

2011

OLED Lighting: A review of the patent landscape

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This analysis of OLED lighting is based on a dataset of 2,918 patents, which contains 2,760 unique patents and 168 search reports/corrected patents

Table 01: Possible price reductions
 [Source: cintelliq, 2011]

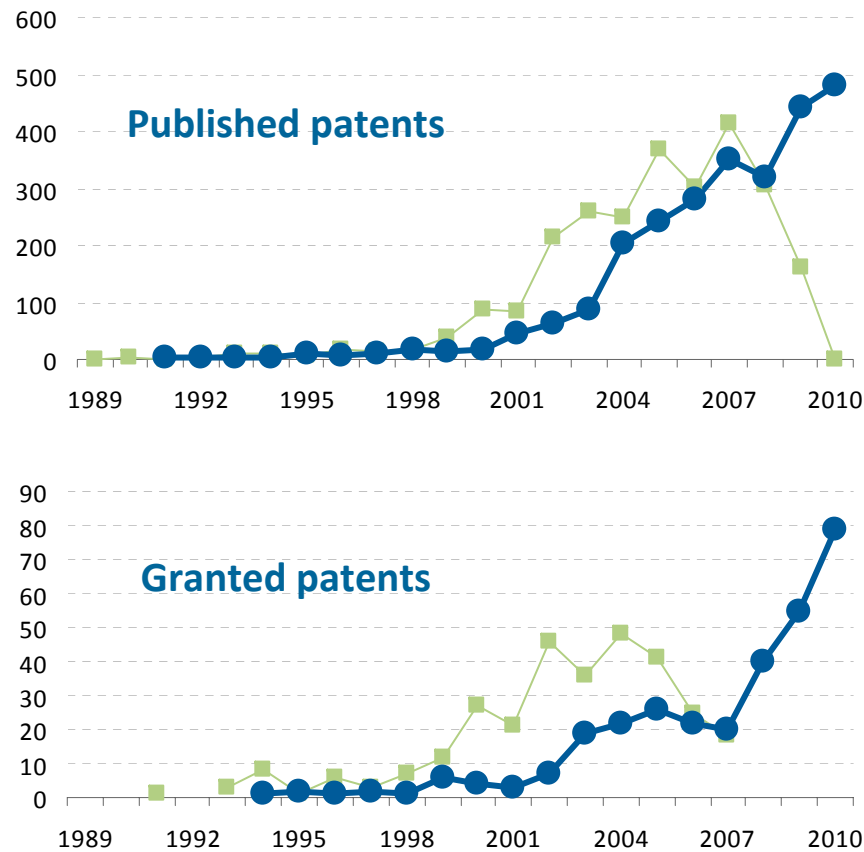
		Updates	Unique	Totals
Patent Dataset	EP	80	354	434
	JP	-	1,037	1,037
	US	-	934	934
	WO	78	435	513
		158	2,760	2,918

These are the number of patents used in the analysis

- Dataset: The analysis uses 2,760 patents, unless stated. This is slightly less than the 2,913 patents in the spreadsheet as the dataset was amended to take into account -
- Updates: European (EP) and WIPO (WO) patent offices issue updates to patents, these are either corrections or search reports, in the patent dataset there are 158 such updated patents
 - Corrections = 12
 - Search reports = 146
- When patents are corrections and search reports added the patents are reissued with a different document kind code
 - A3, A4, A8 A9, etc
- The accompanying patent dataset contains all 2,918 patents
- The OLED lighting dataset is a subset of the wider patent dataset on OLED technology

Annual OLED lighting filings continue to grow with published patents reaching 480 in 2010 and granted patents reaching 79 in 2010

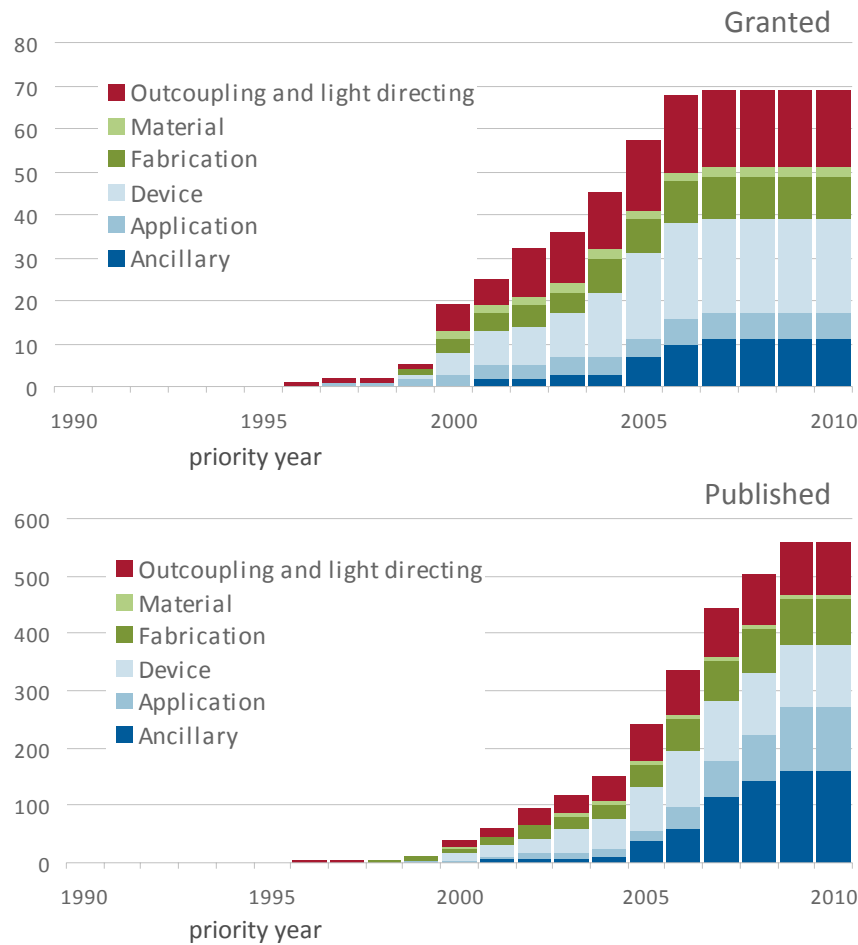
Figure 03: Trend of annual published and granted patents
 [Source: cintelliq, 2011]



- Since 2000 there has been an explosive growth in the number of OLED lighting patents being filed
- This increase coincides with increase in Government funding of OLED lighting projects since 2000, most notably in Europe, The United States, Japan, Korea, Taiwan and China
- Important to differentiate between published patents (application) and granted patents
 - **Published** - all patents start out life as published patents
 - **Granted** - after examination patents considered unique are given “legal” status
- Important to differentiate between publication date and priority dates on patents
 - **Publication date** (shown blue ●) - date that a patent was put into the public domain
 - **Priority date** (shown green ■) - date of the original filing of the invention – important date

The lighting sector emphasises devices, outcoupling, and ancillary (driving) which are necessary to make efficient and cost effective lighting solutions

Figure 12: Lighting sector accumulative patent filings 1990-2010
 [Source: cintelliq, 2011]



- Granted patents are primarily focused on devices and outcoupling and light extraction
- There recent trends sees a growing increase in
 - ancillary patents – related to driving, power supply, colour changing control, sockets and fixture design
 - fabrication patents – related to fabrication, deposition, integration and assembly
 - application patents – related to the use of an OLED light source
- Panasonic (37) and GE (34) hold the largest number of fabrication patents – while Philips has the less (3)
 - Suggesting Philips likes to retain their process know-how a trade-secret
- Although the lighting sector has the highest total number of patents, it is only surpassed by the number of granted patents in the Technology Providers sector

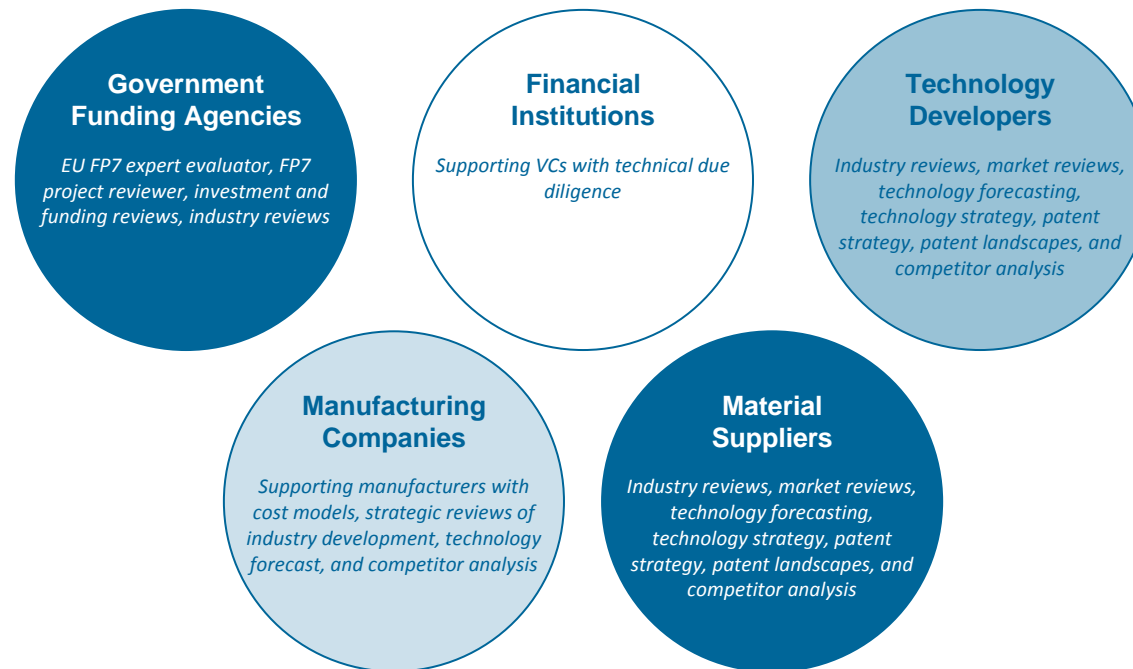
About cintelliq Limited

- cintelliq provides strategic research and consulting for the needs of the organic semiconductor industry, including OLED lighting, organic photovoltaics, and organic transistors
- cintelliq was founded in 2002 in recognition that as basic research in organic semiconductors moves from the research laboratories towards early commercialisation it is imperative that organisations with a vested interest in the development and commercialisation of the technology have access to sufficient industry information.

Consulting from cintelliq

cintelliq offer consulting services from patent analysis, technology forecasting, strategic reviews through to cost models. cintelliq has been helping clients from different industry sectors since 2003, and help them to understand the development of the emerging industry enabling them to make the best possible decisions based on our fact-based approach.

cintelliq advises clients in many industry sectors



For more information please contact cintelliq or visit our website

About cintelliq

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Examples of past projects

Examples of recent and past projects

Project	Client	Problem	Solution
Review of the Organic Photovoltaic (OPV) IP landscape	Government funding agency on renewable energy	Our client wanted to develop a broad and deep understanding of OPV patent landscape	Using our knowledge and experience of organic semiconductor patents, cintelliq provided the client with a highly focused, detailed and substantial dataset on OPV patents
Commercial and technical review of OLED lighting	Major European lighting firm	Our client wanted to develop a detailed understanding of commercial and technical opportunities in the OLED lighting industry and strategic options	cintelliq provided a detailed overview of OLED lighting, including the technical developments, list of key players, licensing requirements, IP review, list of major patents, and the development of strategic options for manufacturing
Ten-year OLED IP review	Global management consultancy firm	Our client wanted to develop a broad understanding of OLED patents	Using our knowledge and experience of organic semiconductor patents, cintelliq provided the client with a highly focused dataset relating to OLED patents covering the past ten years
Assessment of organic electronics technology and early applications	World-leading technology, media and financial services company	Our client required an overview of technology developments and early applications for the emerging organic electronics industry.	cintelliq provided a review of these technologies, possible applications and industry sectors that are considered to be early adopters of organic electronics.
Review of Organic Photovoltaic Technology	Government funding agency on renewable energy	Our client wanted a review of S.O.A. and technology trends of OPV	Using our knowledge and experience of organic photovoltaics, cintelliq provided the client with a highly focused report of the current technology, future technology, players, research and manufacturing options
Five-year Organic Photovoltaic (OPV) IP review	World-leading photovoltaic technology and device provider	Our client wanted to develop a broad understanding of OPV patents	Using our knowledge and experience of organic semiconductor patents, cintelliq provided the client with a highly focused dataset relating to OPV patents covering the past five years

Examples of recent and past projects

Project	Client	Problem	Solution
Review of technology and market for PEDOT	Multinational European chemical business	Our client wanted a technology and market review of PEDOT	Using our knowledge and experience of organic semiconductor technology, cintelliq provided the client with a highly focused report of the current technology, future technology, players, research and manufacturing options
IP review of out-coupling techniques for OLEDs	World-leading OLED technology and device provider	Our client wanted to develop a broad understanding of out-coupling patents	Using our knowledge and experience of OLED technology and organic semiconductor patents, cintelliq provided the client with a report and focused dataset relating to out-coupling patents and highlighting the different approaches to extract light
IP review of hole transport and hole injection materials for OLEDs	World-leading OLED technology and device provider	Our client wanted to develop a broad understanding of HTM and HTL patents	Using our knowledge and experience of OLED technology and organic semiconductor patents, cintelliq provided the client with a detailed report and focused dataset relating to HTM and HTL patents
IP review of thin film encapsulation techniques for OLEDs	World-leading OLED technology and device provider	Our client wanted to develop a broad understanding of thin film encapsulation patents	Using our knowledge and experience of organic semiconductor patents and OLED encapsulation technology, cintelliq provided the client with a detailed report and focused dataset relating to thin film encapsulation patents
Review of LCD technology evolution of the next 3 to 5 years	World-leading OLED technology and device provider	Our client required forecasts of the how LCD technology performance will evolve over the next 3 to 5 years	cintelliq provided a detailed review of current and future LCD performance, enabling the client to set internal targets for the development of OLED technology.
OLED technology due diligence	European VC	Our client wanted to technical due diligence prior to investment of a start-up	cintelliq provided the client with a detailed review OLED technology being developed, giving the VC the confidence to client to undertake their investment

About this review

Corporate and Filing Analysis

Industry Sector analysis

About cintelliq

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