

Patent Litigations as a Barrier to Innovation: The Case of LEDs

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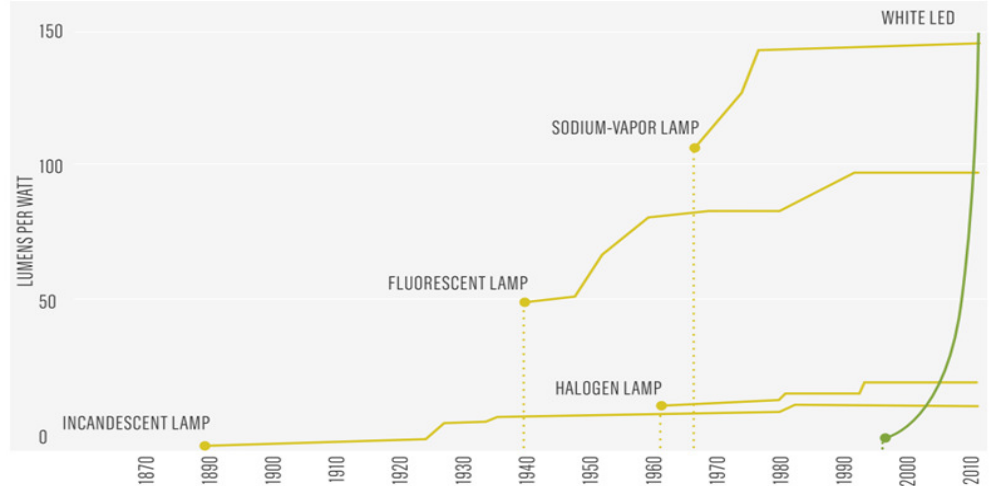
cycLED members (EU FP7 project)



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- | | |
|---|---------------------|
| 1. Fraunhofer IZM (DE, Coordination) | Research & Academic |
| 2. EcoDesign Center Wales (UK) | |
| 3. Institut Mines-Télécom (FR) | |
| 4. Nottingham Trent University (UK) | |
| 5. OUT (DE) | |
| 6. Sirris (BE) | |
| 7. ELPRO Elektronik-Produkt Recycling GmbH (DE) | SMEs |
| 8. Braun Lighting Solutions (DE) | |
| 9. ONA (ES) | |
| 10. Riva GmbH Lighting (DE) | Larger Companies |
| 11. ETAP Lighting (BE) | |
| 12. Philips Lighting (NL) | |
| 13. Umicore (BE) | |

The efficiency of LEDs is rapidly surpassing that of other technologies



Source: The Climate Group (2012). Lighting the clean revolution: The rise of LEDs and what it means for cities. <http://theclimategroup.org/publications/lighting-the-clean-revolution-the-rise-of-leds-and-what-it-means-for-cities>.

Research aims

- Do patent litigations deter innovations in Light Emitting Diodes?
- Are there structural differences between litigated and non-litigated patents in the LED sector?

Data and Methodology

- Patent data: PATSTAT 2014
- Litigation data: MAXWAL litigation databases
- Discriminant function analysis: performed for 1990-2000 and 2000-2010.

Patent descriptive statistics

Application filing year	1951-1980	1980-1990	1990-2000	2000-2010	2010-2014	TOTAL
Patent count (H01 L33)	842	751	2571	10507	3435	18106
Litigated patent count	0	15	53	97	3	187
Litigated patent count (H01 L33)	0	3	28	58	2	98

Group statistics for the H01L 33 patents (n = 18106)

	Mean	Std.dev.
LITIGATION	0.01	0.07
PAT_CIT	23.23	32.22
FWD_CIT	2.79	5.66
SCI_CIT	4.63	12.64
CLAIMS	15.51	12.18
IPC	5.52	3.89

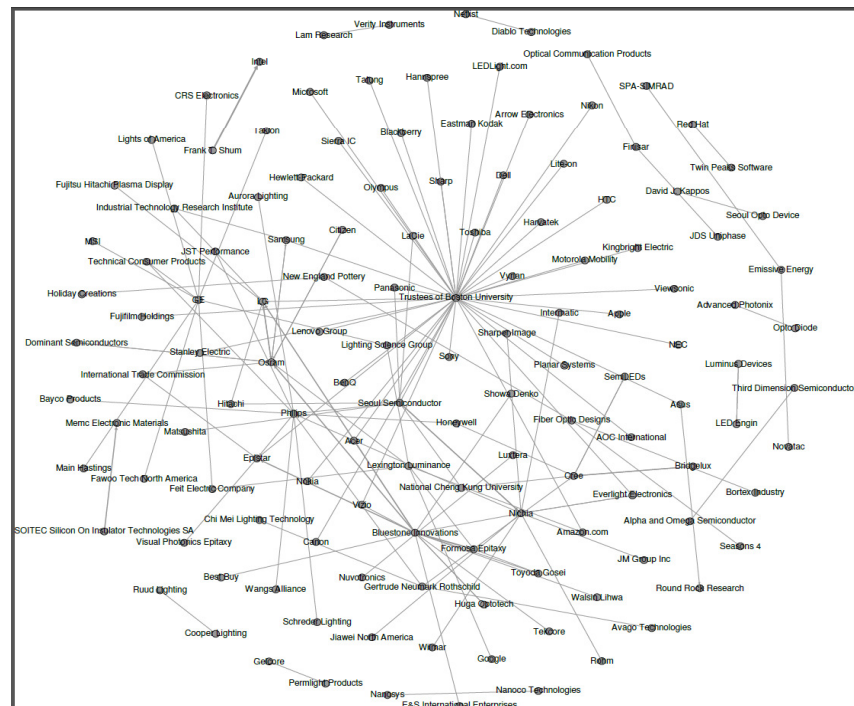
Group statistics for the H01L 33 litigated patents (n = 98)

	Mean	Std.dev.
LITIGATION	1.0	0.0
PAT_CIT	43.46	52.00
FWD_CIT	9.49	11.07
SCI_CIT	14.52	25.47
CLAIMS	22.08	14.29
IPC	7.47	6.22

Coefficient of linear discriminants

	LD1 (1980-2010)	LD1 (1990-2000)	LD1 (2000-2010)
PAT_CIT	0.005493129	0.006347935	0.002548592
FWD_CIT	0.092404235	0.080323561	0.167974538
SCI_CIT	0.011774441	0.040219856	0.005432954
CLAIMS	0.012741730	-0.010253949	0.023555925
IPC	-0.021956102	-0.110886475	-0.017744943

Network of patent litigations



Results

- Litigated patents are significantly different in terms of their scientific basis, and their potential use in later innovations.
- Litigated LED patents are highly scientific (i.e. they cite many scientific publications) => good quality => hard to invalidate => more law suits for infringement => barrier for SMEs & high costs (=> less money for innovation).