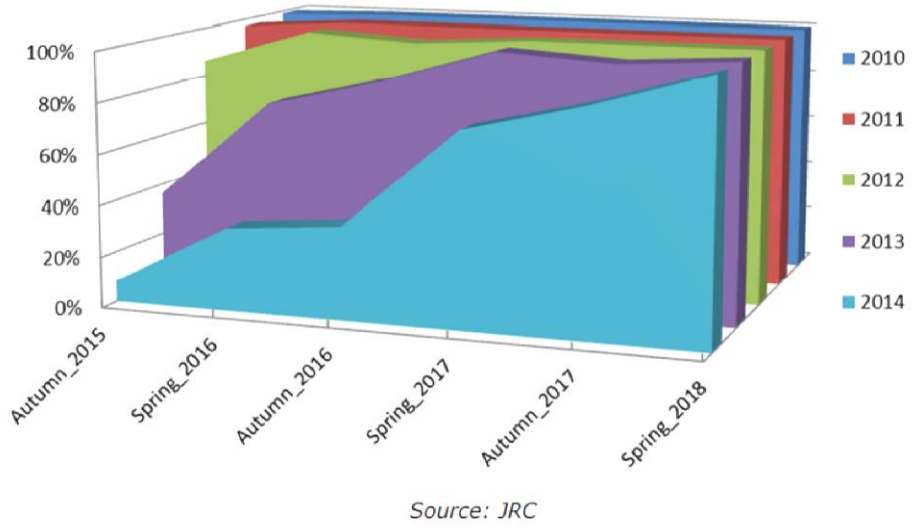
- Counting inventions: patent families (or claimed priorities).
- Share counts for inventors (or applicant) countries
- Harmonise applicant names (!)

Monitoring CCMT inventions

Source: PATSTAT

CCMTs : Y02-Y04S

≥ 2 member patent families



Source: JRC

Figure 4: Empirical JRC estimate of data availability in PATSTAT based on the contents of previous releases.

Source: Energy R&I financing and patenting trends in the EU

MINISTERIO DE ENERGÍA, TURISMO Y AGENDA DIGITAL

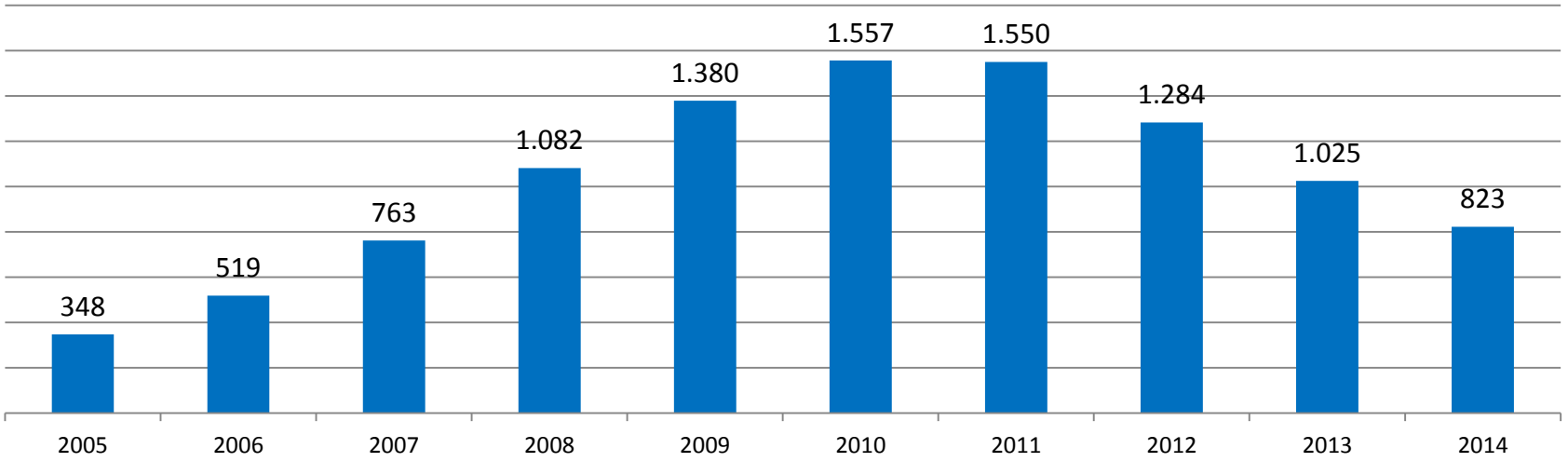
WIND POWER Y02E10/70

Oficina Española de Patentes y Marcas

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total	%
World	348	519	763	1082	1380	1557	1550	1284	1025	823	10331	100,0%
DE	72,7	118,7	152,1	207,3	224,2	326,8	322,5	272,5	172,5	157,8	2027,0	19,6%
DK	33,7	64,8	135,2	192,7	217,3	264,2	280,1	210,7	153,3	124,0	1675,8	16,2%
US	67,7	72,6	140,1	190,8	266,0	260,4	211,3	163,5	175,7	111,3	1659,3	16,1%
JP	29,0	32,5	51,5	67,5	114,0	159,5	129,5	124,8	113,0	112,0	933,2	9,0%
GB	16,8	27,8	32,8	73,7	58,0	74,2	105,5	81,5	61,8	46,7	578,7	5,6%
ES	25,8	33,5	31,5	33,2	41,8	56,3	75,7	103,3	66,3	39,5	506,9	4,9%
CN	10,3	15,5	8,7	21,0	46,2	49,2	50,3	31,0	29,2	40,7	302,1	2,9%
KR	6,0	10,0	10,0	18,0	36,3	48,5	35,5	34,5	35,5	25,5	259,8	2,5%
FR	5,3	12,0	16,5	20,5	25,4	32,2	46,1	28,3	29,2	24,8	240,3	2,3%
IT	4,5	21,5	14,0	22,0	28,7	33,3	39,0	28,3	29,7	13,3	234,3	2,3%
CA	16,3	14,0	23,5	25,4	40,2	24,4	26,5	18,0	11,5	21,8	221,7	2,1%
NL	4,3	20,2	21,3	29,7	36,8	26,8	25,6	25,6	21,4	8,5	220,2	2,1%
SP	0,0	1,0	8,8	25,5	45,8	38,5	26,6	9,8	8,3	1,0	165,3	1,6%
TW	7,5	7,5	9,0	15,5	21,0	24,0	26,5	18,0	9,8	11,3	150,2	1,5%
IN	2,3	0,5	2,8	10,8	24,8	22,7	20,0	18,3	13,7	20,3	136,1	1,3%
OTHER	45,2	67,0	105,3	127,7	152,4	116,0	129,9	116,2	93,7	63,8	1017,2	9,8%

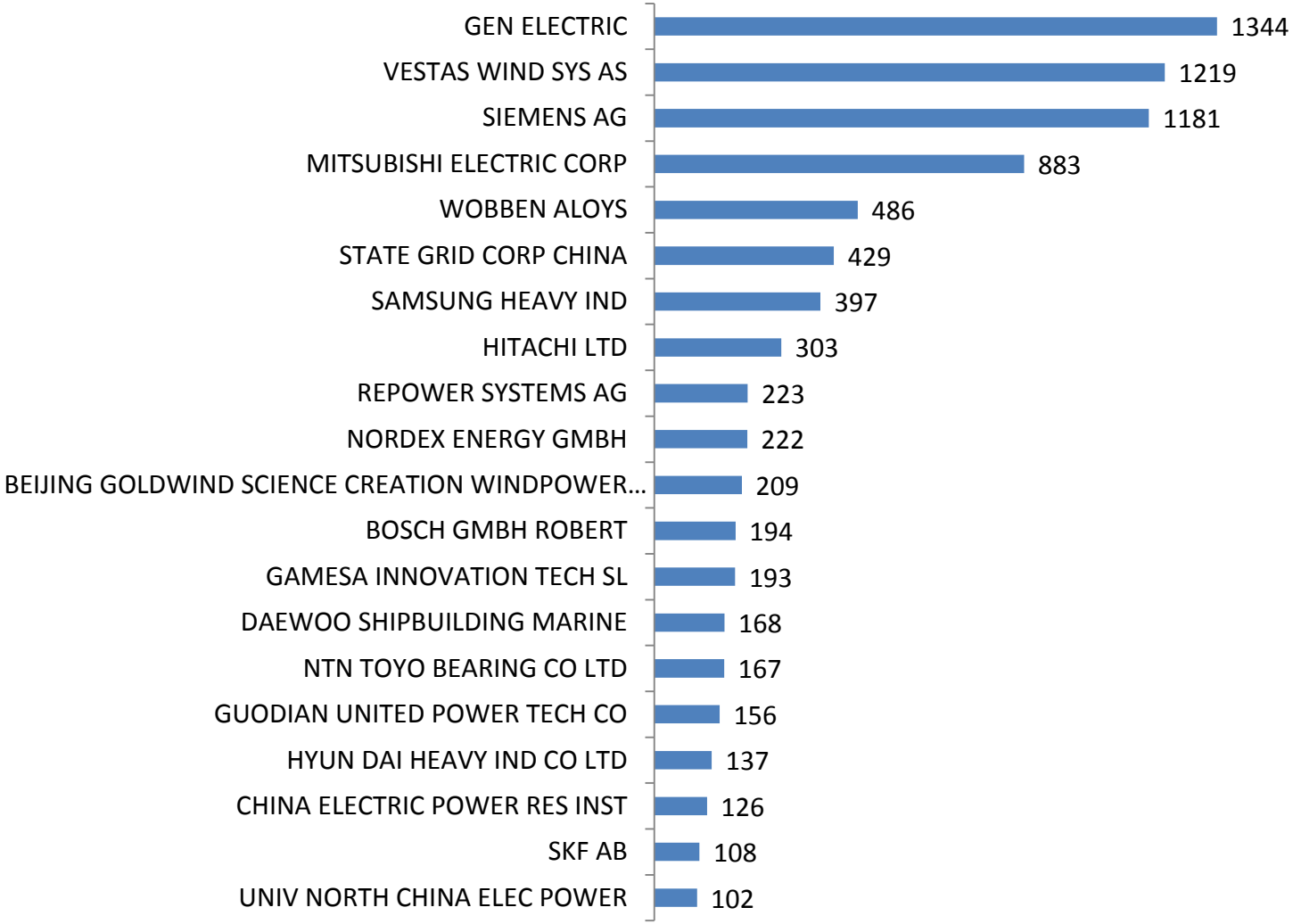
Patent Families* by Inventors' country of residence and by Priority Date

***Patent Family: ≥ 2 members**



Source: OECD Stat.Extracts Nov 2017 - EPO PATSTAT 2017/Spring

Patent Applications since 2000. Top20 Applicants



Source: **Global Patent Index GPI EPO**

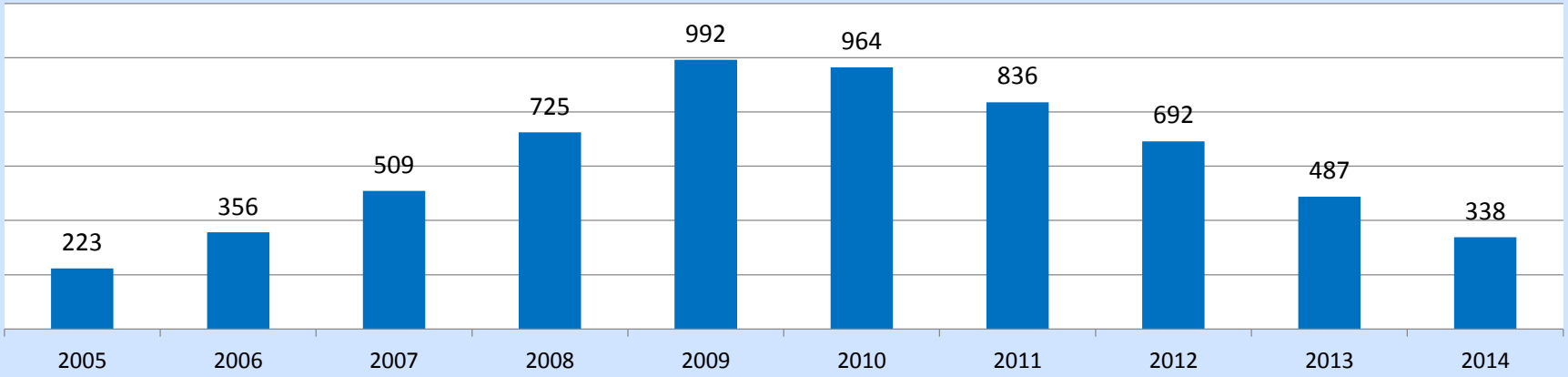
MINISTERIO DE ENERGÍA, TURISMO Y AGENDA DIGITAL

SOLAR THERMAL POWER Y02E10/40

Oficina Española de Patentes y Marcas

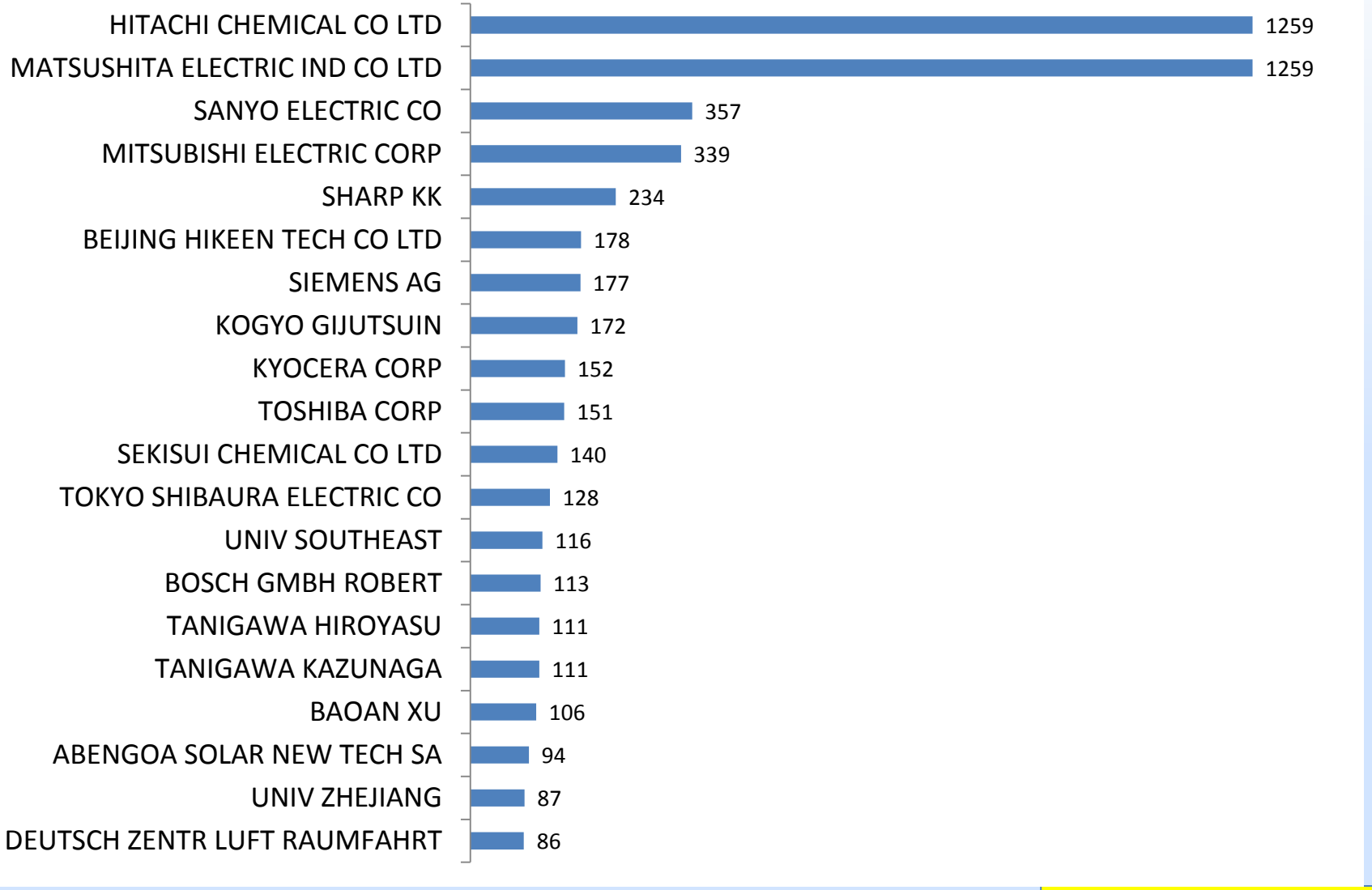
Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total	%
World	223	356	509	725	992	964	836	692	487	338	6122	100,0%
DE	64,3	85,2	114,7	163,5	226,8	217,3	199,1	133,0	67,5	61,0	1332,4	21,8%
US	32,8	79,2	94,0	154,6	221,3	185,9	140,4	113,6	106,0	72,0	1199,9	19,6%
JP	21,0	19,0	18,5	41,5	66,0	81,8	54,3	66,0	55,0	26,0	449,2	7,3%
IT	9,0	24,5	36,0	54,0	50,7	49,0	50,0	45,0	13,2	7,0	338,3	5,5%
FR	15,0	13,0	24,0	26,0	55,2	54,5	51,6	32,8	30,7	20,5	323,2	5,3%
ES	10,8	21,8	33,5	34,5	53,8	41,8	34,8	27,0	8,0	7,5	273,6	4,5%
CN	6,0	17,5	15,3	15,8	23,2	25,7	30,8	37,0	32,8	12,5	216,6	3,5%
IL	6,0	10,0	13,5	22,1	37,0	39,0	37,5	29,0	12,0	8,0	214,1	3,5%
TW	4,5	3,5	14,0	19,5	28,2	32,2	32,8	33,0	21,0	19,5	208,2	3,4%
KR	5,0	2,0	7,5	16,6	20,0	26,5	24,5	24,5	31,0	10,0	167,6	2,7%
CA	1,0	14,2	12,0	10,5	24,3	27,3	35,0	13,2	13,0	11,5	162,0	2,6%
CH	3,0	3,2	10,5	22,3	21,0	29,3	24,0	22,2	15,5	7,8	158,8	2,6%
GB	6,0	7,0	16,2	24,5	23,3	22,8	13,1	19,7	10,8	7,0	150,3	2,5%
AU	6,0	13,0	16,3	24,8	25,3	19,5	11,0	18,5	9,0	6,0	149,5	2,4%
AT	5,0	4,3	12,5	17,0	22,6	22,5	20,0	11,5	6,0	14,8	136,2	2,2%
NL	5,0	3,8	5,5	15,3	13,5	10,0	8,0	6,7	11,0	8,0	86,8	1,4%
OTHER	22,5	34,8	65,0	62,4	79,8	78,9	69,0	59,5	44,4	38,8	555,1	9,1%

Patent Families* by Inventors' country of residence and by Priority Date



Source: OECD Stat.Extracts Nov 2017 - EPO PATSTAT 2017/Spring

Patent Applications since 2000. Top20 Applicants

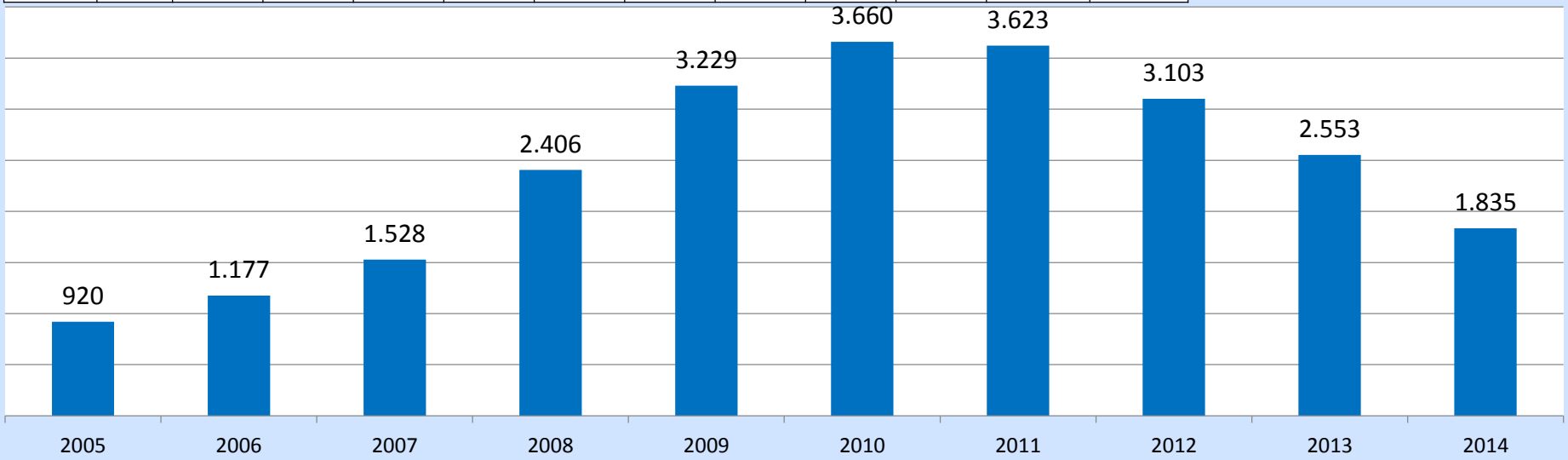


SOLAR PV POWER Y02E10/50

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total	%
World	920	1177	1528	2406	3229	3660	3623	3103	2553	1835	24034	100,0%
JP	313,9	352,8	369,3	599,9	944,5	1197,3	1130,0	939,9	731,7	535,5	7114,7	29,6%
US	171,5	312,0	386,9	560,9	597,6	617,9	549,5	497,6	383,9	250,6	4328,0	18,0%
KR	79,6	86,5	159,0	258,0	441,9	510,6	553,2	442,1	451,4	340,1	3322,4	13,8%
DE	117,7	134,2	206,8	317,1	361,8	374,6	412,3	287,7	227,8	152,3	2592,3	10,8%
TW	20,3	32,8	63,8	129,8	224,3	204,1	241,0	206,7	176,5	124,9	1424,4	5,9%
CN	20,7	39,5	32,5	51,2	96,2	130,0	140,4	130,3	131,4	114,4	886,6	3,7%
FR	30,8	23,7	29,5	58,1	85,9	77,6	101,8	101,9	100,7	72,4	682,2	2,8%
GB	41,8	25,3	40,8	54,9	57,6	51,9	58,9	56,1	51,4	35,0	473,6	2,0%
IT	13,8	16,5	36,8	40,8	59,6	53,8	59,4	61,7	34,5	21,9	398,7	1,7%
CA	7,8	18,0	25,4	25,5	41,1	71,7	52,8	37,8	27,8	25,4	333,3	1,4%
NL	15,6	16,4	20,4	27,3	29,3	44,7	36,8	33,8	16,5	22,5	263,3	1,1%
CH	7,2	7,7	16,5	36,5	34,6	33,8	44,9	42,0	17,7	18,1	258,9	1,1%
IL	8,0	20,4	26,5	42,2	36,2	30,6	18,0	24,3	16,5	15,8	238,6	1,0%
OTHER	71,3	90,4	113,9	202,5	217,2	260,6	223,5	241,4	182,9	105,6	1709,1	7,1%

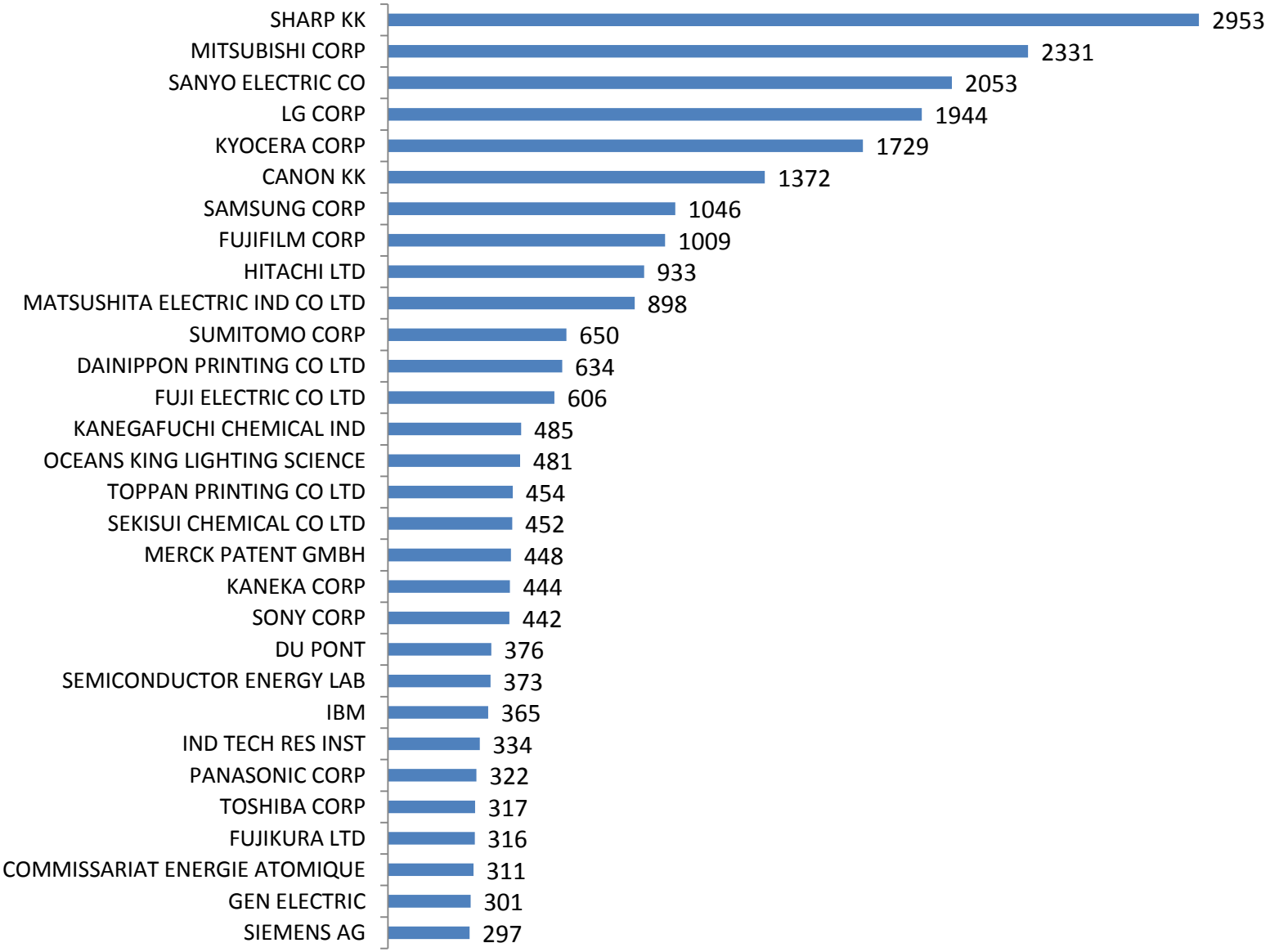
Patent Families* by Inventors' country of residence and by Priority Date

ES 0,7%



Source: OECD Stat.Extracts Nov 2017 - EPO PATSTAT 2017/Spring

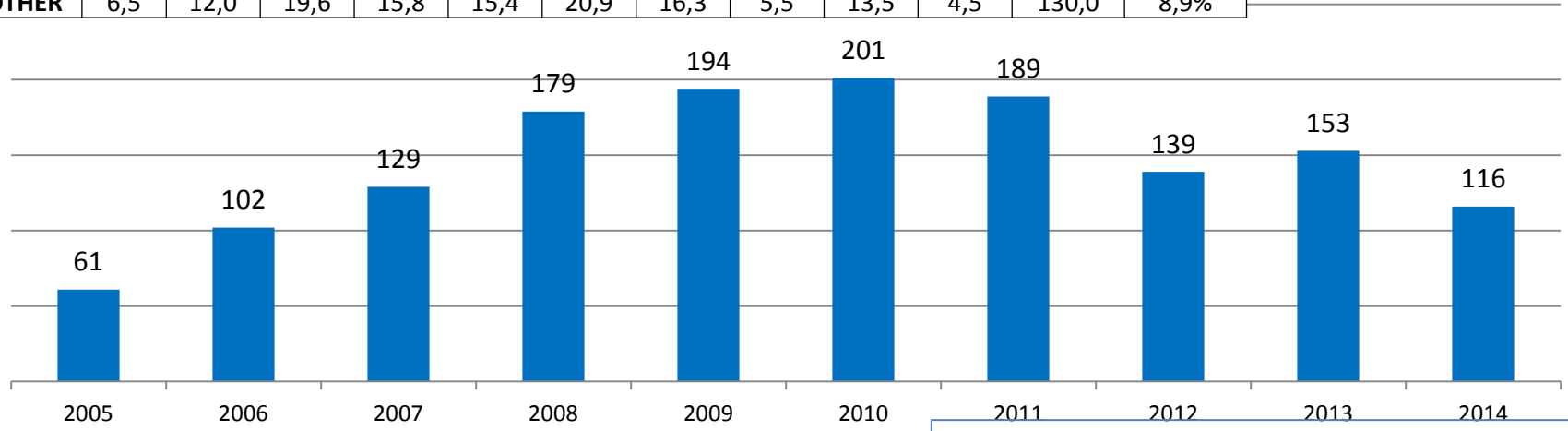
Patent Applications since 2000. Top30 Applicants



MARINE ENERGIES Y02E10/30

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total	%
World	61	102	129	179	194	201	189	139	153	116	1463	100,0%
US	11,5	18,5	21,9	28,5	48,6	47,8	32,8	29,9	26,5	24,5	290,5	19,9%
GB	14,5	18,5	14,2	25,8	26,8	25,2	26,3	16,9	10,0	11,0	189,3	12,9%
DE	2,0	2,5	7,0	17,0	26,8	12,9	23,3	11,0	13,0	9,0	124,5	8,5%
FR	0,0	2,5	4,7	10,5	6,0	15,3	11,0	6,3	9,0	12,0	77,3	5,3%
AU	7,0	7,0	13,0	11,3	9,3	8,0	2,8	4,4	5,0	1,0	68,8	4,7%
JP	1,0	3,0	1,5	3,0	4,5	4,9	17,5	13,0	6,5	10,0	64,9	4,4%
KR	1,0	4,0	5,0	3,5	8,0	7,0	10,8	9,0	6,5	7,5	62,3	4,3%
NO	3,0	3,0	9,0	10,5	13,0	8,0	4,5	4,0	2,0	5,0	62,0	4,2%
CN	1,0	0,5	4,0	3,5	4,0	5,5	5,0	12,5	15,5	5,5	57,0	3,9%
CA	3,0	4,0	4,0	6,5	4,5	10,0	5,5	3,8	8,5	2,0	51,8	3,5%
SE	0,0	1,5	4,0	7,5	2,0	11,0	4,0	3,0	3,0	4,0	40,0	2,7%
IE	0,5	5,5	3,5	7,5	7,0	4,0	5,5	3,0	1,0	1,0	38,5	2,6%
IT	1,0	3,5	4,0	3,5	3,5	4,0	4,5	4,0	6,0	3,0	37,0	2,5%
ES	3,0	7,0	3,0	3,0	5,0	5,0	3,0	1,5	1,5	4,0	36,0	2,5%
FI	2,0	2,0	1,0	3,0	1,0	5,0	4,0	4,0	7,0	5,0	34,0	2,3%
TW	0,0	0,0	1,0	2,0	1,0	6,0	3,0	3,0	9,5	5,0	30,5	2,1%
IL	0,0	5,0	5,0	7,0	0,0	0,0	5,0	0,0	2,0	1,0	25,0	1,7%
DK	4,0	2,0	2,0	6,5	1,0	0,0	2,0	1,4	2,0	0,5	21,4	1,5%
NL	0,0	0,0	1,0	3,0	6,6	0,5	2,0	2,7	5,0	0,0	20,8	1,4%
OTHER	6,5	12,0	19,6	15,8	15,4	20,9	16,3	5,5	13,5	4,5	130,0	8,9%

Patent Families* by Inventors' country of residence and by Priority Date



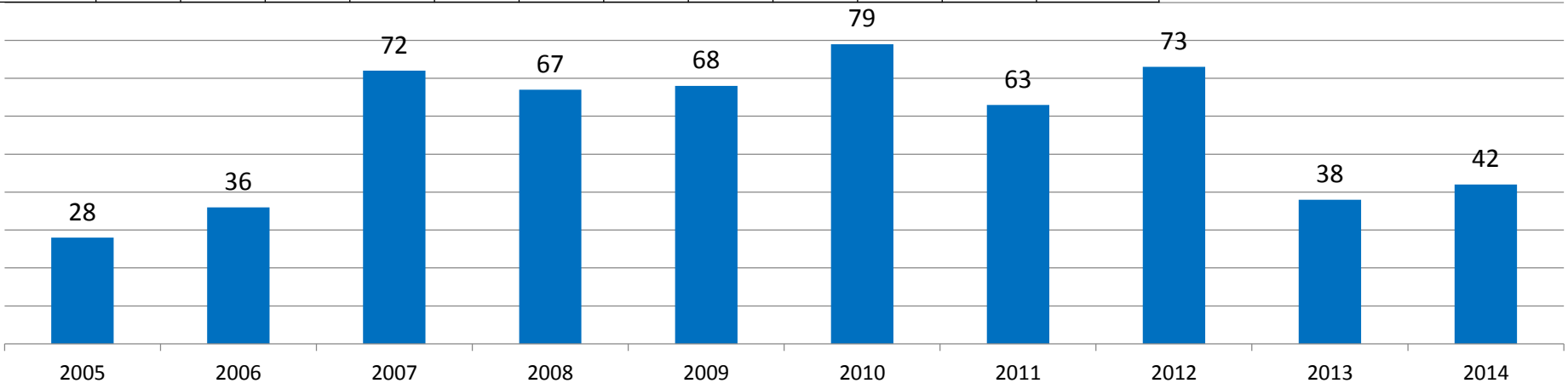
Source: OECD Stat.Extracts Nov 2017 - EPO PATSTAT 2017/Spring

GEOTHERMAL ENERGY Y02E10/10

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total	%
World	28	36	72	67	68	79	63	73	38	42	566	100,0%
DE	6,0	14,0	25,0	17,0	21,5	13,0	9,5	12,0	3,2	11,0	132,2	23,4%
US	3,5	4,0	12,0	15,5	12,0	29,0	13,3	18,0	12,7	7,5	127,4	22,5%
JP	5,0	1,0	2,0	5,0	1,5	2,0	6,0	9,5	2,0	6,5	40,5	7,2%
CA	5,5	2,0	3,5	3,0	9,0	11,0	1,0	1,0	2,0	0,0	38,0	6,7%
IT	1,0	1,0	2,0	1,0	4,0	3,0	2,0	4,0	0,7	2,0	20,7	3,7%
TW	1,0	0,5	1,0	3,0	2,5	0,0	7,0	2,5	1,0	0,5	19,0	3,4%
FR	2,0	0,0	1,0	1,0	3,0	3,5	3,0	1,0	2,0	1,0	17,5	3,1%
CN	0,0	0,5	2,0	4,5	2,0	0,0	1,3	4,0	1,0	0,5	15,8	2,8%
GB	0,0	2,0	0,5	1,3	1,5	2,0	3,0	2,5	2,5	0,0	15,3	2,7%
SE	0,0	1,0	1,0	6,0	2,0	0,0	0,0	1,0	1,0	3,0	15,0	2,7%
NL	1,0	0,0	1,5	2,3	2,0	2,0	2,5	0,5	0,5	2,5	14,8	2,6%
KR	1,0	1,0	0,5	1,5	0,0	4,0	0,0	4,0	2,0	0,5	14,5	2,6%
AT	0,0	0,0	7,0	1,0	1,0	0,0	2,0	1,0	0,0	1,5	13,5	2,4%
AU	1,0	0,0	2,0	0,0	0,0	1,0	4,0	3,0	2,0	0,0	13,0	2,3%
CH	0,0	2,0	2,0	0,0	1,0	2,5	1,0	3,0	0,5	1,0	13,0	2,3%
FI	0,0	3,0	0,0	1,0	1,0	0,0	3,0	2,0	0,0	1,0	11,0	1,9%
NO	0,0	0,0	0,5	1,0	0,0	1,0	2,0	1,0	1,0	0,0	6,5	1,1%
OTHER	1,0	4,0	8,5	3,0	4,0	5,0	2,5	3,0	4,0	3,5	38,5	6,8%

Patent Families* by Inventors' country of residence and by Priority Date

ES 0,6%



Source: OECD Stat.Extracts Nov 2017 - EPO PATSTAT 2017/Spring

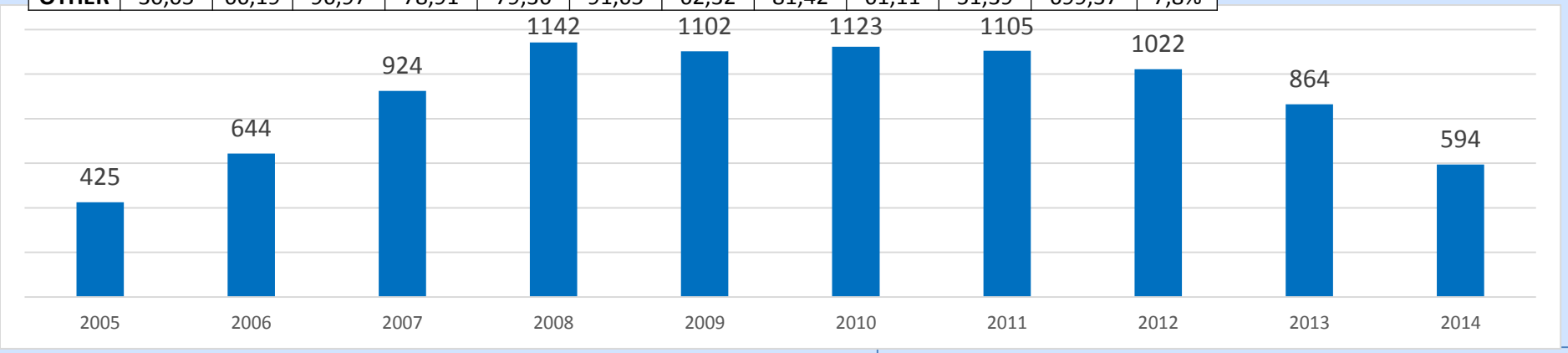
MINISTERIO DE ENERGÍA, TURISMO Y AGENDA DIGITAL

ENERGY FROM NON FOSSIL FUELS Y02E50

Oficina Española de Patentes y Marcas

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	TOTAL	%
World	425	644	924	1142	1102	1123	1105	1022	864	594	8945	100%
US	130,03	248,7	273,42	464,66	399,73	395,53	399,08	367,32	351,63	163,98	3194,08	35,7%
DE	67,83	82,67	150,1	124,79	156,37	112,98	108,5	108,58	75,5	59,9	1047,22	11,7%
JP	39,58	42	66,5	83,5	78,83	91,17	62,25	59,17	51,5	46	620,5	6,9%
CA	23,33	27,47	42,6	44,98	51,7	49,2	49,03	33,7	40,27	36,33	398,61	4,5%
FR	14,67	20,57	33,58	40,43	59,28	48,15	50,83	55,2	40,5	32,33	395,54	4,4%
NL	14,53	28,9	35,45	32,65	35,79	51,54	48,25	35,28	26,53	22,75	331,67	3,7%
KR	7	15,17	31	21,5	34	46,33	41,5	44	34	51	325,5	3,6%
GB	8	25,25	38,28	47,64	30,29	36,56	35,42	39,87	19,03	15,75	296,09	3,3%
CN	6,87	16,83	13,85	29,73	14,35	32,3	32,25	49,4	30,63	17,17	243,38	2,7%
DK	24,75	11,5	11,7	30,83	29,28	38,65	37,58	16,45	19,37	17,9	238,01	2,7%
IT	17	14,5	16,83	25,89	27	14	17,5	17	16,83	15	181,55	2,0%
FI	9,67	2,5	14,17	19,33	16,5	27,33	39,33	19,7	15	13,83	177,36	2,0%
SE	3	4,5	9,83	14,83	19,7	18,82	31,75	19,5	16	8,67	146,6	1,6%
IN	3,33	3,13	12,85	14,45	16,87	17,3	18,67	12,87	11,93	4,33	115,73	1,3%
BR	8	5,5	16,33	15,64	6,5	7,83	11,17	13	6	7,17	97,14	1,1%
CH	8,33	2,72	12,2	4,83	6,62	12,83	10,08	13,83	14	9,83	95,27	1,1%
IL	2	5,5	12,67	15,83	13	9,83	15	8,67	8,17	3,5	94,17	1,1%
AU	1,5	6	12,67	9,58	10,5	9,5	16,33	6,92	8,5	11,67	93,17	1,0%
ES	0,53	7,4	11	10,5	4,5	6,5	12,33	10,87	12,5	4	80,13	0,9%
AT	5	7	12	11,5	11,83	5	5,83	9,25	5	1,5	73,91	0,8%
OTHER	30,05	66,19	96,97	78,91	79,36	91,65	62,32	81,42	61,11	51,39	699,37	7,8%

Patent Families* by Inventors' country of residence and by Priority Date



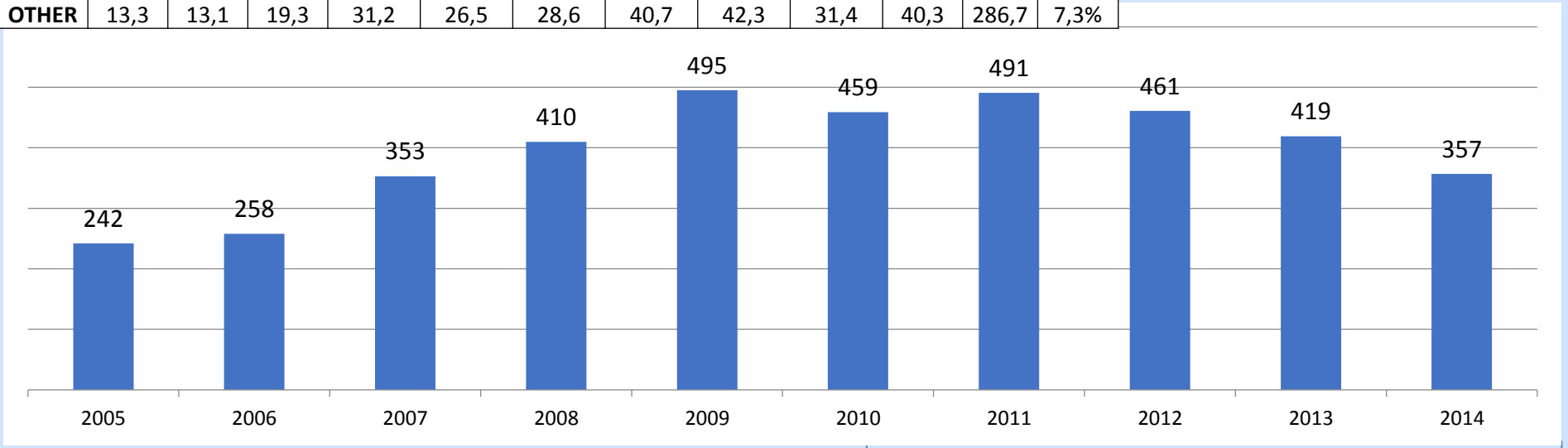
Source: OECD Stat.Extracts Nov 2017 - EPO PATSTAT 2017/Spring

Capture, Secuestration & Disposal of Greenhouse Gases Y02C

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	TOTAL	%
World	242	258	353	410	495	459	491	461	419	357	3945	100,0%
US	75,9	85,9	126,0	146,0	159,5	161,0	151,9	135,7	116,2	98,5	1256,6	31,9%
JP	38,8	27,9	46,3	43,3	71,3	65,2	83,7	84,0	78,5	72,8	611,9	15,5%
DE	17,3	39,2	39,6	37,8	63,8	56,5	52,7	39,5	41,3	39,3	427,1	10,8%
FR	22,8	18,1	14,6	28,8	30,1	28,0	35,3	25,1	16,5	15,8	234,9	6,0%
KR	7,0	10,2	12,7	15,0	13,8	20,0	24,5	28,0	39,3	29,3	199,8	5,1%
CA	22,6	14,4	10,2	22,7	26,0	19,4	12,0	24,9	13,3	7,5	172,9	4,4%
GB	13,8	11,0	14,3	20,1	22,3	21,0	11,0	16,9	19,5	20,2	170,0	4,3%
NL	6,8	3,2	13,1	24,0	14,8	8,8	13,3	14,8	14,0	9,3	122,1	3,1%
NO	6,7	9,3	12,8	6,8	15,5	6,5	12,7	8,5	9,3	3,0	91,0	2,3%
AU	4,5	10,8	15,0	8,0	12,3	13,0	4,5	4,1	7,0	1,0	80,2	2,0%
CN	3,2	3,7	14,3	6,1	9,0	7,7	14,0	8,5	9,0	2,3	77,7	2,0%
IN	5,5	3,5	2,5	3,6	6,8	5,8	16,8	8,3	5,5	8,5	66,8	1,7%
SE	0,0	3,0	3,0	6,2	4,8	7,3	7,8	8,2	7,3	3,0	50,6	1,3%
IT	3,8	3,0	4,5	6,5	6,4	7,0	0,7	5,0	8,5	3,5	48,9	1,2%
CH	0,0	1,7	5,0	2,0	11,3	3,3	9,6	6,7	2,5	2,5	44,5	1,1%
OTHER	13,3	13,1	19,3	31,2	26,5	28,6	40,7	42,3	31,4	40,3	286,7	7,3%

Patent Families* by Inventors' country of residence and by Priority Date

ES 0,5%



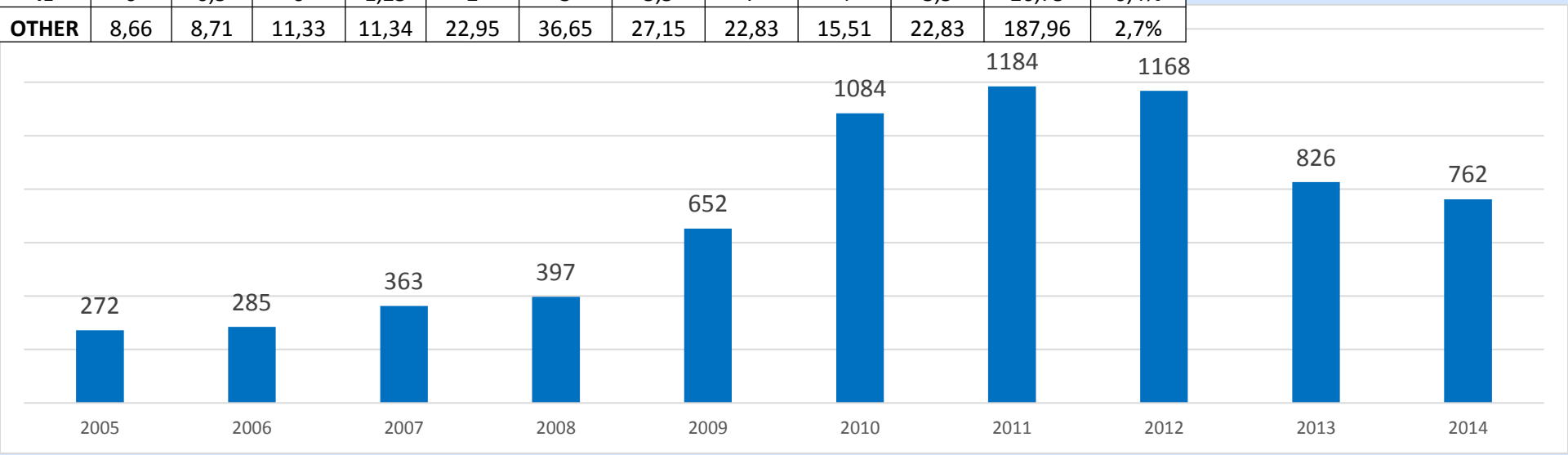
Source: OECD Stat.Extracts Nov 2017 - EPO PATSTAT 2017/Spring

BATTERIES Y02E60/12

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	TOTAL	%
World	272	285	363	397	652	1084	1184	1168	826	762	6993	100,0%
JP	134,5	144,5	192,17	177	301	524,25	552,33	481,33	277	336,67	3120,75	44,6%
KR	81	62,7	60,83	53,83	109,08	198,67	241,33	260,83	224,83	179,67	1472,77	21,1%
US	16,17	30,53	39	58,83	100,62	99,37	126,25	148,42	141,58	95,5	856,27	12,2%
DE	5	15,2	27,5	30,08	43,17	92,42	101,17	111,67	73	75,67	574,88	8,2%
CN	3,5	3,58	5,17	35,5	22,58	57,03	53	52,17	27,75	18,33	278,61	4,0%
FR	7,5	10	12,67	10	21,17	24,5	21,92	20,75	23,83	12,5	164,84	2,4%
TW	2	1	3,25	3	3,5	11	14,5	18,5	11,5	1,67	69,92	1,0%
GB	3	1,92	4	8,5	8,78	10,78	8,42	10,67	7	1,33	64,4	0,9%
CA	5	2,83	4,33	4,5	4,2	9,58	9	6,17	5	5,33	55,94	0,8%
RU	5	1,5	0	0,25	3,5	2,67	5,17	7,83	7,17	4,17	37,26	0,5%
IN	0	1,45	1,25	0,75	2,45	4,75	6,67	7,58	2,83	0	27,73	0,4%
IT	0	0,33	1	1,67	2,17	2,83	7,92	8	1,83	1,83	27,58	0,4%
CH	0,67	0,25	0,5	0,5	4,83	6,5	3,67	4,25	3,17	3	27,34	0,4%
IL	0	0,5	0	1,25	2	3	5,5	7	4	3,5	26,75	0,4%
OTHER	8,66	8,71	11,33	11,34	22,95	36,65	27,15	22,83	15,51	22,83	187,96	2,7%

Patent Families* by Inventors' country of residence and by Priority Date

ES 0,1%



Source: OECD Stat.Extracts Nov 2017 - EPO PATSTAT 2017/Spring

MINISTERIO DE ENERGÍA, TURISMO Y AGENDA DIGITAL

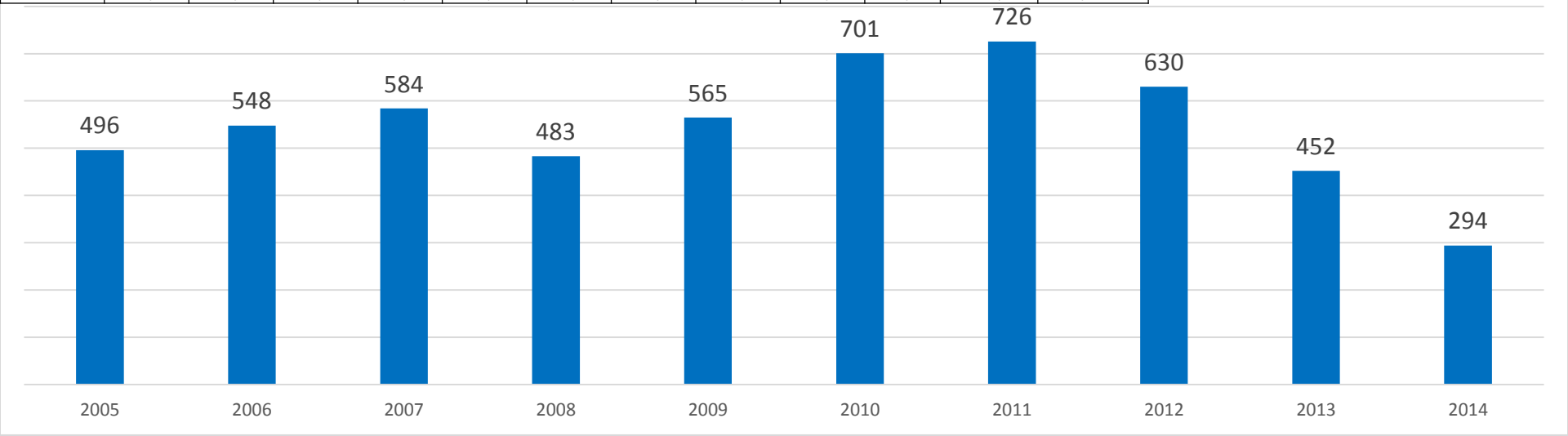
FUEL CELLS Y02E60/50-566

Oficina Española de Patentes y Marcas

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	TOTAL	%
World	496	548	584	483	565	701	726	630	452	294	5479	100,0%
JP	226,7	231,2	261,4	214,5	243,0	250,0	296,0	259,2	113,0	85,3	2180,3	39,8%
US	87,8	79,5	89,9	86,3	93,5	135,6	122,7	120,3	127,3	79,5	1022,4	18,7%
KR	71,2	80,2	60,7	45,0	51,8	114,5	106,2	94,5	76,0	42,5	742,5	13,6%
DE	35,7	41,7	58,2	33,0	51,6	48,4	52,4	40,3	35,5	27,8	424,6	7,7%
FR	5,8	6,0	7,2	14,5	24,1	32,0	26,6	17,7	10,0	8,5	152,3	2,8%
GB	12,0	18,3	14,6	15,2	8,1	14,5	15,7	22,5	14,5	7,5	142,8	2,6%
CN	9,3	9,1	9,9	11,8	12,7	20,5	24,9	13,7	10,0	5,5	127,3	2,3%
TW	8,5	24,3	23,0	10,3	10,5	11,0	10,5	14,3	5,0	6,0	123,4	2,3%
CA	7,7	11,0	6,8	15,3	10,3	13,5	18,0	14,2	11,5	6,5	114,8	2,1%
DE	4,3	5,0	12,5	4,0	7,4	2,3	5,5	3,3	0,5	1,5	46,4	0,8%
IT	5,0	7,0	6,5	2,0	6,8	6,7	7,5	0,0	3,0	0,0	44,5	0,8%
NL	2,3	4,0	4,7	6,7	5,2	3,8	1,8	1,3	5,0	2,5	37,4	0,7%
IN	2,5	2,8	3,8	3,0	3,9	4,1	4,8	3,7	4,5	0,5	33,5	0,6%
CH	0,3	0,0	4,0	3,5	7,3	3,9	5,3	3,0	1,7	3,0	32,0	0,6%
AT	0,6	2,4	2,2	1,5	4,8	4,2	2,5	2,0	11,2	0,0	31,4	0,6%
OTHER	16,3	25,7	18,7	16,5	23,9	36,0	25,7	20,0	23,3	17,3	223,5	4,1%

Patent Families* by Inventors' country of residence and by Priority Date

ES 0,2%



Source: OECD Stat.Extracts Nov 2017 - EPO PATSTAT 2017/Spring

MINISTERIO DE ENERGÍA, TURISMO Y AGENDA DIGITAL

ELECTRIC VEHICLES

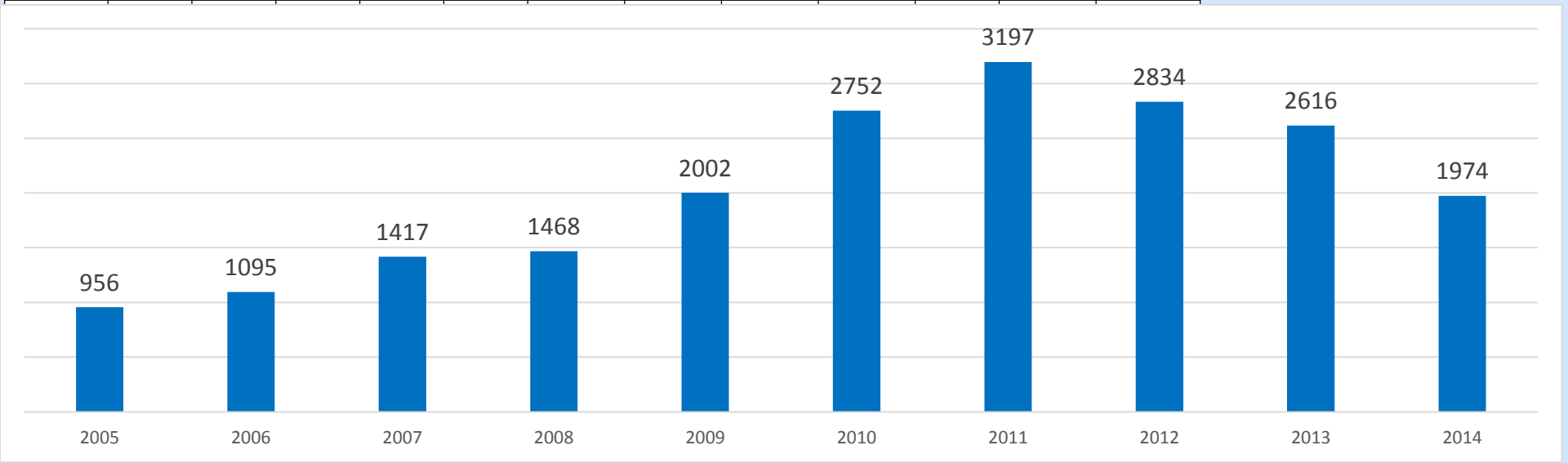
Y02T10/64-649 Y02T10/70-7094 Y02T10/72-7291

Oficina Española de Patentes y Marcas

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	TOTAL	%
World	956	1095	1417	1468	2002	2752	3197	2834	2616	1974	20311	100,0%
JP	600,8	671,5	705,0	627,5	902,5	1318,5	1635,1	1231,2	1111,8	763,2	9567,1	47,1%
US	128,3	124,8	325,4	321,8	356,1	385,0	412,7	368,4	377,4	335,3	3135,0	15,4%
DE	88,8	108,4	164,2	193,6	322,9	412,0	422,2	429,4	356,0	300,2	2797,6	13,8%
KR	37,5	59,4	36,8	51,8	113,2	220,1	297,8	331,0	369,8	305,3	1822,6	9,0%
FR	28,5	36,7	55,2	55,0	62,8	92,8	120,3	116,3	107,8	49,3	724,7	3,6%
CN	7,7	16,4	22,5	50,9	32,4	57,1	51,2	50,3	50,9	44,1	383,5	1,9%
GB	5,0	9,5	7,8	15,3	25,0	33,8	36,3	55,3	37,5	23,8	249,5	1,2%
SE	12,2	13,5	6,5	13,3	25,8	22,8	28,2	25,0	45,5	18,0	210,8	1,0%
CA	17,8	10,8	22,2	11,6	11,7	23,8	28,4	21,3	18,7	17,0	183,4	0,9%
TW	1,5	2,5	11,5	13,5	16,7	28,0	37,4	28,9	24,0	18,5	182,5	0,9%
IT	6,8	10,5	11,5	15,0	22,5	18,3	17,2	19,3	13,3	16,0	150,4	0,7%
AT	3,5	6,3	13,8	5,3	16,0	31,3	14,7	32,2	12,5	7,5	143,2	0,7%
CH	1,5	6,5	3,0	9,8	9,7	18,8	11,2	12,2	15,8	14,1	102,5	0,5%
IL	0,0	1,0	2,0	40,8	9,9	5,0	11,0	22,0	4,0	4,5	100,1	0,5%

Patent Families* by Inventors' country of residence and by Priority Date

ES 0,3%

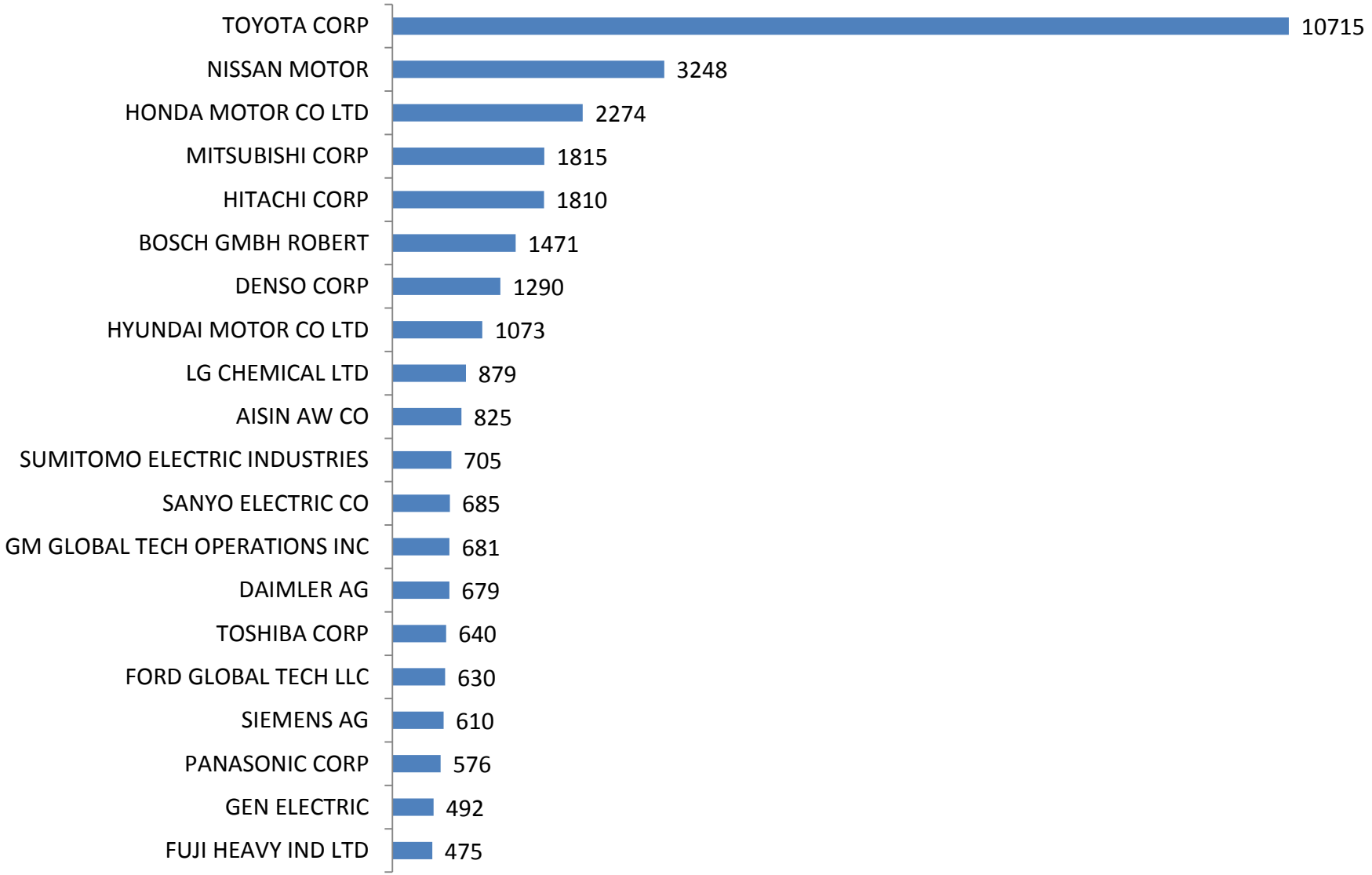


Source: OECD Stat.Extracts Nov 2017 - EPO PATSTAT 2017/Spring

ELECTRIC VEHICLES

Y02T10/64-649 Y02T10/70-7094 Y02T10/72-7291

Patent Applications since 2000. Top20 Applicants

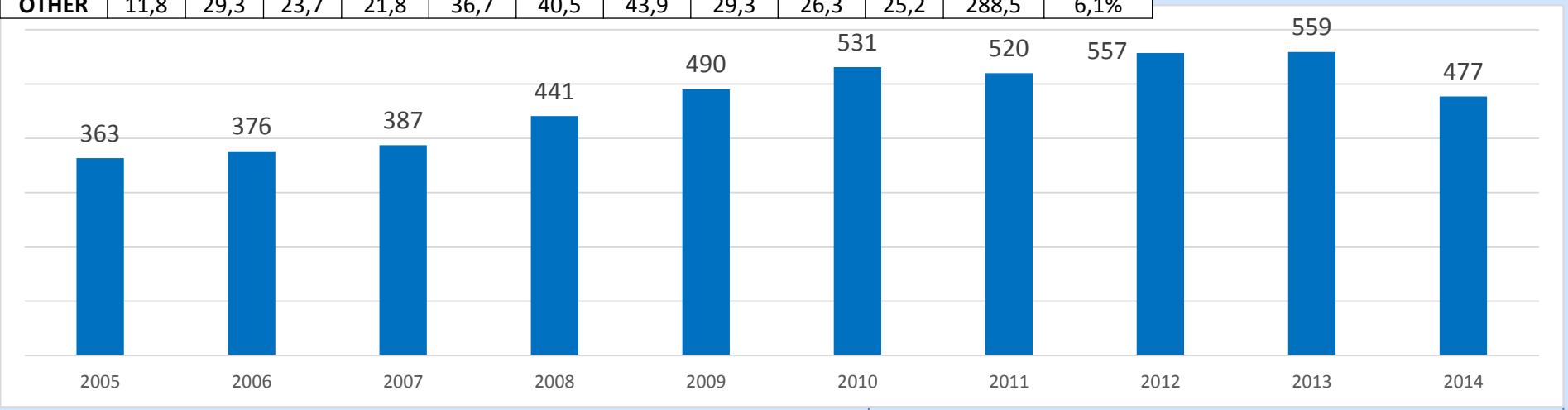


Source: **Global Patent Index GPI EPO**

Heating, ventilation or air conditioning HVAC Y02B30

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	TOTAL	%
World	363	376	387	441	490	531	520	557	559	477	4701	100,0%
JP	92,5	85,0	89,0	102,0	117,0	107,5	133,0	155,0	130,5	95,3	1106,8	23,5%
US	63,0	38,4	57,1	50,0	55,7	76,0	72,9	84,8	81,0	89,0	667,9	14,2%
DE	46,3	76,0	57,5	77,3	71,2	82,0	66,0	51,5	74,8	60,0	662,6	14,1%
KR	59,5	51,5	39,5	26,5	40,0	51,5	35,5	42,0	36,5	41,5	424,0	9,0%
FR	13,0	11,4	16,3	30,5	39,5	45,0	24,4	29,8	50,0	38,3	298,2	6,3%
IL	12,0	16,8	16,5	21,3	23,5	24,5	25,5	19,5	17,0	20,3	196,9	4,2%
CN	3,5	5,5	9,0	10,5	20,5	16,5	22,5	32,7	31,5	22,0	174,2	3,7%
GB	12,8	6,0	13,5	21,5	21,0	21,0	14,0	28,5	22,5	12,0	172,8	3,7%
CA	9,0	7,0	14,0	14,0	9,3	11,0	16,5	16,5	25,8	12,5	135,6	2,9%
NL	10,0	10,5	3,0	7,5	7,3	10,0	16,0	10,5	8,8	7,0	90,6	1,9%
DK	5,0	8,5	14,0	9,0	12,0	4,5	4,5	7,0	8,5	8,0	81,0	1,7%
CH	8,0	5,0	1,5	4,8	10,5	11,0	6,9	5,0	12,5	8,1	73,3	1,6%
AT	3,5	9,0	7,0	9,3	7,8	4,0	7,4	6,0	5,0	6,3	65,3	1,4%
SE	1,0	6,5	7,5	7,0	3,5	7,5	4,0	6,5	13,0	7,0	63,5	1,4%
TW	3,0	5,0	2,0	7,0	4,0	9,5	12,0	10,3	4,5	6,0	63,3	1,3%
AU	3,0	2,0	7,0	5,8	1,3	4,0	8,0	10,0	4,0	7,0	52,2	1,1%
FI	1,0	1,5	4,5	7,0	4,0	3,0	4,0	8,0	4,5	8,0	45,5	1,0%
ES	5,0	1,0	4,5	8,0	5,3	2,0	3,0	4,0	2,5	3,5	38,8	0,8%
OTHER	11,8	29,3	23,7	21,8	36,7	40,5	43,9	29,3	26,3	25,2	288,5	6,1%

Patent Families* by Inventors' country of residence and by Priority Date



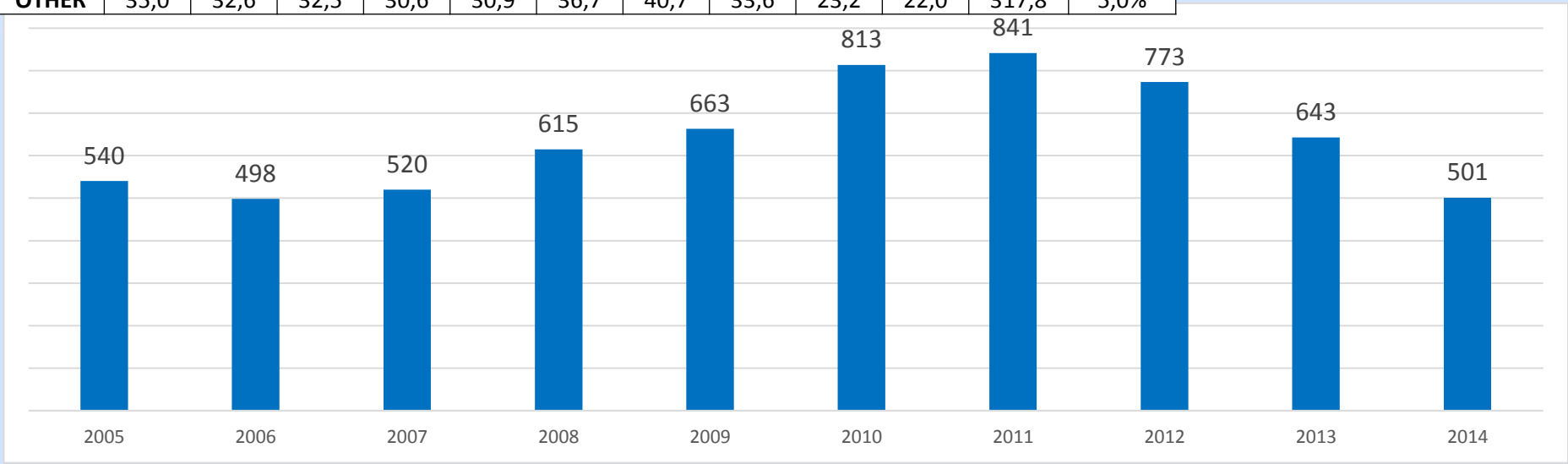
Source: OECD Stat.Extracts Nov 2017 - EPO PATSTAT 2017/Spring

LIGHTING Y02B20

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	TOTAL	%
World	540	498	520	615	663	813	841	773	643	501	6407	100,0%
JP	131,5	126,5	120,0	136,0	110,0	169,5	166,3	151,5	90,0	80,3	1281,7	20,0%
US	109,3	54,5	78,0	134,2	134,8	130,1	138,1	116,0	144,0	105,6	1144,4	17,9%
KR	66,0	75,0	42,7	51,2	73,5	112,8	132,5	139,5	85,3	63,0	841,5	13,1%
TW	37,2	53,2	56,7	72,5	87,2	85,8	87,0	88,0	54,3	37,8	659,6	10,3%
CN	26,6	28,2	29,3	41,4	50,8	72,5	104,8	84,8	100,3	66,6	605,3	9,4%
DE	62,1	45,6	68,5	58,3	55,4	66,4	56,0	47,0	44,5	32,2	535,9	8,4%
NL	16,8	26,8	31,4	35,6	45,1	30,2	40,7	44,3	42,2	44,5	357,7	5,6%
GB	9,0	12,5	9,3	11,7	27,0	15,2	17,5	13,6	18,0	7,7	141,4	2,2%
AT	6,5	9,8	14,6	12,8	5,0	17,0	8,8	21,0	14,3	15,3	125,1	2,0%
CA	17,2	10,0	9,5	4,0	10,5	28,3	17,3	9,1	5,8	8,5	120,2	1,9%
IT	6,0	6,8	7,5	10,2	12,9	10,8	9,0	5,0	8,0	4,0	80,3	1,3%
FR	7,8	9,5	6,5	3,0	6,5	9,5	7,0	6,7	2,5	7,0	66,0	1,0%
CH	0,0	3,5	3,3	8,7	5,5	19,0	5,3	3,8	4,8	2,0	56,0	0,9%
HU	3,5	1,0	9,0	4,0	3,0	6,8	7,0	1,3	1,5	1,0	38,2	0,6%
AU	5,5	2,6	1,3	1,0	5,0	2,3	3,0	7,8	4,3	3,5	36,3	0,6%
OTHER	35,0	32,6	32,5	30,6	30,9	36,7	40,7	33,6	23,2	22,0	317,8	5,0%

Patent Families* by Inventors' country of residence and by Priority Date

ES 0,3%



Source: OECD Stat.Extracts Nov 2017 - EPO PATSTAT 2017/Spring

MINISTERIO
DE ENERGÍA, TURISMO
Y AGENDA DIGITAL

Oficina Española
de Patentes y Marcas

OEPM PATENT INFORMATION ON CCMTs

- CCMT PATENT PUBLICATIONS YEARLY REPORT
- TECHNOLOGY ALERTS
- TECHNOLOGY WATCH BULLETINS
- TRADE FAIRS
- TECHNOLOGY PLATFORMS

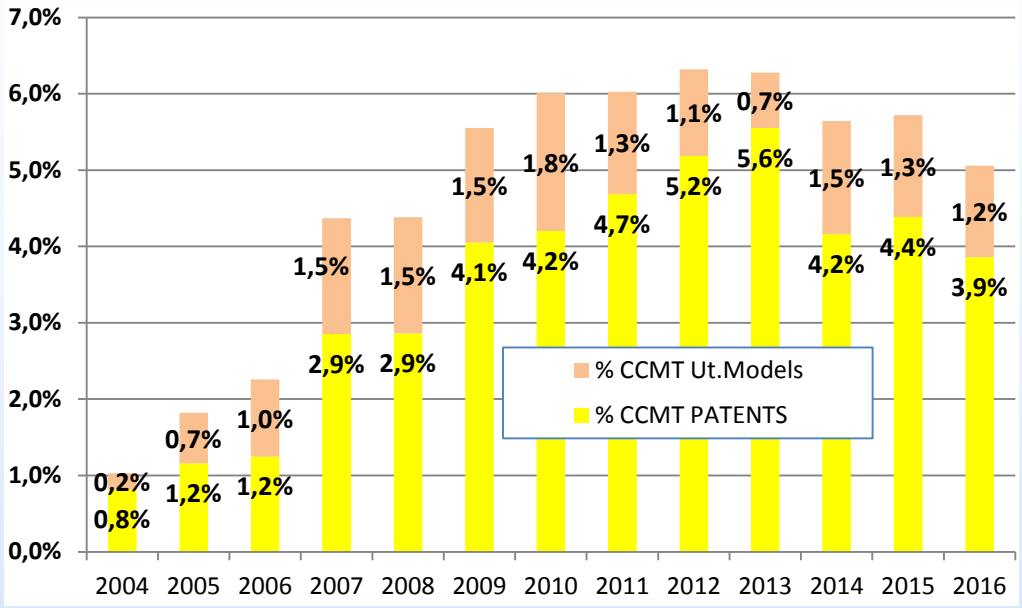
MINISTERIO DE ENERGÍA, TURISMO Y AGENDA DIGITAL

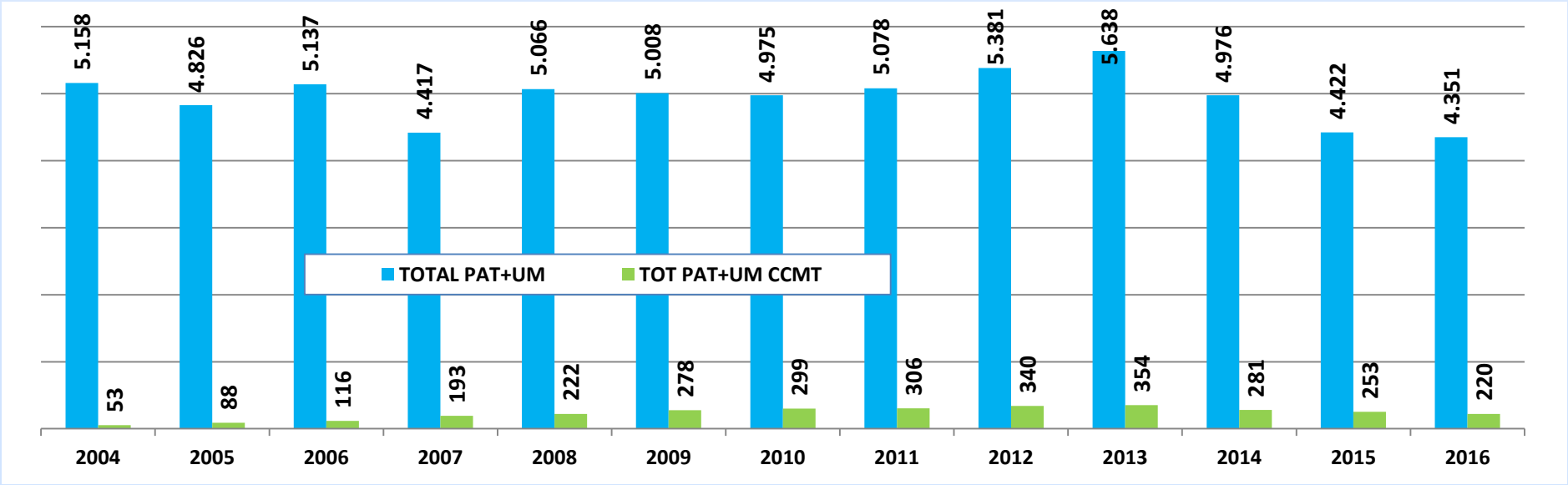
CCMTs PATENT PUBLICATIONS YEARLY REPORT

Oficina Española de Patentes y Marcas

Published Patents and Utility Models from Spain Resident Applicants by publication date

	TOT PUBLISHED PATENTS	CCMT PATENTS	% CCMT PATENTS	UM	CCMT Ut.Mod.	% CCMT Ut.Mod.	TOTAL PAT+UM	PAT+UM CCMT	% TOT
2004	2.271	42	0,8%	2.887	11	0,2%	5.158	53	1,0%
2005	2.307	56	1,2%	2.519	32	0,7%	4.826	88	1,8%
2006	2.291	64	1,2%	2.846	52	1,0%	5.137	116	2,3%
2007	2.138	126	2,9%	2.279	67	1,5%	4.417	193	4,4%
2008	2.362	145	2,9%	2.704	77	1,5%	5.066	222	4,4%
2009	2.860	203	4,1%	2.148	75	1,5%	5.008	278	5,6%
2010	2.499	209	4,2%	2.476	90	1,8%	4.975	299	6,0%
2011	2.796	238	4,7%	2.282	68	1,3%	5.078	306	6,0%
2012	2.985	279	5,2%	2.396	61	1,1%	5.381	340	6,3%
2013	3.364	313	5,6%	2.274	41	0,7%	5.638	354	6,3%
2014	2.383	207	4,2%	2.593	74	1,5%	4.976	281	5,6%
2015	2.235	194	4,4%	2.187	59	1,3%	4.422	253	5,7%
2016	2.045	168	3,9%	2.306	52	1,2%	4.351	220	5,1%





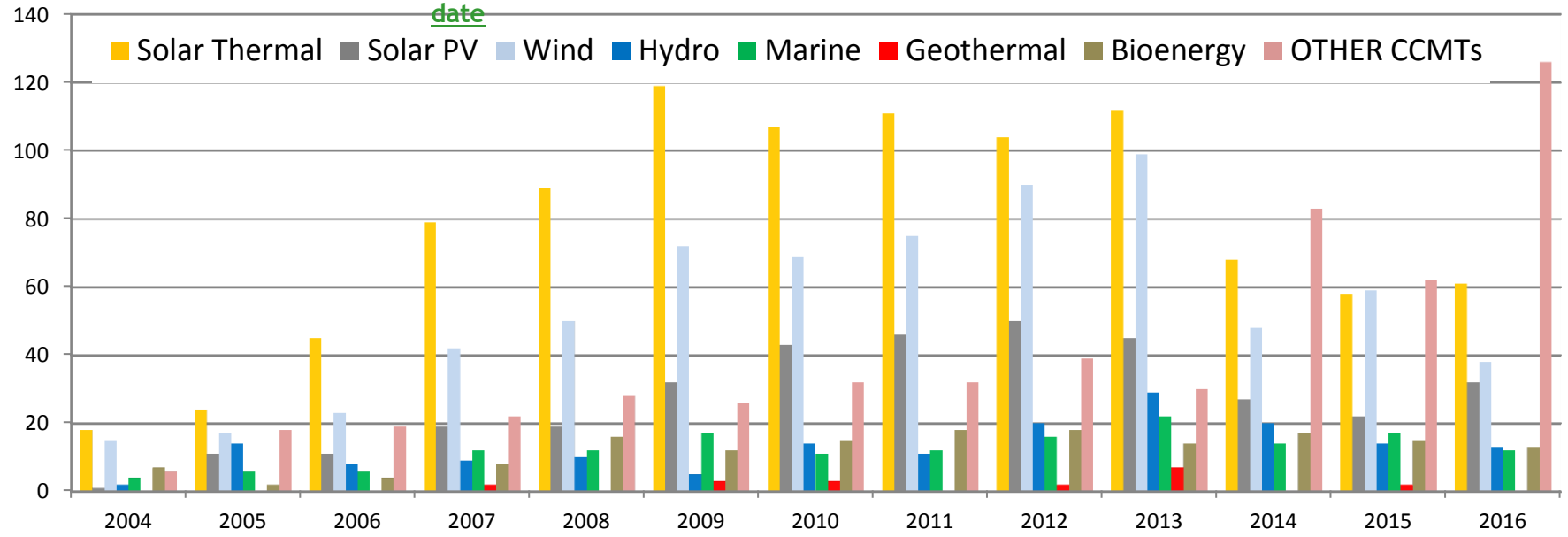
Source: OEPM Tecnologías de Mitigación del Cambio Climático

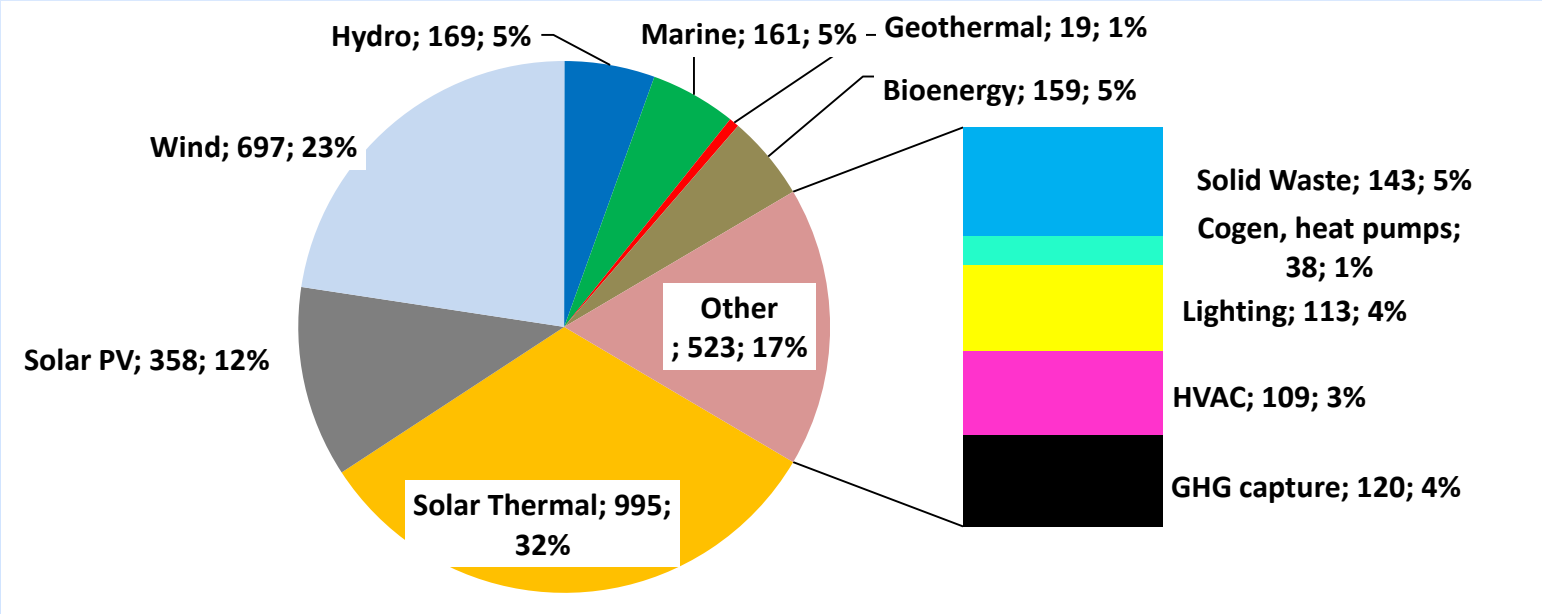
MINISTERIO DE ENERGÍA, TURISMO Y AGENDA DIGITAL

CCMTs PATENT PUBLICATIONS YEARLY REPORT

Published Patents and Utility Models from Spain Resident Applicants by publication date

Oficina Española de Patentes y Marcas



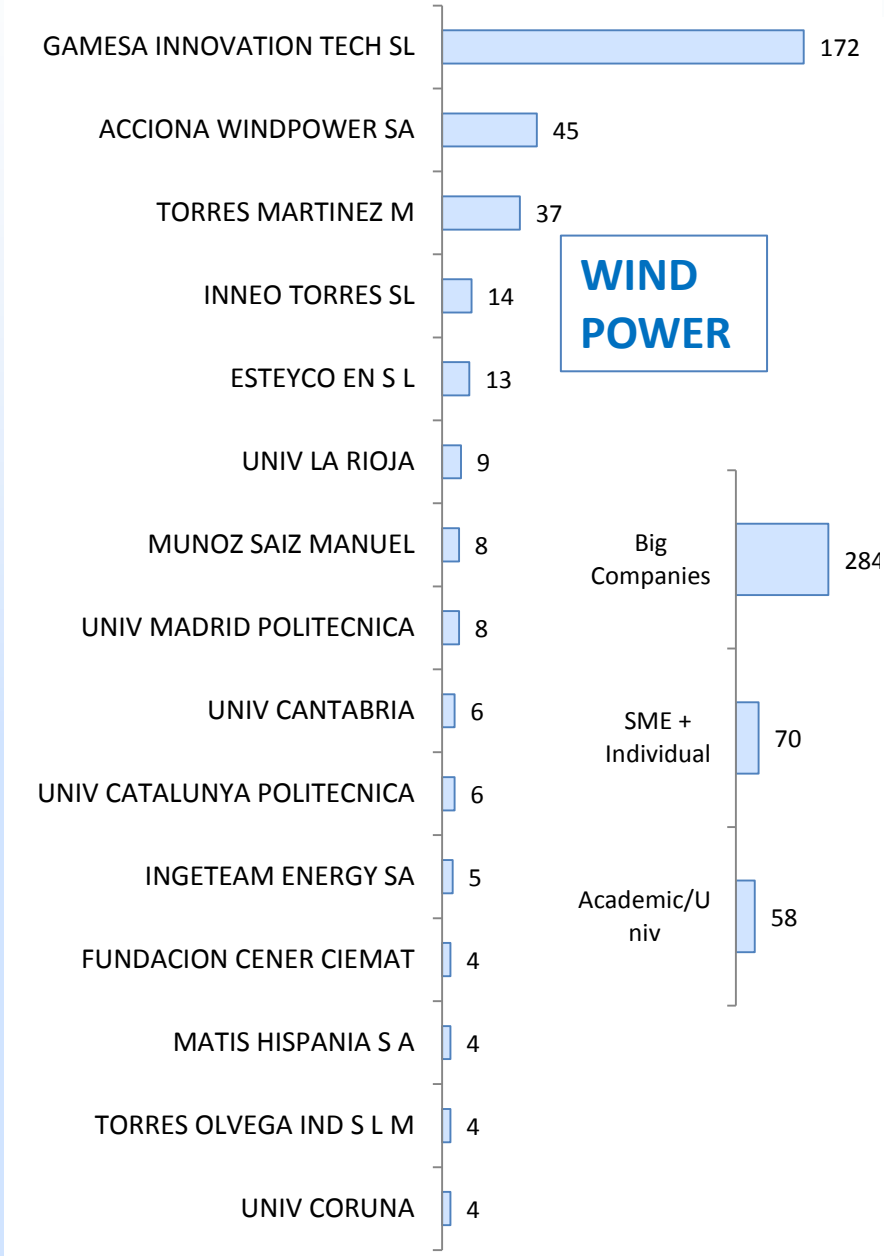


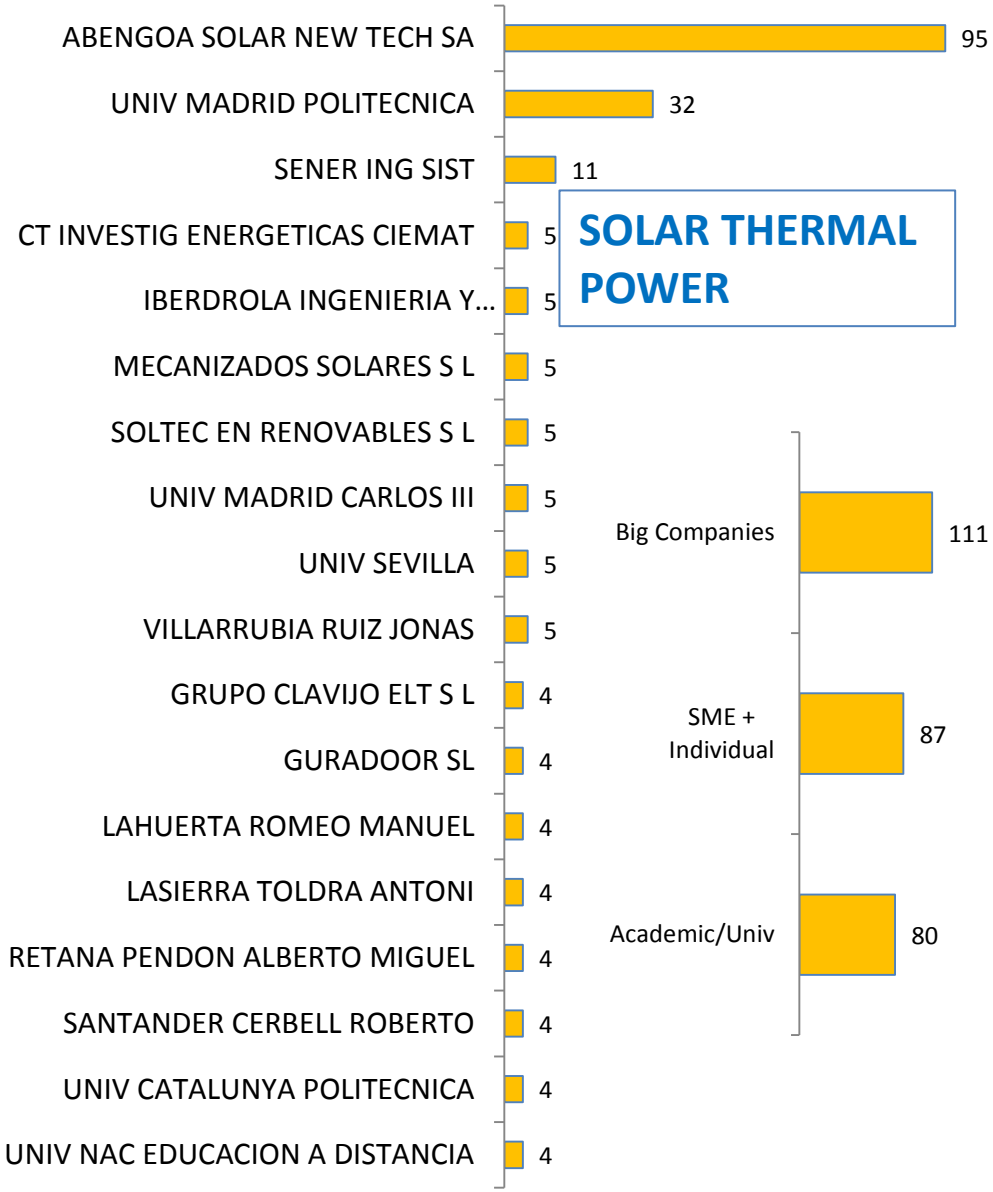
Source: OEPM Tecnologías de Mitigación del Cambio Climático

MINISTERIO DE ENERGÍA, TURISMO Y AGENDA DIGITAL

Top ES Patent Applicants since 2000

Oficina Española de Patentes y Marcas





Source: Global Patent Index GPI EPO

MINISTERIO DE ENERGÍA, TURISMO Y AGENDA DIGITAL

Oficina Española de Patentes y Marcas

Technology Alerts
Energy & Sustainnability

GEOTHERMAL ENERGY

CONCENTRATED SOLAR POWER

FUEL CELLS

MARINE ENERGIES

PHOTOVOLTAIC SOLAR POWER

WIND POWER

BATTERY POWER STORAGE

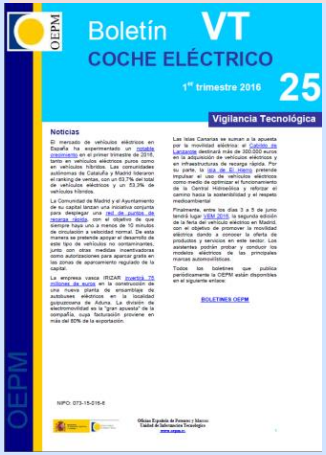
Last patents published worldwide on specific technical fields

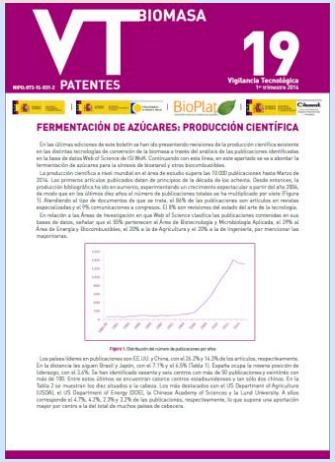
- FREE
- English/Spanish
- Daily update
- Worldwide coverage: OPS
- CQL search done by examiners

Technology Watch Bulletins:

Electric Vehicle, Marine Energies, Biomass

Periodical publications listings and relevant news





CCMT Trade Fairs

Genera, Egética, Smart Cities

Cooperation with CCMT Platforms

Wind, fuel cells, solar thermal, solar PV, marine, biomass, geothermal

Reoltec, PTE HPC, SolarConcentra, Fotoplat, PT Marítima, Geoplat, Bioplat

Some conclussions:

- Sustained growth in CCMTs and related technologies
- Patent internationalisation lead by JP, US, DE, KR
- Spain presence especially in Wind and Solar Thermal Power

Thanks for your attention!

GOBIERNO DE ESPAÑA
MINISTERIO DE ENERGÍA, TURISMO Y AGENDA DIGITAL
Oficina Española de Patentes y Marcas

Oficina Española de Patentes y Marcas, O.A. (OEPM)

GOBIERNO
DE ESPAÑA

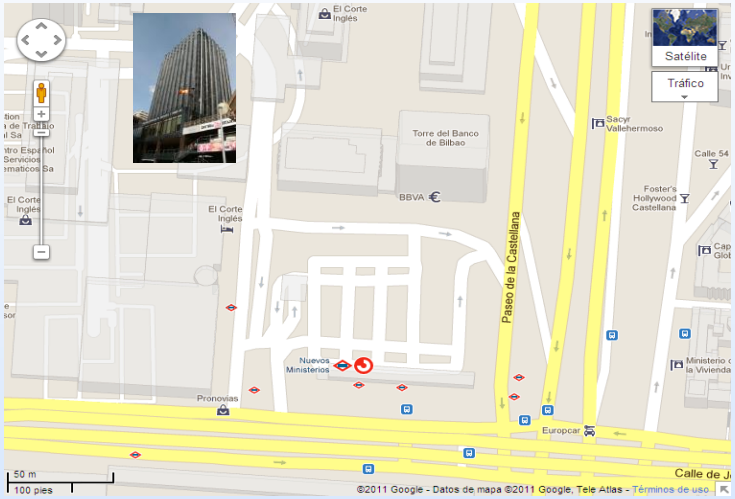
MINISTERIO
DE ENERGÍA, TURISMO
Y AGENDA DIGITAL

Oficina Española
de Patentes y Marcas

Prosecution of patent applications on CCMT's
Meeting patentability requirements
Search and examination practice at the OEPM

Luis Sanz Tejedor

Head of Applied Mechanics Division



Autonomous Body of Ministerio de Energía, Turismo y Agenda Digital

Mission

Promote innovation
Boost economic development
Foster progress

Vision

Avant-garde office
Intl referent
Search of excelency
Technology advanced
Processes optimization

Values

Professionalism
Transparency
Service oriented
Cooperation
Quality

New patent legislation

Legal clarity

Administrative burdens

Adjustment to Intl procedures

Entrepreneurial Support

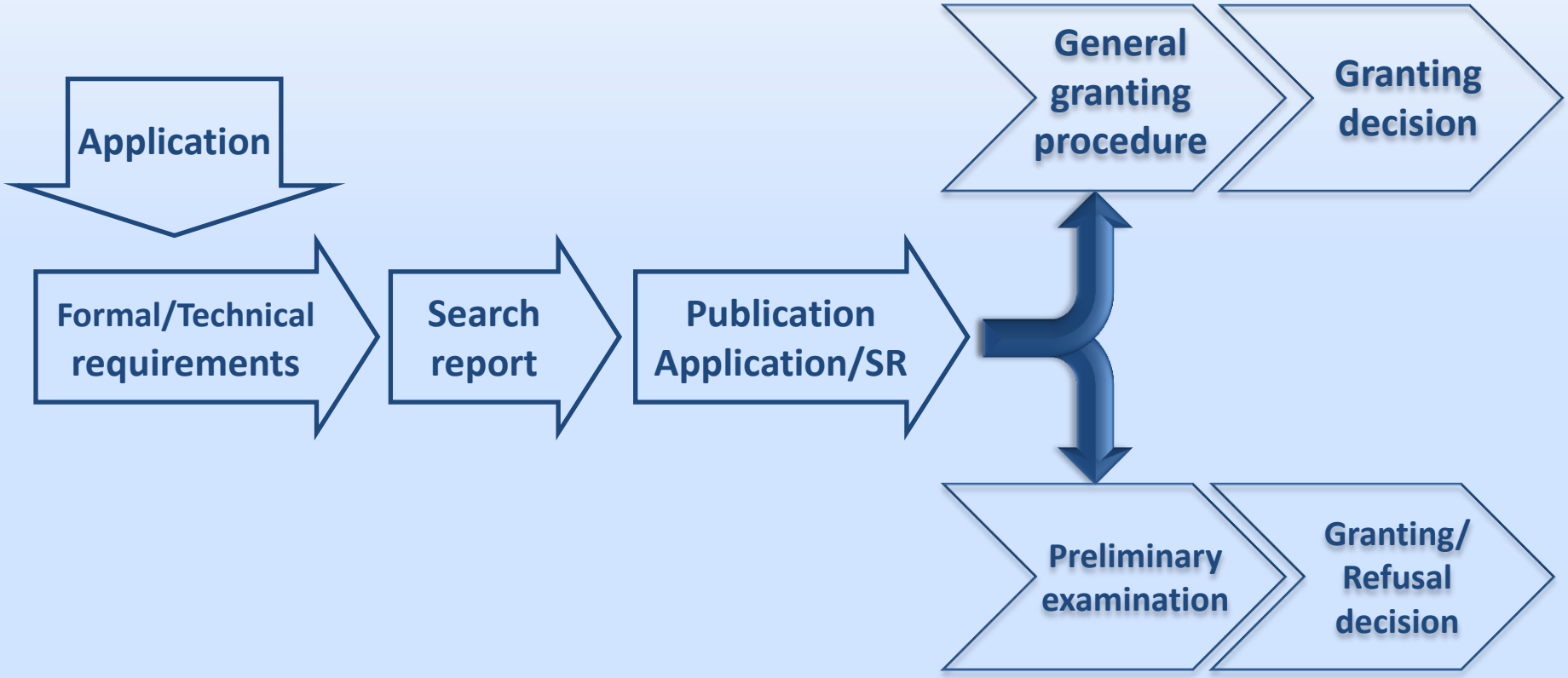
21st Century oriented

Patent Act 11/1986
PA Implementing Regulations 2245/1986
Implementing Regulations 812/2000
Implementing Regulations 996/2001
Public Institutions Research Law 55/2002
Sustainable Economy Law 2/2011
TRIPS
EPC
PCT
PLT
} Several instructions

} **24/2015 Patent Act**

11/1986 Patent Act

Two options system



24/2015 Patent Act

One option system

1. Filing / Admission
   - Defense Vetting
   - Technical Areas
     - Chemical/Pharma
     - Physics/Electricity
     - Applied mechanics
     - General mechanics
2. Formalities examination
3. Search
4. Publication
5. Substantive examination
   Resolution
   - Exam commission
   - Oral proceeding
6. Opposition

Some features

Patentability requirements fulfillment

Partially invalid claim possibility during trial

Chemical substances newly protected

Post-grant opposition system

Defense Interest Patents procedure

Additions banned

Utility Models strengthening

Fee reductions rearranged

SCP's procedure

Legal procedure novelties

Some features

Patentability requirements fulfillment

Partially invalid claim possibility during trial

Chemical substances newly protected

Post-grant opposition system

Defense Interest Patents procedure

Additions banned

Utility Models strengthening

Fee reductions rearranged

SCP's procedure

Legal procedure novelties

Some features

Patentability requirements fulfillment

Partially invalid claim possibility during trial

Second medical use protection

Post-grant opposition system

Defense Interest Patents procedure

Additions banned

Utility Models strengthening

Fee reductions rearranged

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Additions banned

Utility Models strengthening

Fee reductions rearranged

SCP's procedure

Legal procedure novelties

Challenges in CCMT's

24/2015 Patent Act

- Newborn law to be implemented
- CCMT's not very different to other technologies
- Big impact of individuals as applicant
- Y02 widely used as support for searching
- Not CCMT's classified as such
- Need to have the CC alert active
- Top-up searches
- Usual lack of clarity in applications
- Mixed features in claims: device & process

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MINISTERIO
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Y AGENDA DIGITAL

Oficina Española
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THANK YOU!

Oficina Española de Patentes y Marcas, O.A. (OEPM)

Experience of a Spanish Company in the Field of Climate Change Mitigation Technology

Patenting procedures relating to climate change mitigation technologies
OEPM

07. March 2018

Karl-Georg Aspacher | CTO RDP

SIEMENS Gamesa
RENEWABLE ENERGY

Global presence to ensure customer proximity

Non-exhaustive Main Sales Offices Main Engineering Centers Nacelles Blades

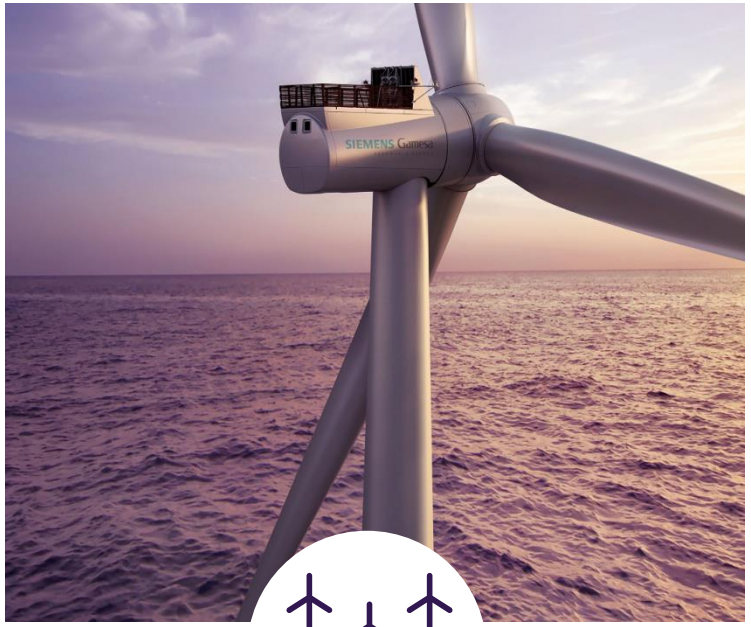
SIEMENS Gamesa
RENEWABLE ENERGY

Three business units strongly positioned in the market

Onshore

Over **73 GW installed** since 1980

The **technological partner of choice** for Onshore wind power projects.



Offshore

Over **11 GW installed** since 1991

Most experienced offshore wind company with the most reliable product portfolio in the market.

Service

55 GW maintained

Commitment beyond the supply of the wind turbine **to reach the profitability goals**.

Siemens Gamesa – Key Facts (FY17)

~84.5 GW
globally installed

~25 k
employees

€11 bn
Annual Revenue

8 GW
Order entry

5
Invention Disclosures/week

3
First Filings/Week

€21.3 bn
Order book

True **global,** modern and scalable **footprint**

Advanced **digital** capabilities

Portfolio covering all requirements

3195[1)]
granted **Patents** worldwide

1) End of December 2017

SIEMENS Gamesa
RENEWABLE ENERGY

Innovation and Intellectual Property Management

Past

R&D

Inventor

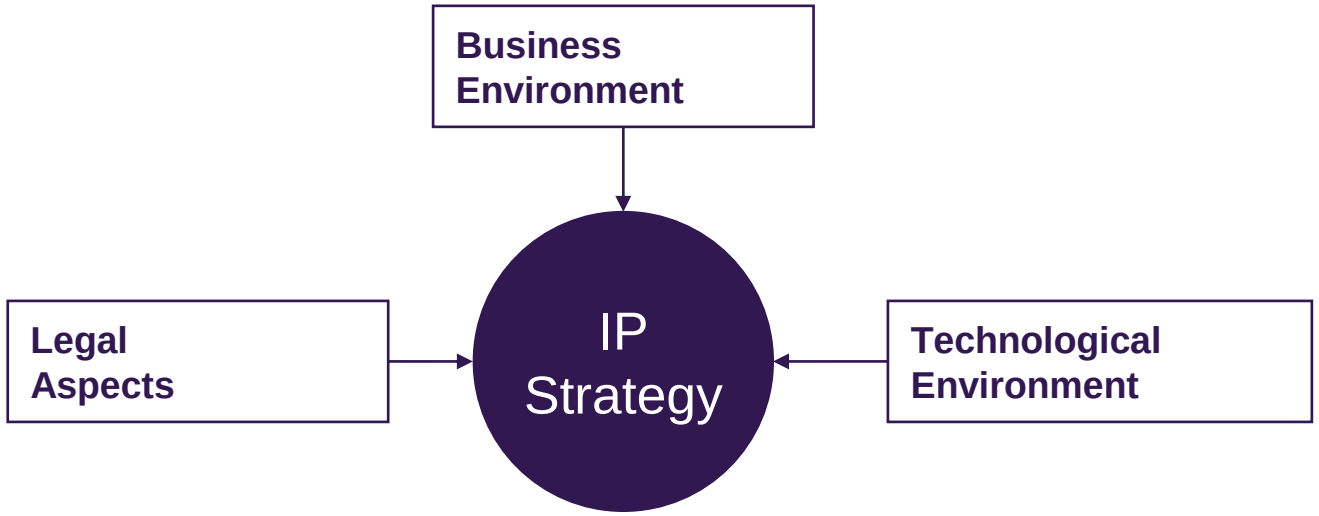
“Patent Bureau”

Today

- Integration into innovation activities
- Early harvesting of ideas
- Interdisciplinary Decision Committee including Research and Development, Intellectual Property, Product Strategy, Technology and Innovation, Strategy and Marketing experts

Integrated Project and Strategic Patent Work

Product Planning	Design	Design Implementation	Validation
• Define IP Strategy • Clarify Patent Situation	Harvest ID's	Check IP Situation	Exploitation



SIEMENS Gamesa
RENEWABLE ENERGY

Innovation and Intellectual Property Management

Own Patents

Active Harvesting of ID's

Strategic Patent Portfolio

Portfolio Management

Exploitation

Third Party Patents

Product Clearing Continuous Monitoring

Risk analysis

Risk Mitigation

SIEMENS Gamesa
RENEWABLE ENERGY

CSIC
CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS

Experience of a Spanish research group in the field of climate change mitigation technologies

Prof. Carlos Abanades

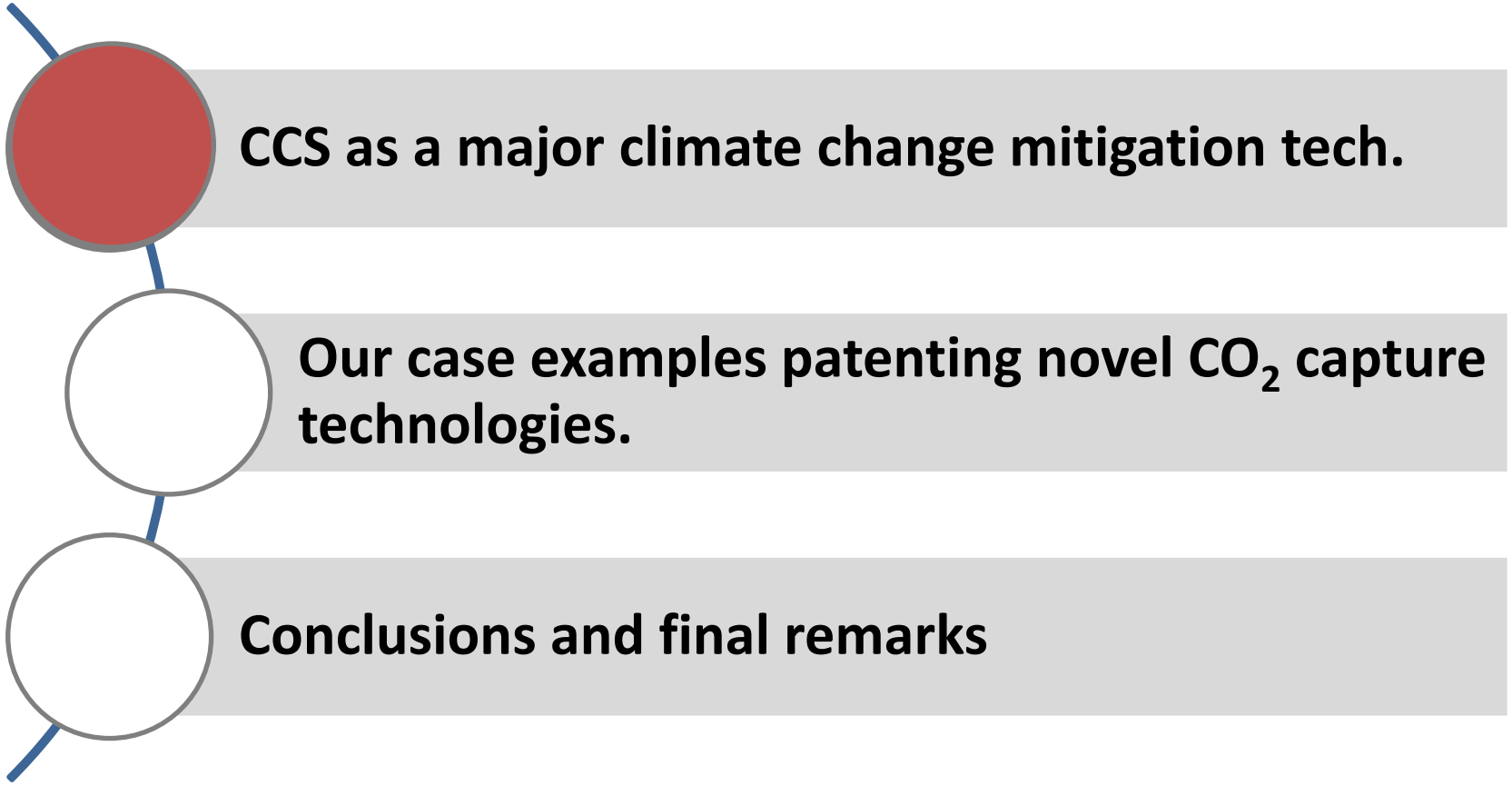
Spanish Research Council, CSIC-INCAR

abanades@incar.csic.es

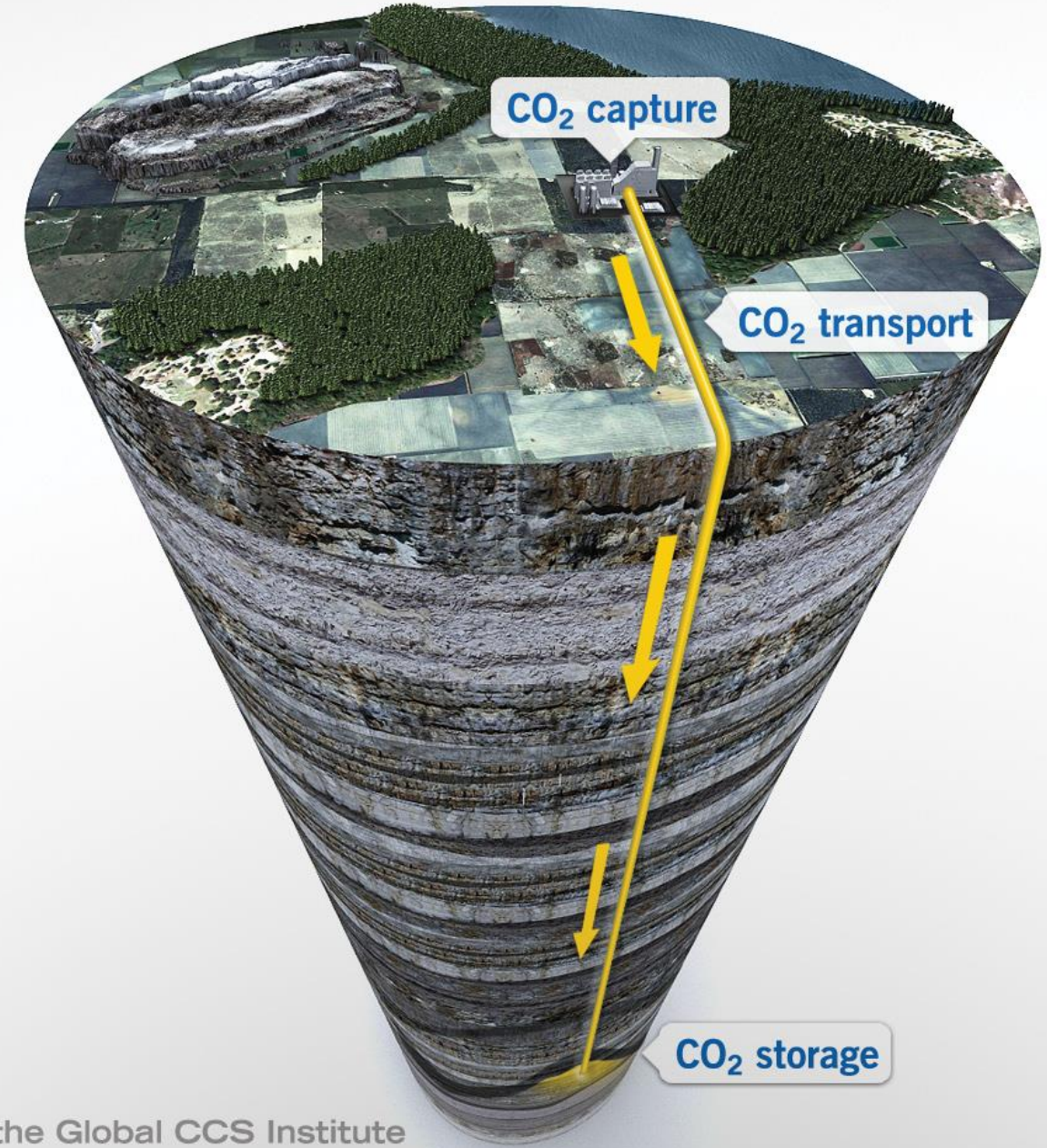
MINISTERIO DE ENERGÍA, TURISMO Y AGENDA DIGITAL
Oficina Española de Patentes y Marcas
Europäisches Patentamt
European Patent Office
Office européen des brevets

Workshop: OEPM and EPO Patent examiners, Madrid, 7 of March 2018

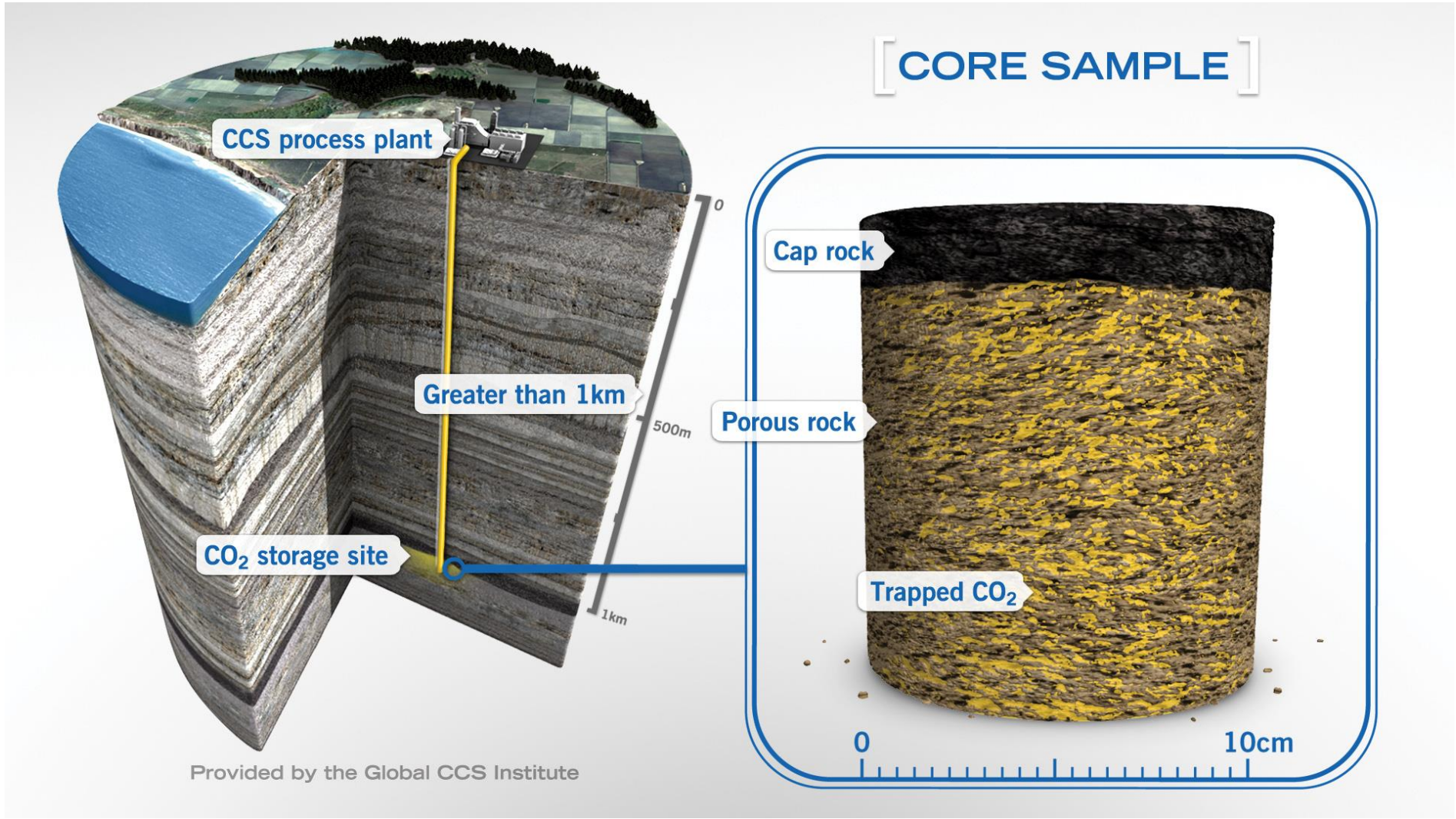
Outline


CCS as a major climate change mitigation tech.
Our case examples patenting novel CO_2 capture technologies.
Conclusions and final remarks

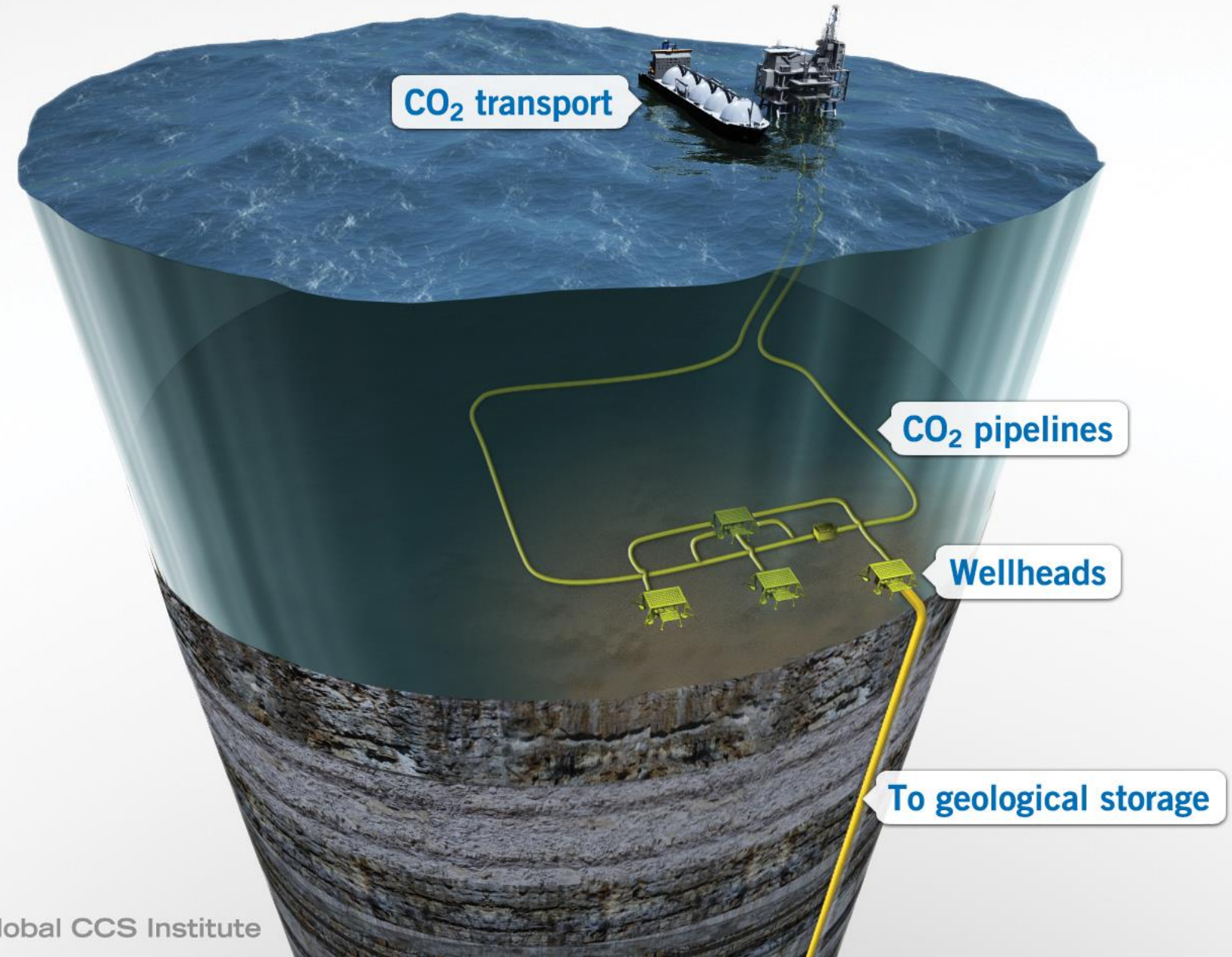
THE CARBON CAPTURE AND STORAGE PROCESS



Provided by the Global CCS Institute


CCS process plant
Greater than 1km
CO_2 storage site
0
500m
1km
CORE SAMPLE
Cap rock
Porous rock
Trapped CO_2
0
10cm
Provided by the Global CCS Institute

OFFSHORE TRANSPORT AND STORAGE

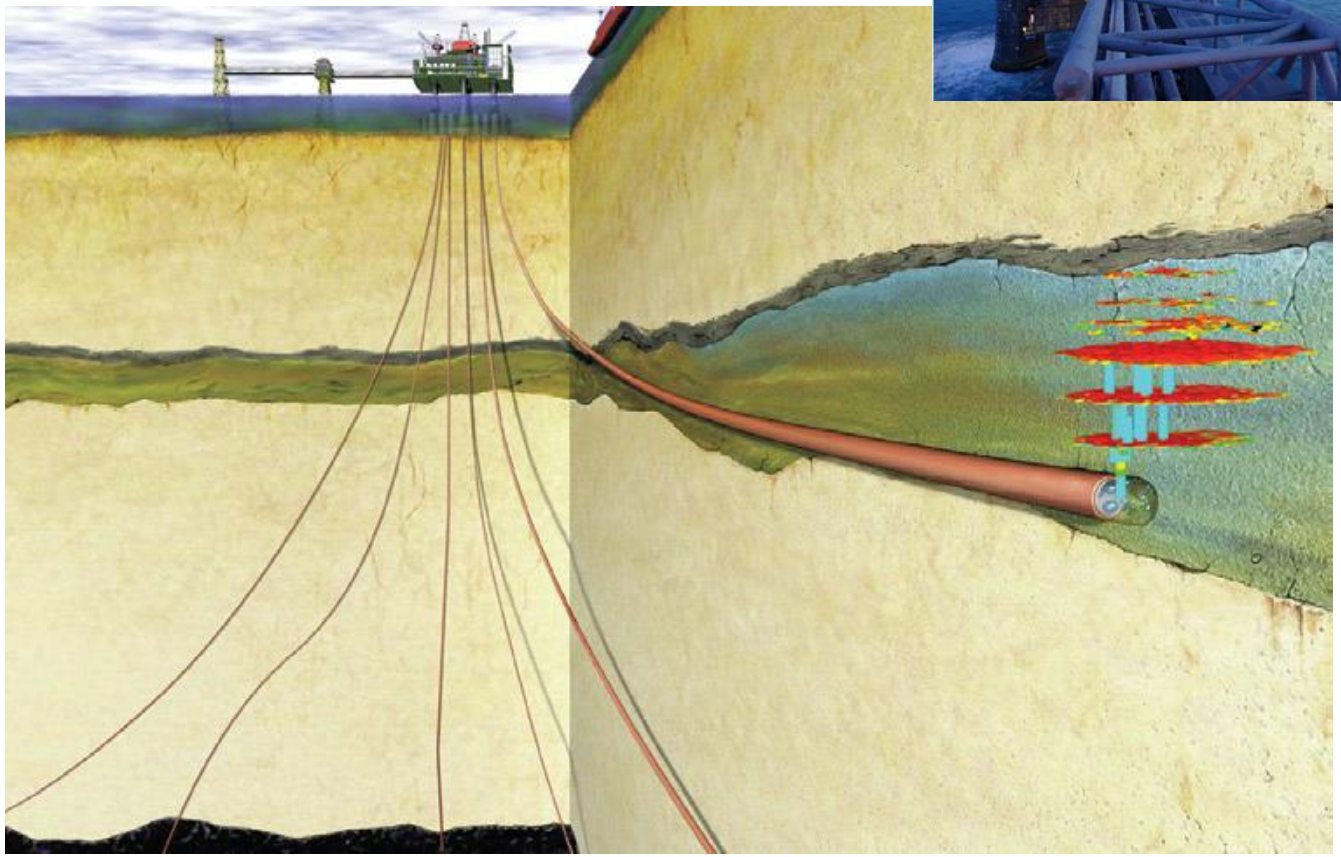


Provided by the Global CCS Institute

Storage of CO_2 en saline formations

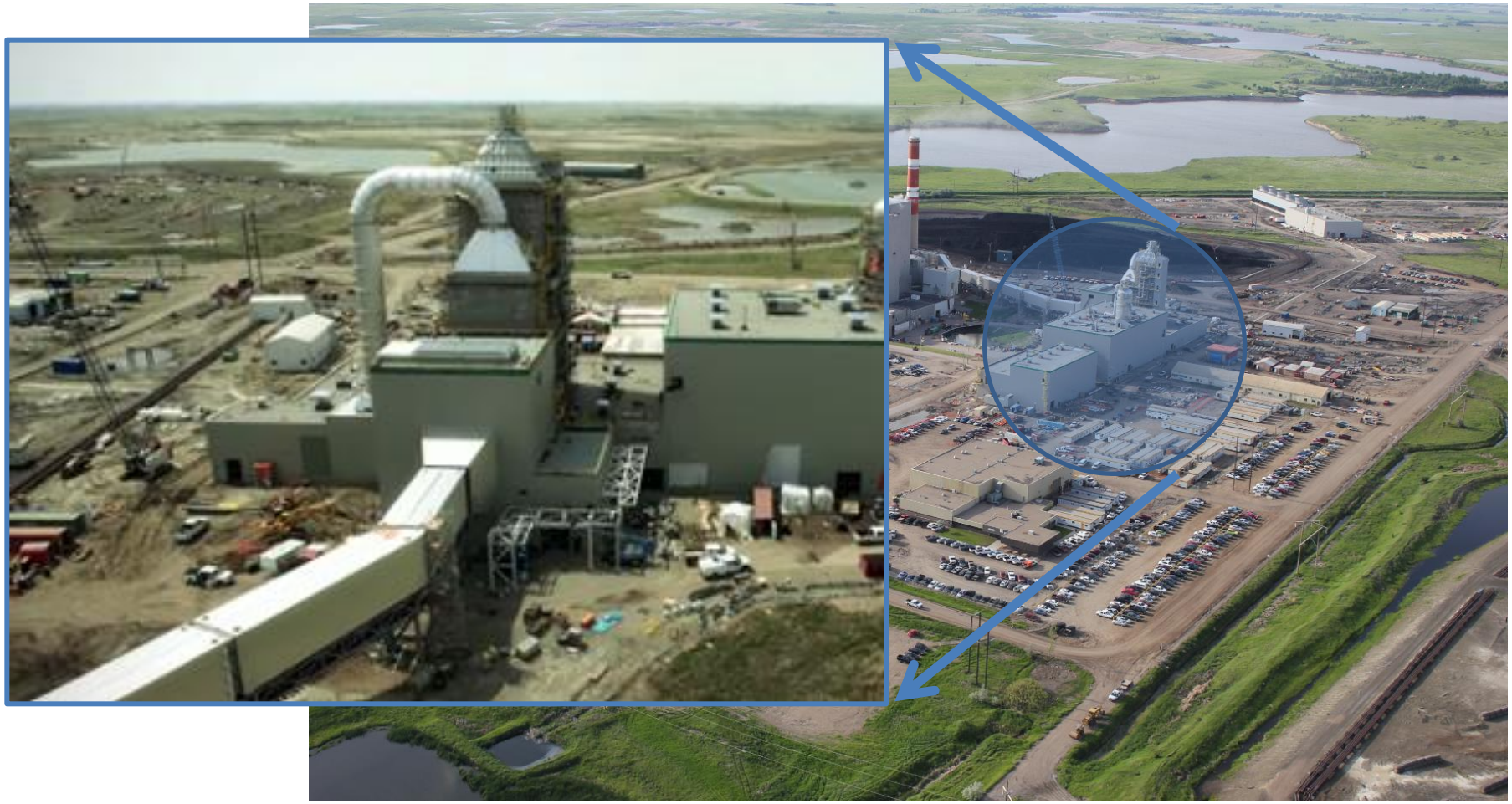
Sleipner

Noway, North Sea. Operating from 1996
Source of CO_2: Natural Gas with 12%v CO_2
1 $MtCO_2$/y to a saline aquifer

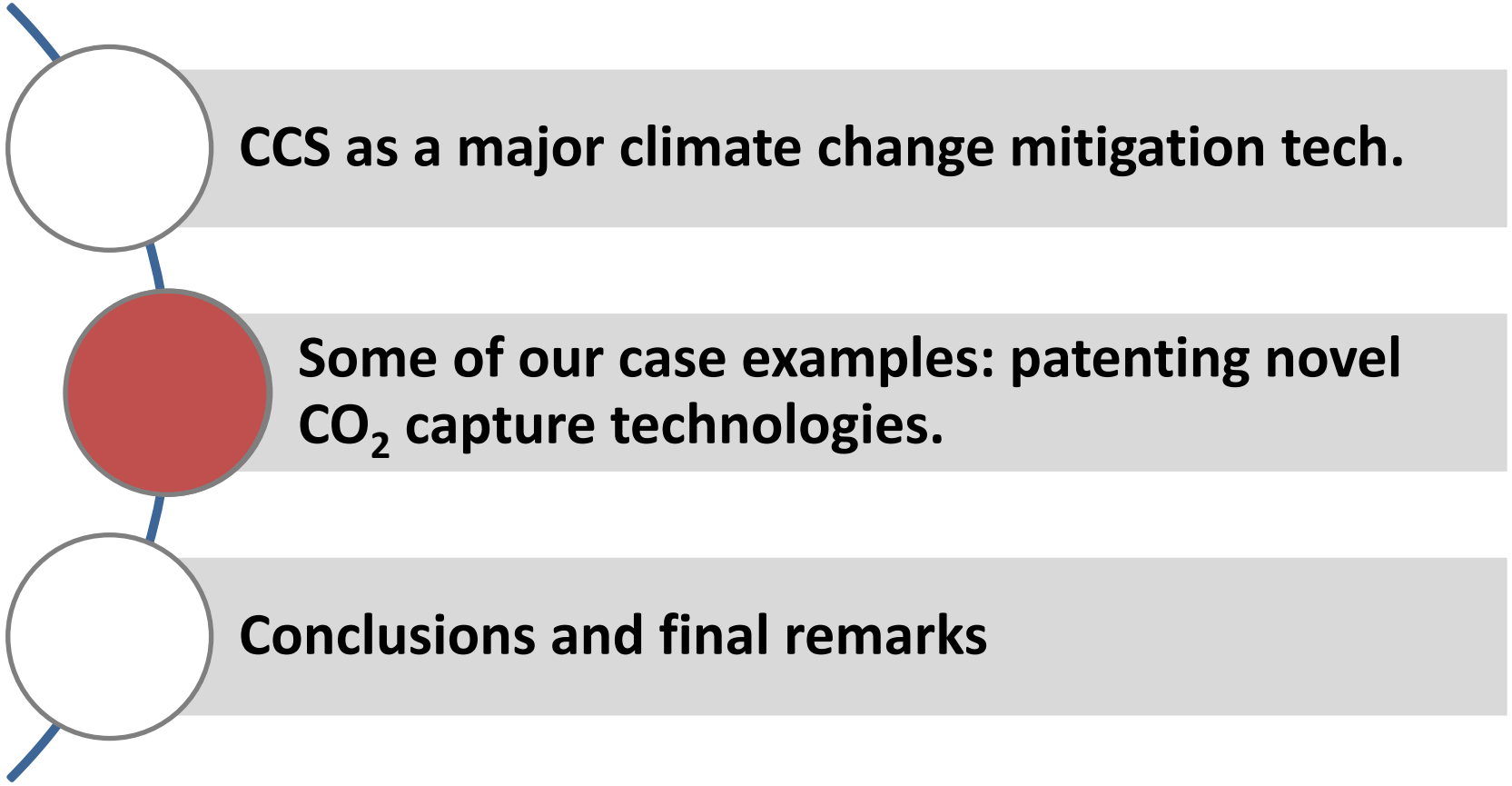


October 2014: first coal power plant with CO_2 capture

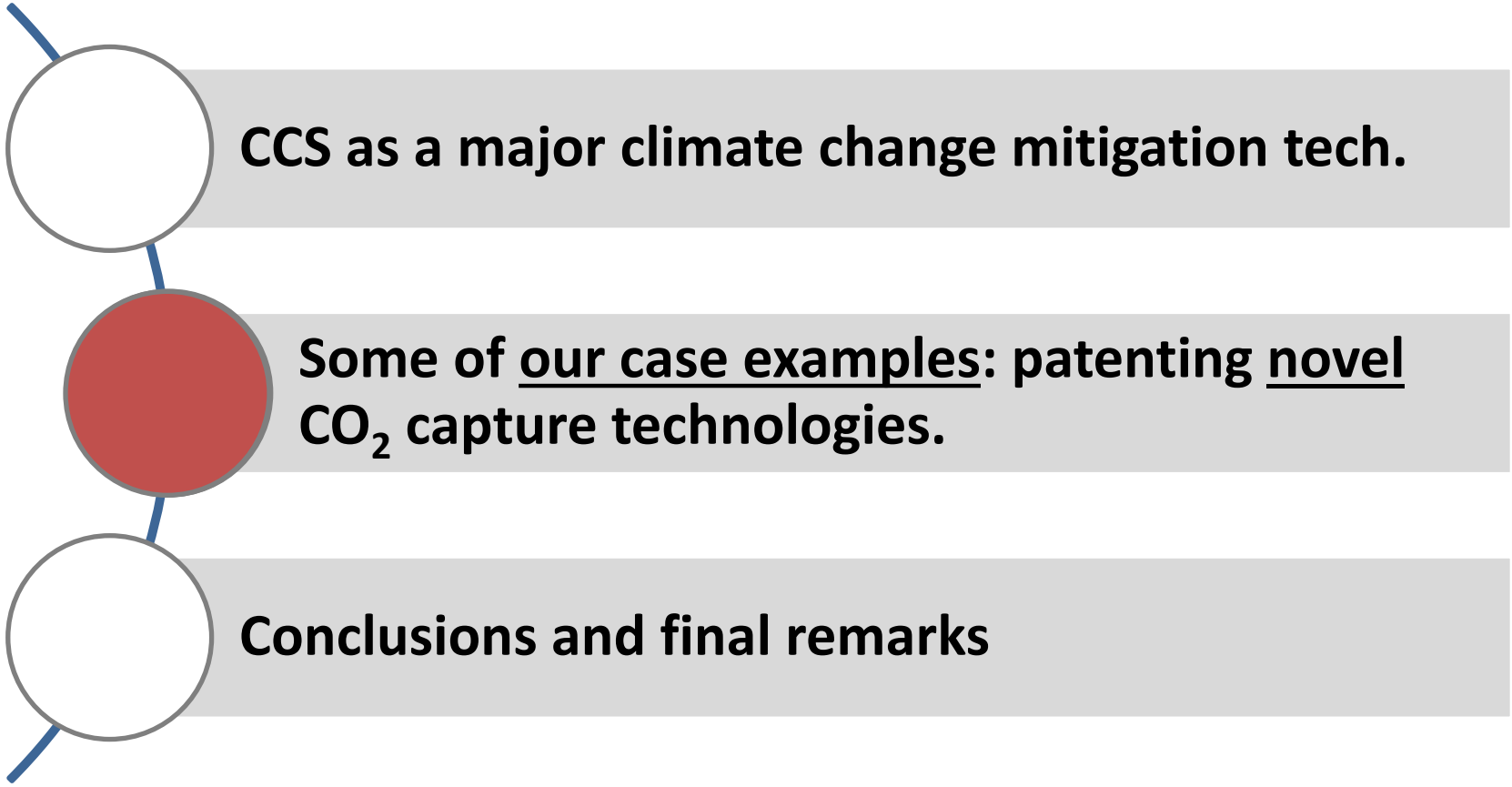
- Boundary Dam, Estevan, Saskatchewan, Canada
- 160 MWe brutos. 110 MWe net
- Capture efficiency of CO_2= 95% (1Mt/yr)
- Transpor of CO_2: 66 km (for Enhanced Oil Recovery)



Outline


CCS as a major climate change mitigation tech.
Some of our case examples: patenting novel CO_2 capture technologies.
Conclusions and final remarks

Outline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Outline

CCS as a major climate change mitigation tech.

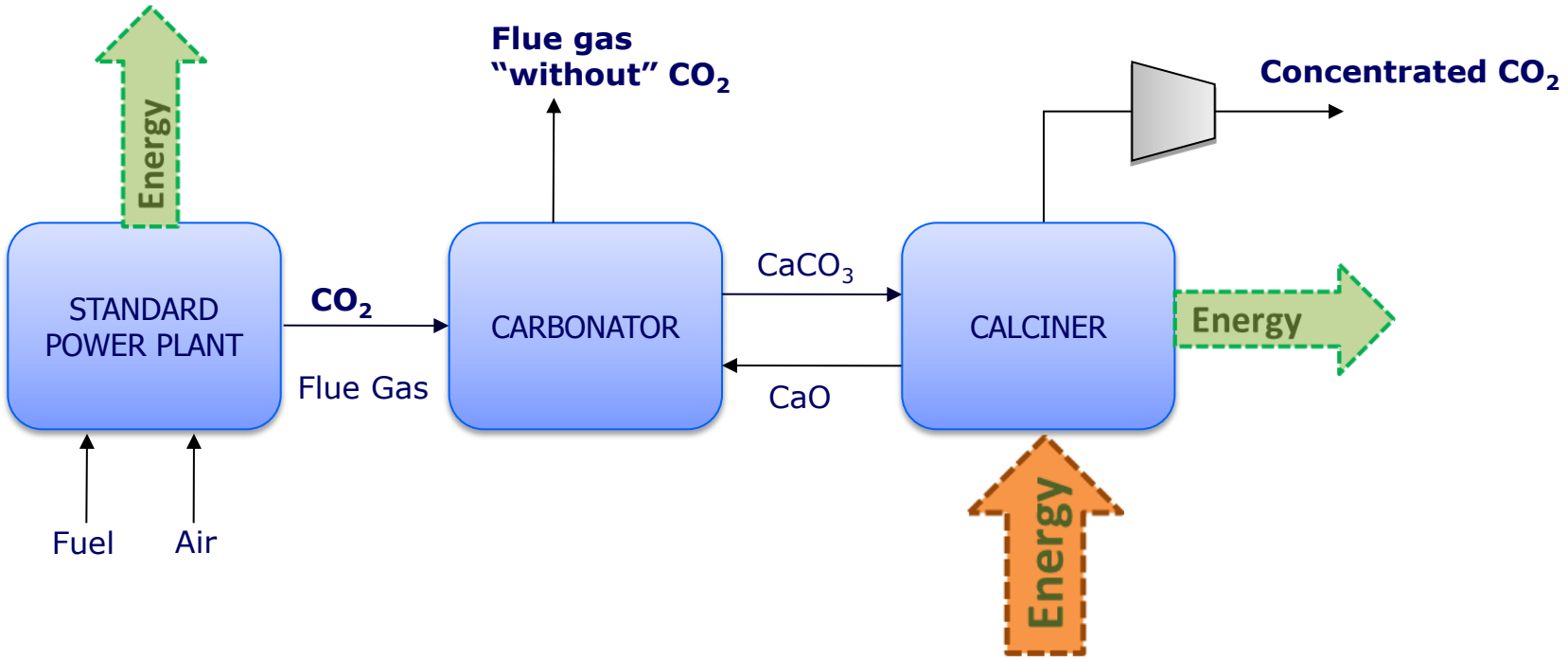
me of our case examples: patenting CO_2 capture technologies.

novel ?

and what about **inventive step ?**

and what about **industrial applicability?**

Post-combustion CO_2 capture by Calcium Looping



Key points from a patent´s perspective

- ✓ **Capture of CO_2 only makes sense at very, very large scale.**
- ✓ **First patents, using $CaO/CaCO_3$ reactions, go back to the XIX century and Shimizu´s patent (1999) , the closest in state of the art.**
- ✓ **Use of solid sorbents for gas separation (including CO_2) is a mature commercial gas separation technique.**

Calcium Looping technology development at CSIC

Multicycle testing TG at CSIC

Reactions kinetics, deactivation studies, reactivation methods

From 2000

Abanades and Alvarez, 2003. Conversion limits in the reaction of CO_2 with lime. *Energy and Fuels,* 17-2, 308-315

0.03 MW_{th} pilot at INCAR-CSIC

Twin CFB reactor concept validation in lab scale. Basic reactor and process modeling

From 2008

Rodriguez et al. 2010. Experimental investigation of a CFB reactor to capture CO_2 with CaO. *AIChE Journal*, 57, pp. 1356 - 1366

"La Pereda 1.7 MW_{th}" pilot

From 2012

Arias et al. *2013*. Demonstration of steady state CO2 capture in a 1.7 MWth calcium looping pilot. *Int. J. of Greenhouse Gas Control 18, 237–245*

Demostration of CaL in a 1.7 MW_{th} pilot

Economic Interest Grouping,
"AIE La Pereda CO_2"

+

FOSTER WHEELER

MINISTERIO DE ECONOMÍA Y COMPETITIVIDAD

CSIC
CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS

grupohunosa

endesa

Design work from 2009 and operation of the plant from 2011 to date

(EU Projects: CaOling, ReCaL, CaO2, **FlexiCaL (2016-2019))**

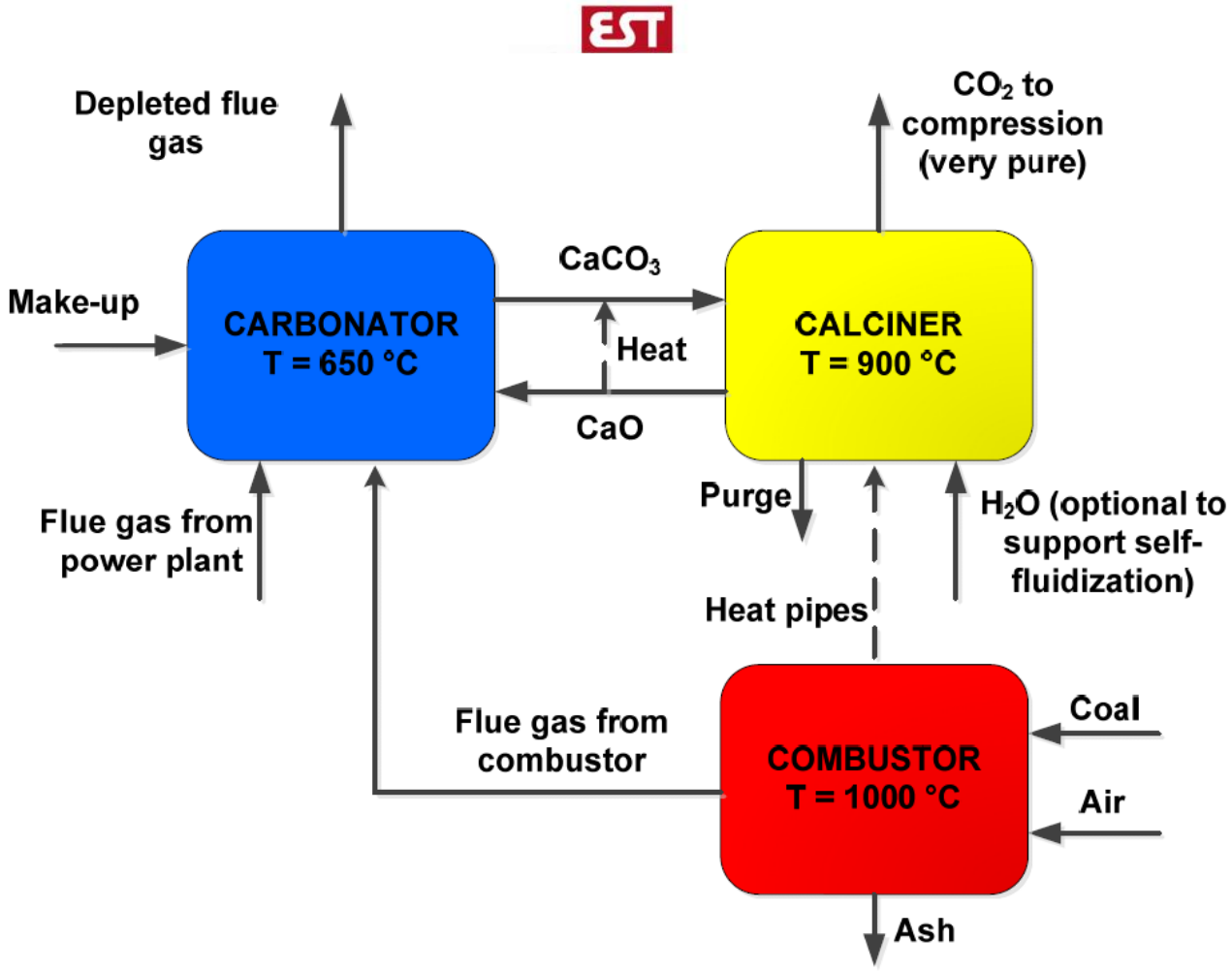
* Arias et al. 2013. Demonstration of steady state CO_2 capture in a 1.7 MWth calcium looping pilot. *Int. J. of Greenhouse Gas Control* 18, 237–245
* Diego et al. .2016. Experimental testing of a sorbent reactivation in La Pereda pilot plant *Int. J. of Greenhouse Gas Control*, 50, Pages 14-22
* Arias et al.2016. Operating experience in la Pereda 1.7 MWth Calcium Looping pilot , *GHGT-13* , Lausanne Nov 2017

Examples of supporting CaL patents at CSIC

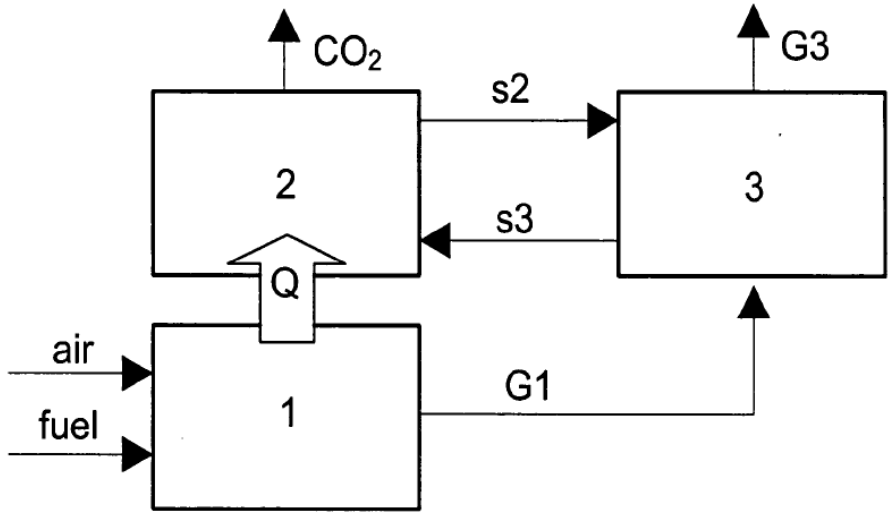
Title	Refs	PATENT Status	Comments
Combustion method with integrated CO_2 separation by means of	P2020200684	Granted in Spain, Australia, Canada	+ Rejected/abandoned in US and EPO.
			CSIC, 2.4 M€)
METHOD AND DEVICE FOR BIOMASS COMBUSTION AND SIMULTANEOUS CAPTURE OF CARBON DIOXIDE IN A COMBUSTOR-CARBONATOR	EP2359925B1 **2008**	Granted by EPO and USPO **ACTIVE (Gas Natural Fenosa is the only asignee…)**	+ All rights granted to Gas Natural Fenosa (under the "Menos CO2" project supporting CSIC with > 1 M€)

- ✓ **There is no "business case" for CCS. No sufficient incentives (ETS or similar) and lack of public support…**
- ✓ **Patents are too expensive to maintain and offer limited practical protection when there is not a major market for the invention.**
- ✓ **Patents are systematically abandoned when R&D projects are concluded**

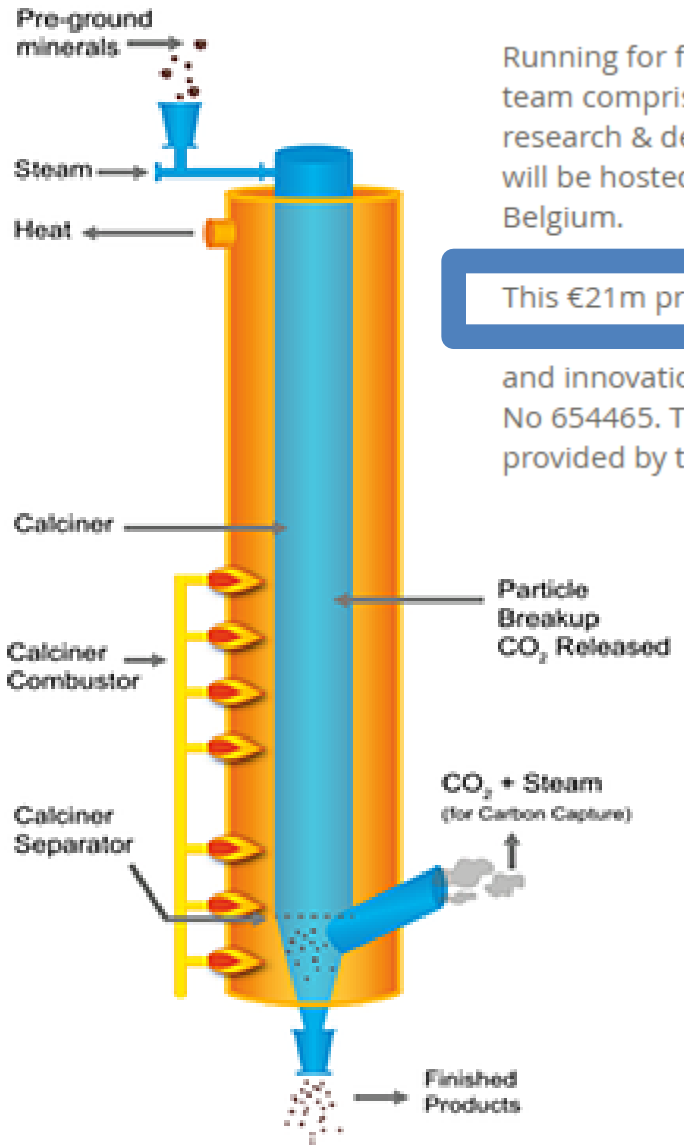
Other competing projects developing (and patenting) on CaL



2002 CSIC early patent application (PCT/ES03/00118), abandoned in 2014



Other competing projects developing (and patenting) on CaL

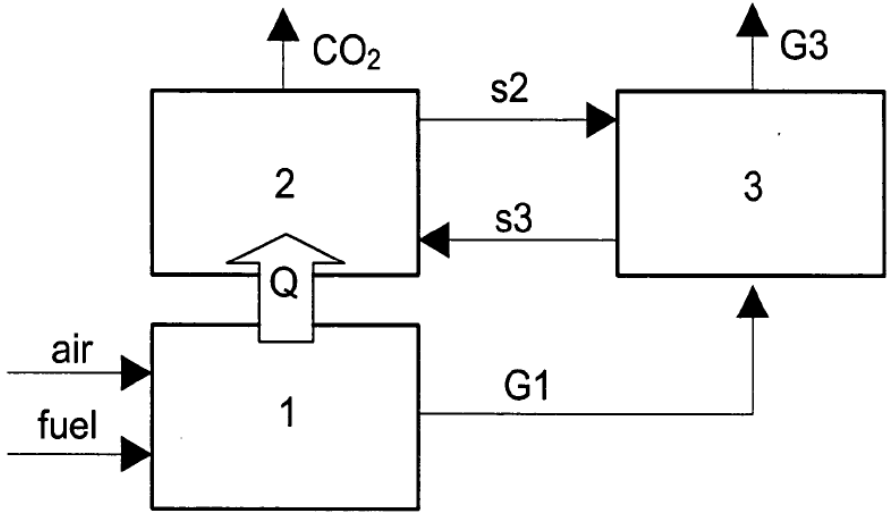


Running for five years from 2016 to 2020, the project team comprises leading industrial, technology and research & development partners. The pilot plant will be hosted by Heidelberg Cement at Lixhe in Belgium.

This €21m project h s received €12m of funding nion's Horizon 2020 research and innovation programme under grant agreement No 654465. The balance of the funds will be provided by the consortium partners.

Leilac

2002 CSIC early patent application (PCT/ES03/00118), Granted in Australia but abandoned in 2014



Related patents by CSIC in the field of H_2 production and CO_2 capture

(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 2 305 366 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
30.05.2012 Bulletin 2012/22

(51) Int Cl.:
B01D 53/62 *(2006.01)* ***F24J 1/00*** *(2006.01)*

- CSIC has received 1.1 M€ (FP7 Ascent project), granted in EPO and US "very quickly", several other competing patents have been published, many scientific papers and a dedicated book chapter have been published but….
- We will abandon the EPO and US patents in 2018 because of lack of concrete offers for scale up.

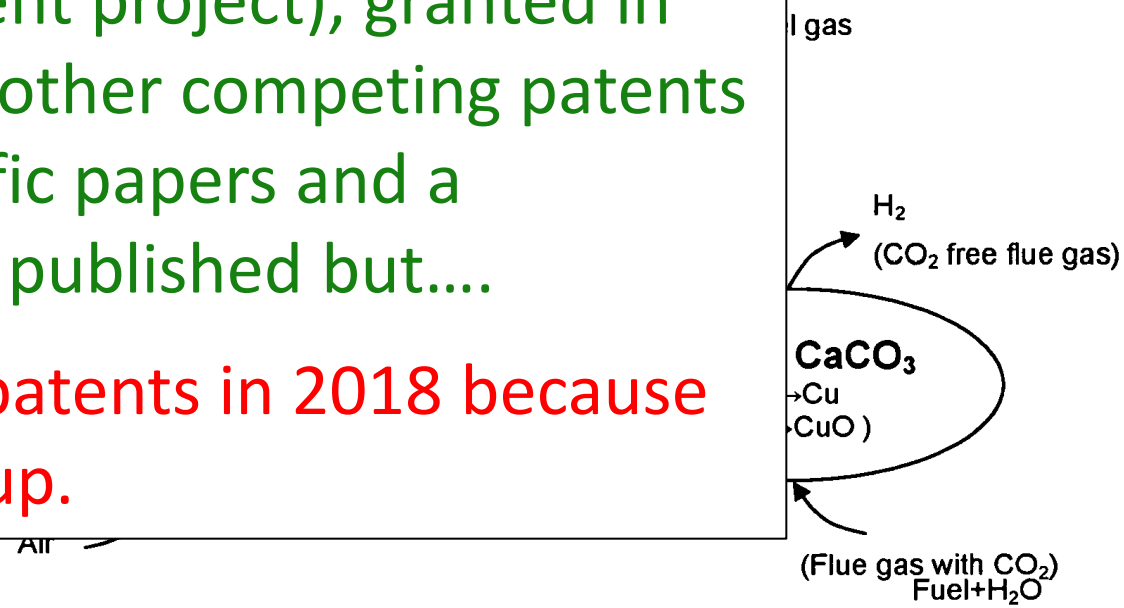


Fig. 1

Final personal remarks

- Patents are valuable tools for our R&D activities on CCS: they support project applications and facilitate industrial engagement in our projects…
- However we systematically abandon the patents as there is no "business case" for CCS, they are too expensive to maintain AND **do not offer so much effective protection.**
- Patenting of complex, highly integrated technologies in mature technology fields like CCS, could benefit from **major changes in the patenting process**:
  - Engage highly specialized external experts and/or competitors, promoting the role of the Evaluator as a "judge of patentability"
  - Allow direct interaction between inventors and evaluators (or their designated experts)
  - Reduce cost by reducing the roles and patent agents

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Experience of a Spanish research group in the field of climate change mitigation technologies

Prof. Carlos Abanades

Spanish Research Council, CSIC-INCAR

abanades@incar.csic.es

MINISTERIO DE ENERGÍA, TURISMO Y AGENDA DIGITAL
Oficina Española de Patentes y Marcas
Europäisches Patentamt
European Patent Office
Office européen des brevets

Workshop: OEPM and EPO Patent examiners, Madrid, 7 of March 2018