

Table SINV-32

## International patent families granted in engines, pumps, turbines, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	9,413	10,961	9,187	9,685	9,722	10,411	10,784	10,490	12,084	11,949	12,011	12,059	13,175	14,440	16,628	17,167	17,061	18,280	20,995	21,296	20,849	21,146	20,472
North America	na	1,345	1,279	1,548	1,816	1,963	1,824	1,712	1,505	1,574	1,325	1,235	1,341	1,589	1,742	2,095	2,064	2,102	2,407	2,513	2,800	2,992	3,339	2,954
Canada	High	54	68	77	94	94	101	87	103	90	95	78	102	88	104	126	114	114	132	122	142	142	150	167
Mexico	Upper middle	3	2	1	0	1	2	2	0	1	1	0	1	5	2	3	2	2	2	12	12	13	11	19
United States	High	1,289	1,209	1,471	1,722	1,868	1,722	1,622	1,402	1,483	1,229	1,157	1,238	1,496	1,637	1,967	1,947	1,986	2,272	2,378	2,646	2,837	3,178	2,768
Central America and Caribbean	na	1	2	0	1	1	0	1	1	2	0	3	0	1	1	4	1	3	1	0	0	2	2	1
Puerto Rico	High	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South America	na	14	11	12	15	14	23	16	13	28	13	17	25	22	31	37	32	27	34	42	35	28	43	43
Argentina	Upper middle	5	2	2	2	5	5	2	2	2	2	1	0	1	2	0	0	1	2	2	0	1	3	1
Brazil	Upper middle	7	8	10	11	7	15	12	10	23	12	16	21	20	30	34	26	25	24	33	31	24	35	40
Europe	na	3,106	2,958	2,697	2,860	3,138	3,581	3,682	3,423	3,651	3,373	3,528	3,574	3,728	3,667	4,075	4,138	4,526	4,760	4,725	5,018	4,866	5,019	4,717
EU-27 + UK <sup>a</sup>	na	1,940	1,970	1,870	1,975	2,145	2,308	2,441	2,307	2,621	2,310	2,288	2,244	2,550	2,679	3,008	3,000	3,327	3,487	3,739	3,873	3,834	4,011	3,878
United Kingdom	High	146	152	132	166	167	159	171	173	182	174	158	159	209	191	162	156	191	200	208	194	183	246	296
EU-27 <sup>b</sup>	na	1,794	1,818	1,738	1,809	1,977	2,150	2,271	2,134	2,439	2,137	2,130	2,085	2,341	2,489	2,846	2,845	3,136	3,287	3,531	3,679	3,651	3,764	3,582
Austria	High	41	37	32	64	37	56	43	54	99	38	66	74	59	65	103	99	86	84	90	78	108	93	90
Belgium	High	6	7	14	14	19	20	18	13	20	18	13	13	12	15	20	20	22	35	74	58	62	61	60
Denmark	High	32	26	20	30	37	29	33	33	36	37	36	37	65	82	115	100	124	146	134	139	108	131	126
Finland	High	26	13	6	22	11	21	18	15	16	16	23	11	26	20	30	31	30	42	32	40	29	37	26
France	High	252	285	270	265	293	325	305	296	505	442	443	489	506	579	661	589	681	793	681	670	813	988	976
Germany	High	949	939	975	1,014	1,161	1,288	1,359	1,331	1,454	1,230	1,157	1,036	1,172	1,137	1,386	1,529	1,649	1,692	1,960	1,840	1,702	1,713	1,695
Hungary	High	9	8	2	2	5	7	2	2	2	5	4	2	3	2	4	6	7	8	4	5	5	6	5
Ireland	High	1	3	3	1	1	2	2	0	2	2	2	1	7	5	4	11	12	11	3	4	9	9	7
Italy	High	135	191	181	131	120	84	201	130	51	50	58	58	108	178	129	72	76	64	90	378	355	266	168
Netherlands	High	45	37	34	47	48	39	34	41	35	44	52	58	54	79	60	54	46	48	55	69	50	70	60
Spain	High	54	41	35	41	51	43	41	48	41	53	70	79	79	92	99	113	157	114	113	99	109	72	48
Sweden	High	88	116	49	76	84	122	121	74	75	72	77	83	82	71	87	70	67	81	102	122	128	136	125
Other Europe	na	1,166	988	828	885	994	1,273	1,241	1,116	1,031	1,063	1,239	1,331	1,179	988	1,067	1,138	1,199	1,274	986	1,146	1,031	1,008	839
Other Europe-2020 <sup>b</sup>	na	1,312	1,140	960	1,051	1,161	1,432	1,411	1,289	1,212	1,237	1,397	1,489	1,388	1,179	1,229	1,293	1,390	1,474	1,194	1,339	1,215	1,254	1,136
Belarus	Upper middle	5	5	0	2	4	5	6	5	7	3	8	3	6	9	5	7	2	2	3	5	4	6	4

Table SINV-32

## International patent families granted in engines, pumps, turbines, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Moldova	Lower middle	5	8	8	9	9	14	9	16	13	7	6	21	9	7	2	15	5	8	9	9	3	1	2
Norway	High	8	12	8	9	11	11	9	20	25	23	34	37	41	48	27	40	38	20	28	33	19	25	33
Russia	Upper middle	1,064	897	755	767	854	1,043	853	895	865	840	948	1,016	918	753	871	907	979	1,050	758	934	844	856	678
Switzerland	High	55	44	43	68	65	70	57	52	57	52	66	69	45	63	76	76	85	129	110	80	105	85	96
Ukraine	Lower middle	28	18	10	29	45	125	303	127	60	135	165	173	148	96	78	77	76	50	60	64	41	20	6
Asia	na	4,852	6,438	4,763	4,785	4,451	4,818	5,088	5,251	6,618	7,126	7,139	7,030	7,746	8,908	10,310	10,823	10,317	10,992	13,613	13,362	12,890	12,667	12,680
China	Upper middle	24	33	75	95	99	165	211	234	245	427	785	958	1,132	1,724	2,348	2,251	2,117	4,470	6,094	6,306	6,132	6,275	6,642
India	Lower middle	1	1	1	3	1	4	4	2	4	8	3	9	10	26	35	43	70	73	61	65	78	81	112
Japan	High	4,323	4,534	3,776	3,646	3,339	3,363	3,762	3,639	4,500	5,024	5,208	5,155	5,395	5,443	5,802	5,916	5,574	4,369	5,487	5,013	4,720	4,163	3,791
Malaysia	Upper middle	0	0	0	0	1	0	0	0	4	4	1	1	1	10	3	3	3	4	3	4	3	2	1
Singapore	High	1	4	0	2	2	3	2	3	2	3	4	1	3	4	10	10	7	11	11	7	8	4	3
South Korea	High	449	1,799	818	935	894	1,152	987	1,251	1,704	1,483	1,012	753	1,005	1,489	1,864	2,306	2,289	1,758	1,641	1,674	1,698	1,870	1,916
Taiwan	High	46	62	90	101	112	121	116	117	152	169	121	148	194	209	241	286	250	300	308	277	240	258	205
Middle East	na	14	10	34	39	22	25	15	29	17	31	25	14	20	24	36	29	31	42	39	31	29	32	38
Israel	High	12	8	6	14	9	14	10	5	4	8	12	12	14	11	12	14	16	11	18	11	12	8	12
Africa	na	20	21	17	19	23	27	20	17	11	15	17	26	29	19	15	20	19	6	10	7	9	10	6
South Africa	Upper middle	17	16	11	11	10	19	12	15	7	12	15	26	23	9	11	8	6	4	2	5	5	2	1
Australia and Oceania	na	41	61	58	85	96	108	136	73	81	58	43	46	38	46	54	60	35	36	46	41	23	33	32
Australia	High	38	57	56	84	93	103	132	70	77	53	36	39	33	40	47	50	29	28	37	36	18	32	31
New Zealand	High	3	4	3	1	3	4	4	3	4	5	7	7	6	5	7	10	6	8	9	5	4	1	1
Unclassified	na	21	181	56	66	12	3	115	178	101	7	5	3	2	1	2	1	1	2	6	1	10	1	1

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom.

<sup>a</sup> The United Kingdom was a part of the EU for data purposes from 1973 to 2019.<sup>b</sup> Beginning in 2020, the United Kingdom was no longer a member of the EU.

**Note(s):**

International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2013) is used to fill missing information on priority patents using information in successive filings within the families. Priority patents not indexed in PATSTAT are replaced by the next utility patent(s) in the families according to filing dates. Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. China includes Hong Kong. Data were extracted in June 2021. Because of data coverage issues for some patent offices in PATSTAT, statistics for some countries may be underestimated partially for some years or across the whole trend. Countries with identified issues include India (missing data) and South Africa (no data for 2018). For Italy, because of data gaps regarding information on granted patents, patent applications are used instead, which slightly overestimates Italy's output and creates a small shift in year for which its output is accounted. As patent authorities become more involved with the European Patent Organisation, these gaps should disappear in the future, strengthening the robustness of statistics for these countries.

**Source(s):**

National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

*Science and Engineering Indicators*