InQuartik

Tesla Battery Supplier LG Energy Solution (LGES) Raises $10.8 Billion in Its IPO

Date of analysis: Jan. 19th, 2022

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On Jan. 14th, LG Energy Solution announced that it attracted US$10.8 billion in its initial public offering in South Korea.

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- LG Energy Solution is an energy storage manufacturer in South Korea. The company currently provides EV batteries for car companies, including Tesla, General Motors, and Volkswagen. Before spinning off from LG Chem Ltd., LG Energy Solution was the battery business of LG Chem.

- On January 14th, LG Energy Solution announced that it attracted US$10.8 billion in its IPO. According to Bloomberg, the deal values the company's worth at around US$ 59 billion. LG Energy Solution said it would use the funds to expand battery factories in South Korea and other countries.

- According to the Patent Rankings developed by InQuartik, only 4% of LG Energy Solution patents in some major markets are more likely to be monetized. For patents under IPC H01M, the company owns larger proportions of high-quality patents and high-value patents than its Chinese rival CATL. The potential targets for LG Energy to monetize its patents include Samsung and Bosch.

Coverage and Status - Global Coverage

Applications: 6,350
Families: 5,299

Around 54.44% of LG Energy's patent applications are active patents and around 45.23% are pending.

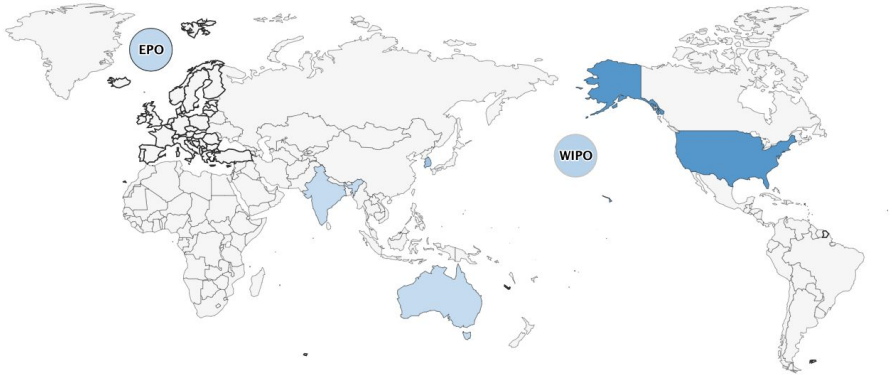
Active
3,457 (54.441%)
of them are active and enforceable.

Pending
2,872 (45.228%)
of them are still pending and may acquire patent rights in the future.

Inactive
21 (0.331%)
Inactive

The geographic coverage of LG Energy's patents:

Country : US(4,176) KR(1,384) WO(550) EP(229) AU(9) EM(1) IN(1)



Country	Patent Appl.	Legal Status
US	4,176	2,927 / 1,228 / 21
KR	1,384	529 / 855
WO	550	550
EP	229	229
AU	9	9
EM	1	1
IN	1	1

Active Pending Inactive

Most of its patents were filed to the USPTO.

Notice that it also filed many applications to WIPO, suggesting its ambition for international expansion.

Source: Due Diligence

Coverage and Status - Pending Patents

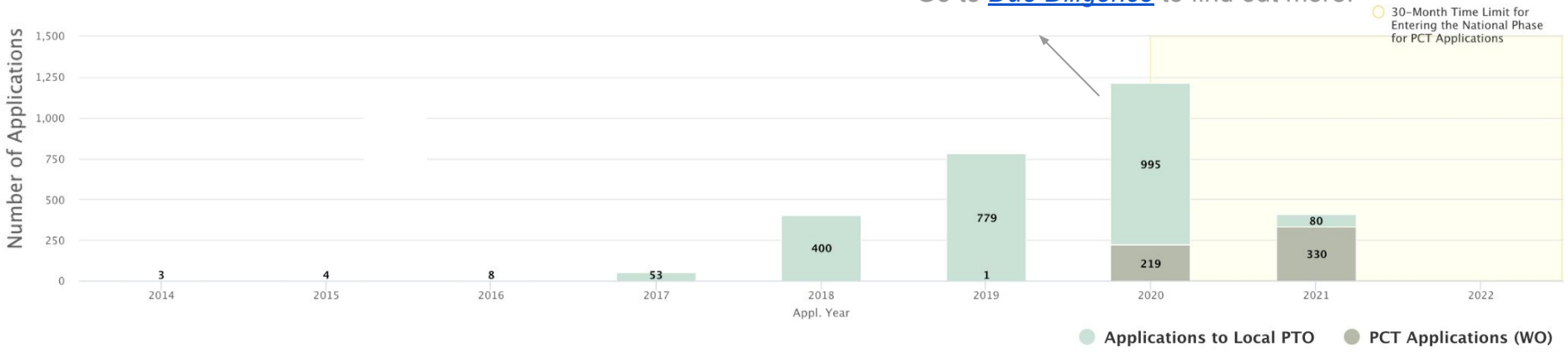
According to the patent data, most of LG Energy's pending applications were filed in 2020.

The company has 550 pending applications at WIPO, and most of them were filed between 2020 and 2021, suggesting that the company is actively expanding its market.

Data Selected 995 Applications; 974 Families

#	Patent No.	Title	Legal Status
1	KR1020210070933A	리튬 이차전지용 양극 활물질, 상기 ...	Pending
2	KR1020210103180A	원통형 전지 및 원통형 전지 제조 방법	Pending
3	EP3933964A1	APPARATUS FOR MANUFACTUR...	Pending

You can see LG Energy's pending applications in each year.
Go to *Due Diligence* to find out more.

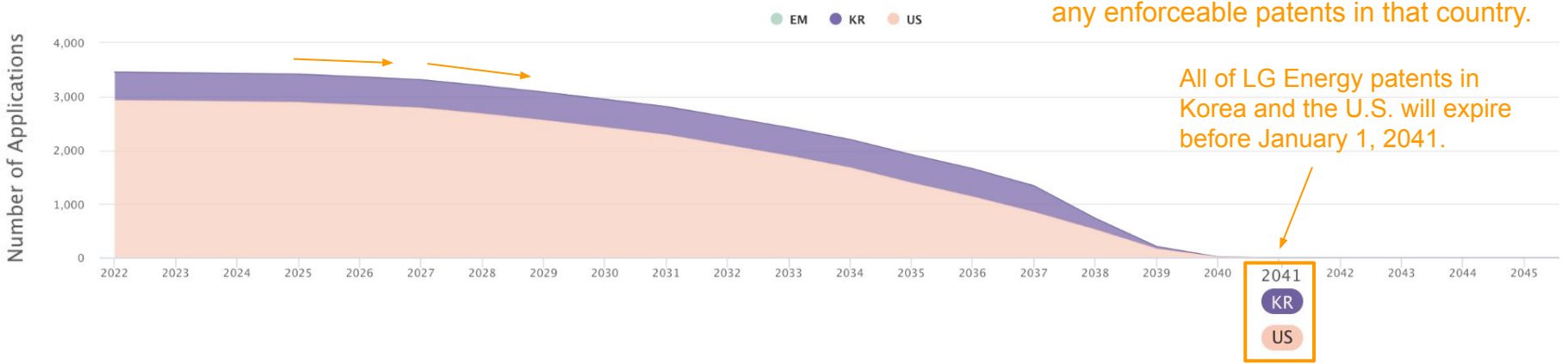


Source: Due Diligence

Coverage and Status - Remaining Life

The number of LG Energy's active patents will decrease more rapidly starting 2027 — mainly driven by number of expiring patents in the U.S.

The country code below indicates the year by which the company will no longer hold any enforceable patents in that country.



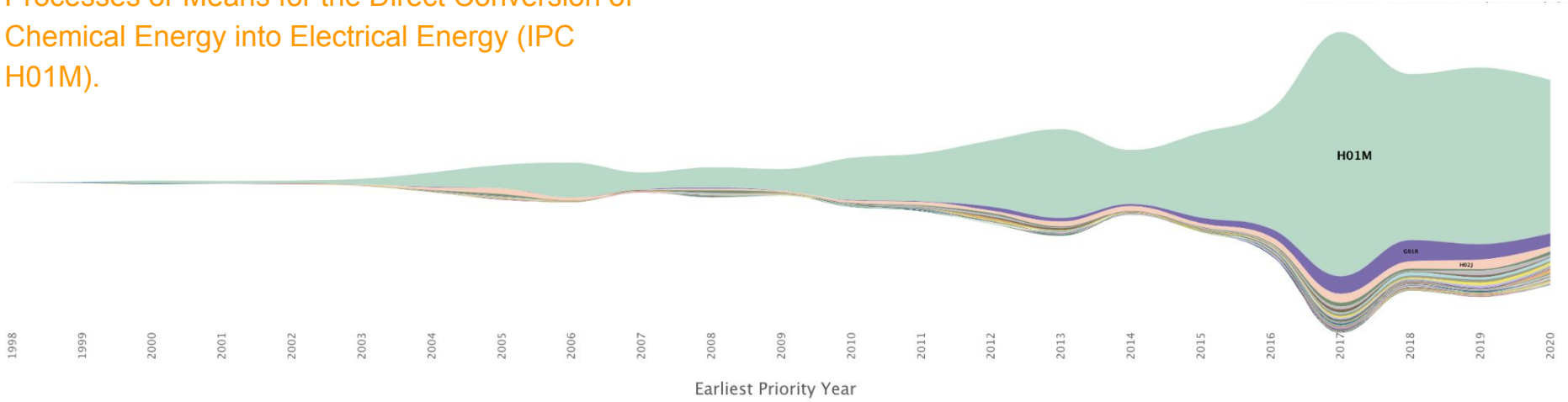
All of LG Energy patents in Korea and the U.S. will expire before January 1, 2041.

Source: Due Diligence

Technologies

Main technical fields 1	Main technical fields 2	Main technical fields 3
PROCESSES OR MEANS, e.g. BATTERIES, FOR THE DIRECT CONVERSION OF CHEMICAL ENERGY INTO ELECTRICAL ENERGY	MEASURING ELECTRIC VARIABLES; MEASURING MAGNETIC VARIABLES	CIRCUIT ARRANGEMENTS OR SYSTEMS FOR SUPPLYING OR DISTRIBUTING ELECTRIC POWER; SYSTEMS FOR STORING ELECTRIC ENERGY
3,942 Patent families (74%)	264 Patent families (5%)	208 Patent families (4%)

Nearly three out of four LG Energy patents fall in Processes or Means for the Direct Conversion of Chemical Energy into Electrical Energy (IPC H01M).



Source: Due Diligence

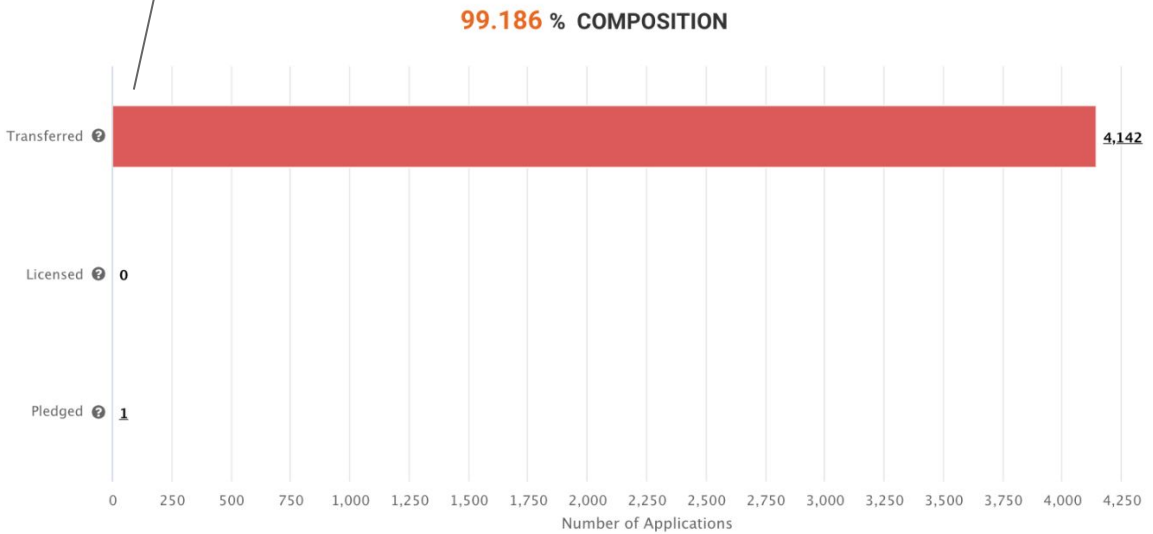
Patent Transaction History

According to the patent records in the U.S. and China, around 99.19% of LG Energy's patents have been transacted.

Main Events — Assignment

Assignor	Assignee	Number of Transfers
LG CHEM LTD	LG ENERGY SOLUTION LTD	4141

LG Chem Ltd. transferred 4,141 patents to LG Energy Solution. The results suggest that most of LG Energy patents in the U.S. and China were from LG Chem Ltd.

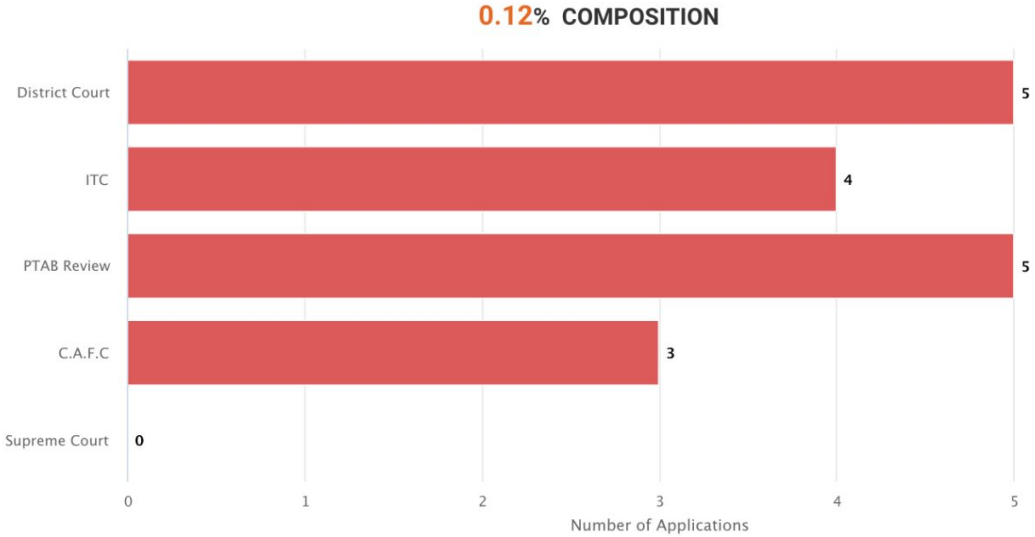


Source: Due Diligence

Patent Litigation History

Only 0.12% of LG Energy's U.S. patent applications have been litigated.

See the government bodies to which these patent applications were taken.



Source: Due Diligence

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Quality and Value Evaluation

Why Quality and Value?

Quality and Value are the two cornerstones of patent evaluation. By reflecting on a patent's true quality and value, we can evaluate patents with an objective viewpoint instead of relying on subjective guesswork—eventually giving a fair price to patents.

Quality and Value Definition

Quality:

Predicts the tendency for invalidation.

Describes whether a patent is eligible, novel, non-obvious, and described with clarity.

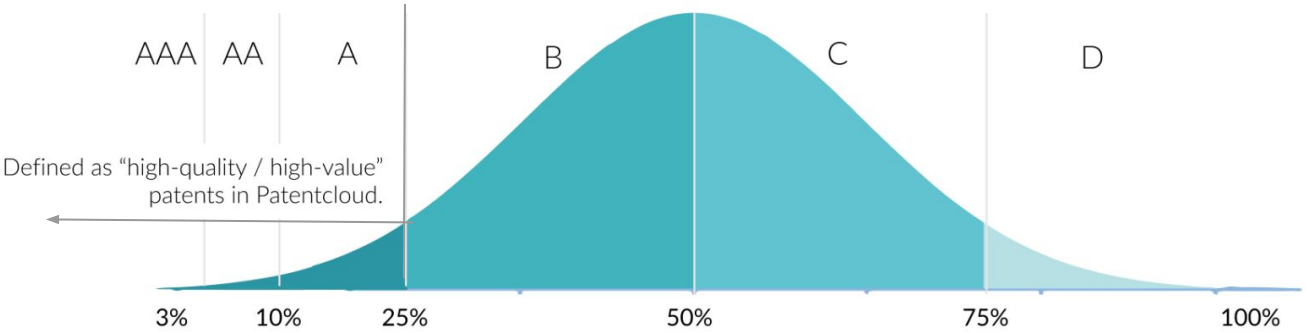
Value:

Predicts the tendency for monetization.

Describes whether a patent has commercial viability—either realized from enforcement, transaction, or other commercial practices.

According to our proprietary models, each patent is ranked as per the quality and value dimensions and is categorized into one of the following six grades: AAA, AA, A, B, C, and D.

A patent with a quality score in the 97th percentile is graded as AAA.



Source: Due Diligence

Quality and Value Rankings - Quality and Value*

Our Patent Quality & Value Dashboard shows that only 4% of LG Energy's patents in major countries are of high value.

Of the 5,225 patent families, 6,247 patents are active or pending in major countries, of which 243 (4 %) are high-value patents.

* The scope of the Quality and Value analysis includes patents filed with the patent offices of the US, China, Europe, Japan, Korea, Taiwan, and the WIPO.

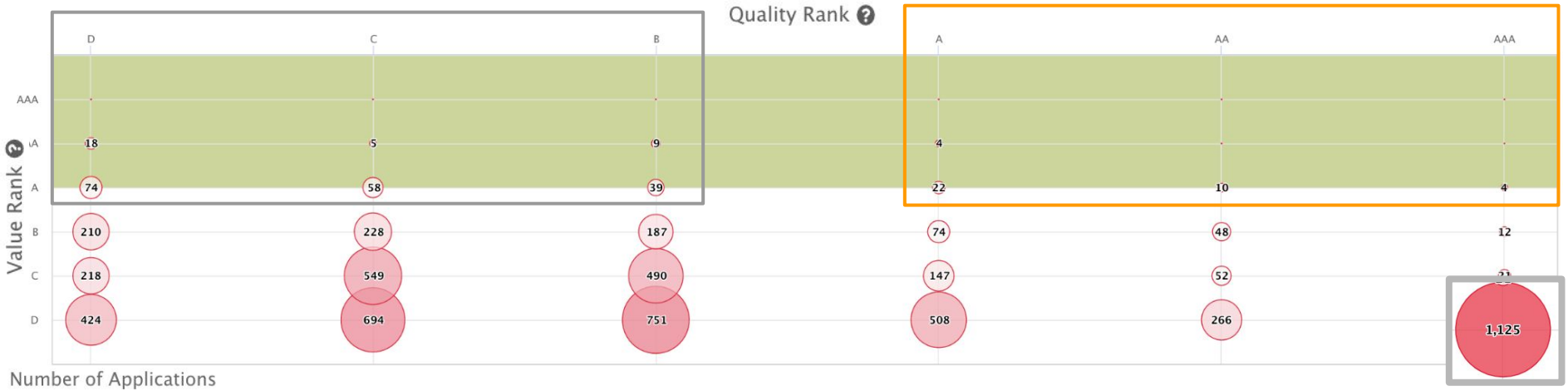
Source: Due Diligence

Quality and Value Rankings - Quality and Value

Among the high-value patents, some have a higher likelihood of standing against legal challenges.

High-value, low-quality patents: They have good monetization potential, but the risk of invalidation is high.

High-quality, high-value patents: The potential for monetization is high, and the risk of being invalidated is low.



A large proportion of LG Energy patents may stand better against legal challenges but are less likely to be monetized.

Source: Due Diligence

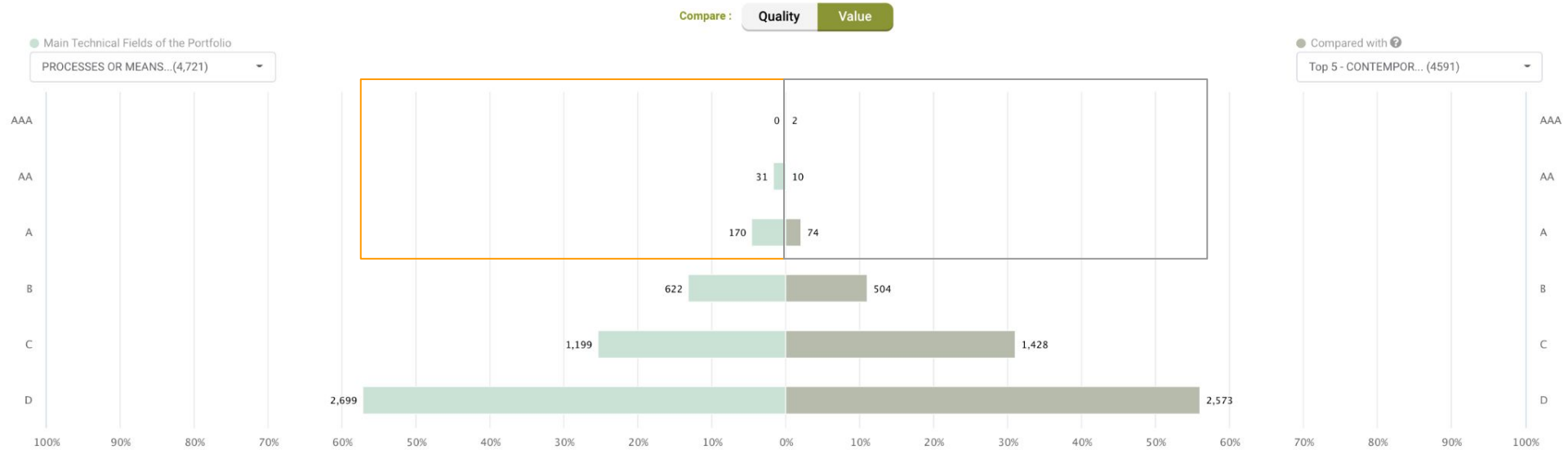
Peer Comparison - Quality Rankings

For LG Energy's patents under IPC A61K, the proportion of high-quality patents is **29.78**%, **higher** than **CATL (12.79%)**.

Source: Due Diligence

Peer Comparison - Value Rankings

The proportion of LG Energy's high-value patents in the same field is **4.26%**, **higher** than **CATL (1.87%)**.

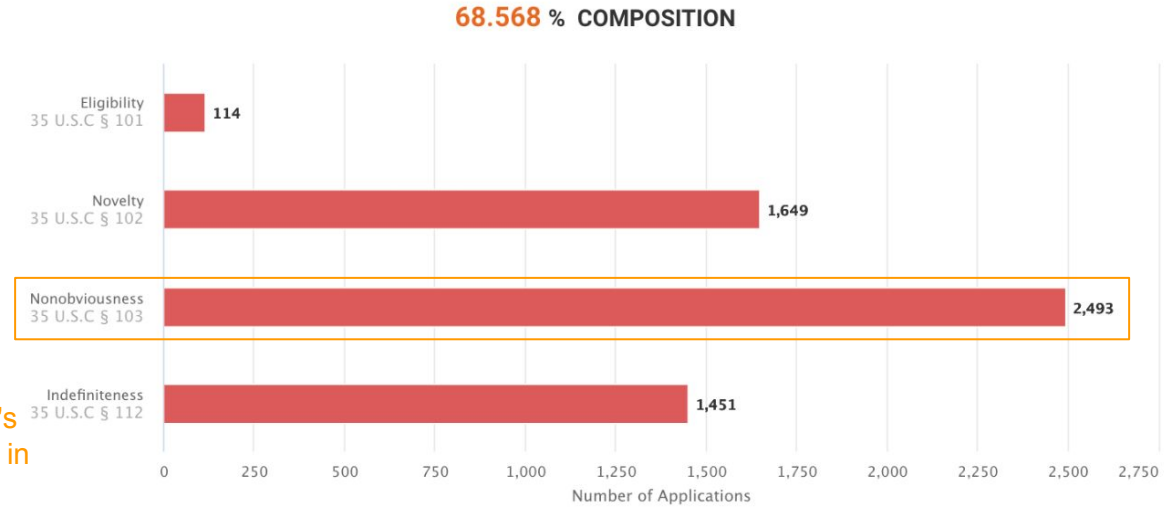


Source: Due Diligence

Quality and Value Highlights - Eligibility and Novelty Issues

Around **68.57**% of LG Energy's U.S. patents have been challenged during prosecution or at PTAB — an indicator of potential quality issues for its patents' family members.

Nonobviousness is the most common challenge brought against LG Energy's patent applications in the U.S.



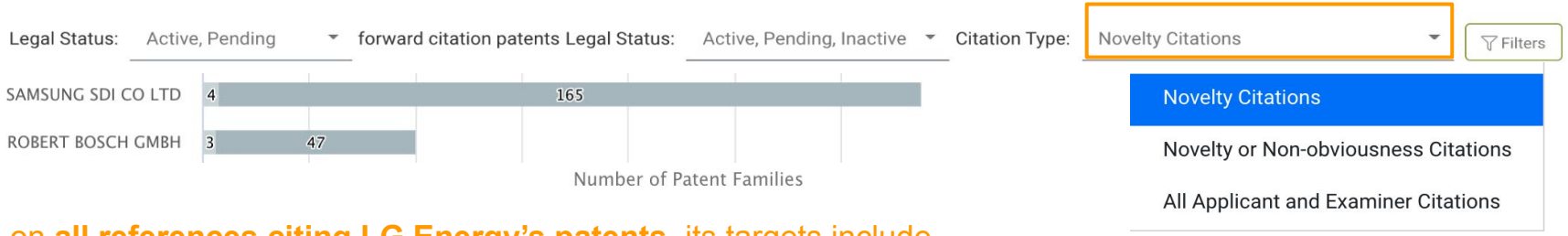
Source: Due Diligence

Quality and Value Highlights - Potential Targets of the Portfolio

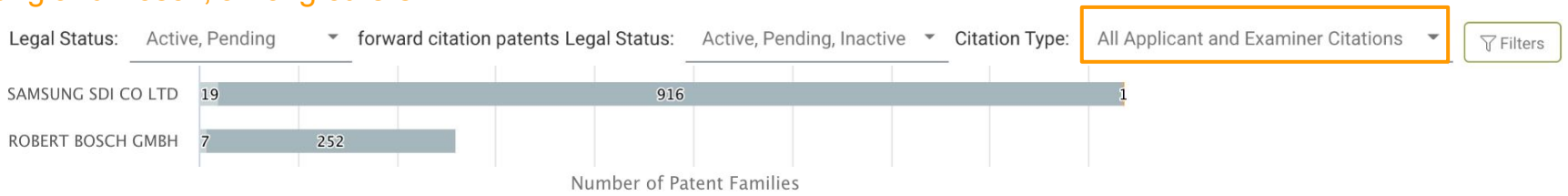
LG Energy's potential targets based on **novelty citations** include Samsung and Bosch, among others.

Some of these companies' patent applications received a novelty (§102) rejection based on patents currently held by LG Energy.

You can search for potential targets based on the nature of the citations.



Based on **all references citing LG Energy's patents**, its targets include Samsung and Bosch, among others.

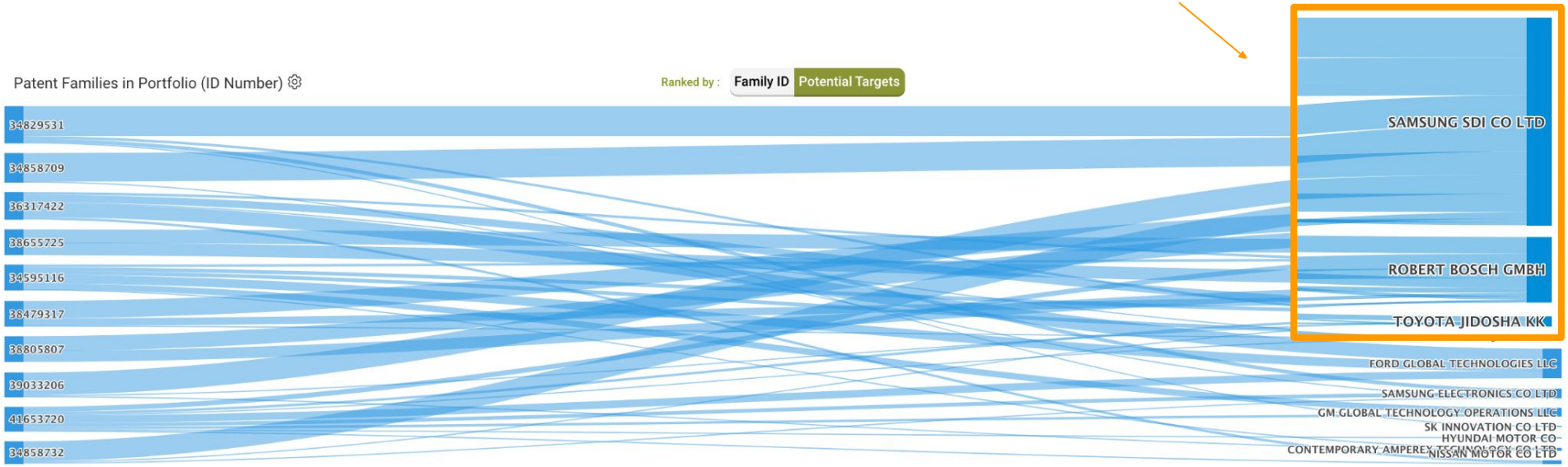


Source: Due Diligence

Patents Against the Potential Targets

Legal Status: Active, Pending | forward citation patents Legal Status: Active, Pending, Inactive | Citation Type: All Applicant and Examiner Citations | Filters | Patent Families

The ten companies that cite LG Energy's patents the most. They are potential targets for LG Energy to monetize its patents.



Source: Due Diligence

Patents Against the Potential Targets

Legal Status: Active, Pending | forward citation patents Legal Status: Active, Pending, Inactive | Citation Type: All Applicant and Examiner Citations | Filters | Patent Families

The most heavily cited families — these patent families are ideal for LG Energy to use against potential targets.

You can view potential targets by the types of references that cite LG Energy's patents.

Source: Due Diligence

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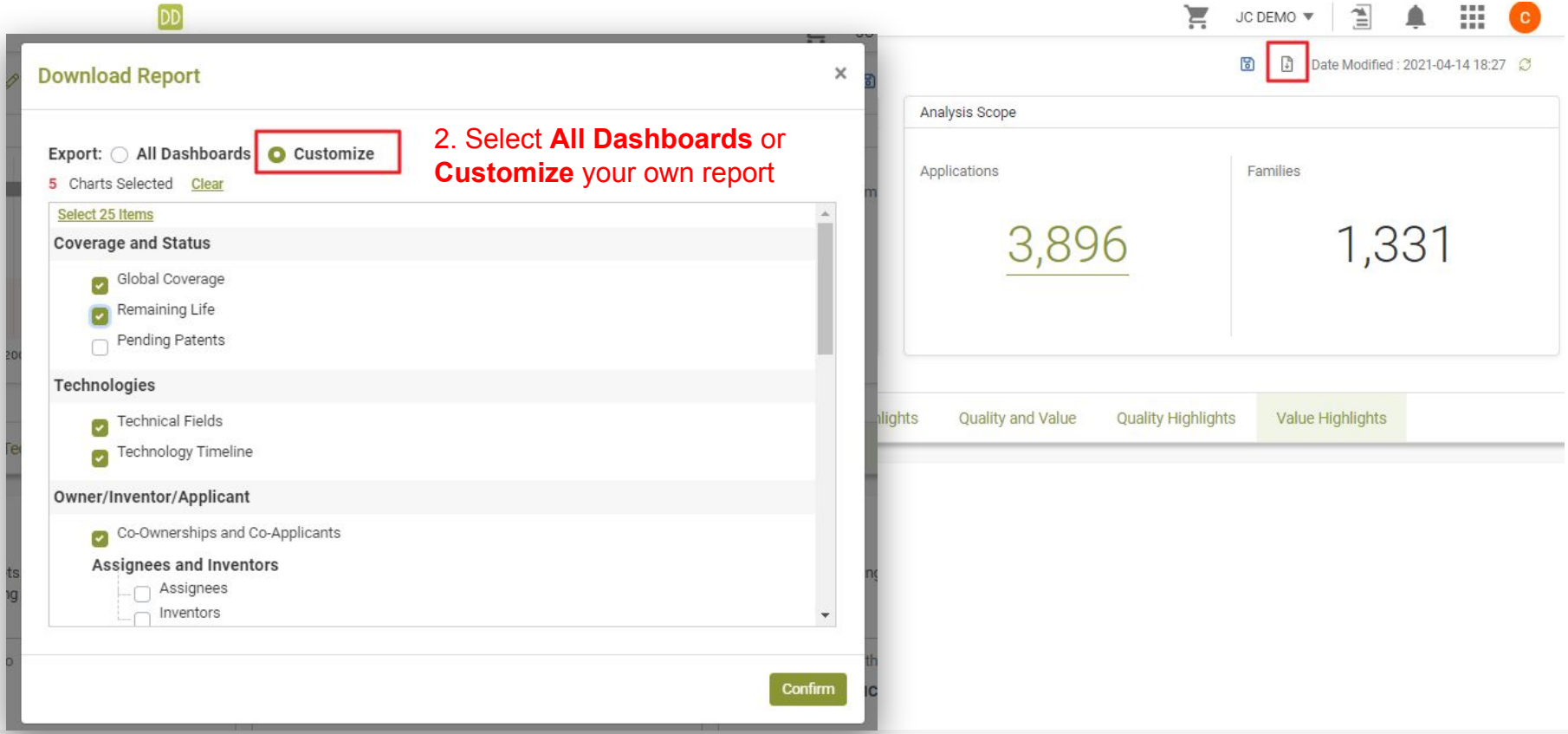

2. Select **All Dashboards** or **Customize** your own report

Source: Due Diligence

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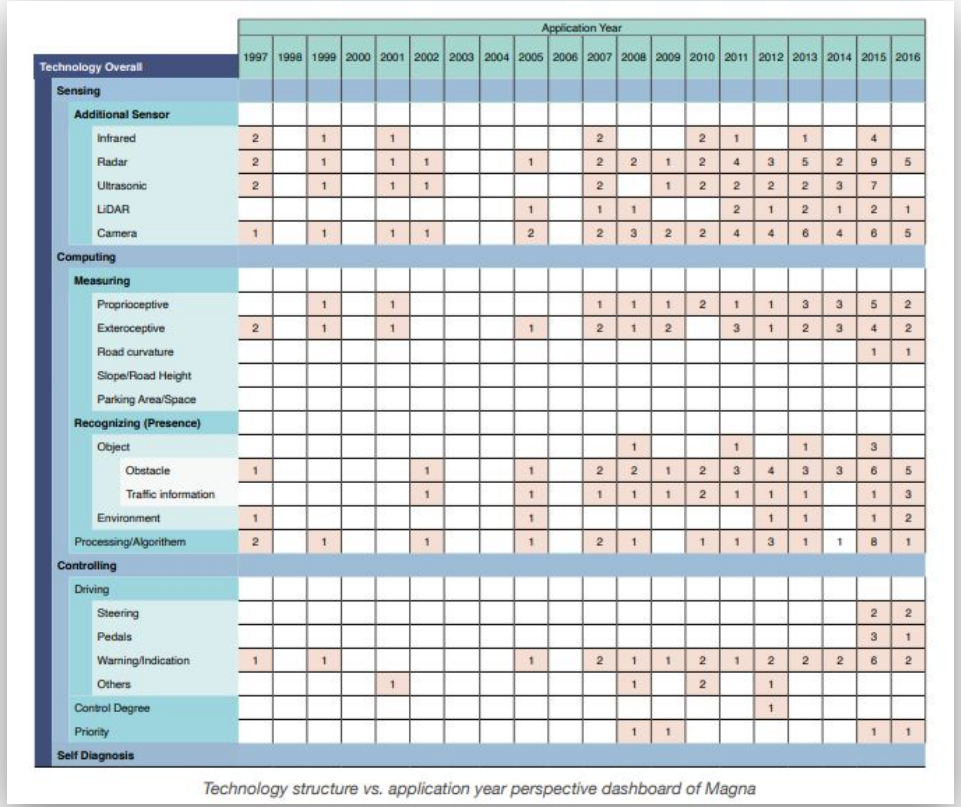
Source: Patent Vault



	Application Year																			
Technology Overall	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Sensing																				
Additional Sensor																				
Infrared	2		1		1						2			2	1		1		4	
Radar	2		1		1	1			1		2	2	1	2	4	3	5	2	9	5
Ultrasonic	2		1		1	1					2		1	2	2	2	2	3	7	
LiDAR									1		1	1			2	1	2	1	2	1
Camera	1		1		1	1			2		2	3	2	2	4	4	6	4	6	5
Computing																				
Measuring																				
Proprioceptive			1		1						1	1	1	2	1	1	3	3	5	2
Exteroceptive	2		1		1				1		2	1	2		3	1	2	3	4	2
Road curvature																			1	1
Slope/Road Height																				
Parking Area/Space																				
Recognizing (Presence)																				
Object												1			1		1		3	
Obstacle	1					1			1		2	2	1	2	3	4	3	3	6	5
Traffic information						1			1		1	1	1	2	1	1	1		1	3
Environment	1								1							1	1		1	2
Processing/Algorithem	2		1			1			1		2	1		1	1	3	1	1	8	1
Controlling																				
Driving																				
Steering																			2	2
Pedals																			3	1
Warning/Indication	1		1						1		2	1	1	2	1	2	2	2	6	2
Others					1							1		2		1				
Control Degree																1				
Priority												1	1						1	1
Self Diagnosis																				

Technology structure vs. application year perspective dashboard of Magna

Source: Due Diligence

Patentcloud

Due Diligence

Visualize patent assets with just one click

- Instantly access and examine patent portfolio attributes to aid in decision-making.
- Discover the patents with the greatest monetization potential — and the most likely targets.
- Identify the strengths and weaknesses of a patent portfolio.
- Maximize investment opportunities and value.