

Electronics & Instruments

Hon Hai Precision Industries takes the lead from Canon. Honeywell moves into the top 10 while Matsushita drops out. Six of the top 10 companies have patent holdings in multiple scorecard industries, five of the companies are conglomerates; however pure-play companies take the top two spots

This industry contains companies that offer wide-ranging technologies, and support many fields including consumer electronics, communications products and laboratories.

Diverse in its make-up, 36% of the companies are present in other scorecard industries with about a dozen being conglomerates.

The top 10 companies have patent holdings pertaining to displays, components, test & measurement equipment and scientific instrumentation, where displays are the most prevalent. This is not surprising considering the amount of high-tech products and services that require the most advanced and durable technological displays available.

Most of the companies in the top 10 had an increase in patent activity with E-Ink and Samsung having the largest at 53% and 64%

respectively. Hon Hai, LG Philips and Canon hold the top three spots for patenting volume. Most of the top 10 companies have approximately average Industry Impact (II), with generally declining measures over the past year, some by as much as 17%. However, E-Ink's II seems to have no bounds (see profile on next page). While not charted, it is noteworthy to mention that Philips Electronics, whose recent acquisition of LED lighting innovator Color Kinetics, not only had their Industry Impact more than double as a result, they also moved up in rank significantly into 12th position.

Those building on science are display companies – E-Ink, Canon and LG Philips and those in the analytical instrument field – Agilent and Honeywell. E-Ink and Agilent are the 1st and 3rd ranked companies for Science Strength™. E-Ink rounds out its high ranking with a 3rd overall position for Research Intensity™, with competitor SiPix Imaging taking the top spot. Less than half a point separates the two and E-Ink's 5 yr average beats SiPix by almost 2 points.

Figure 1. Industry Impact™

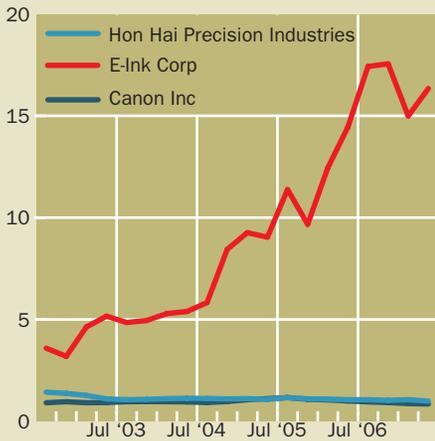


Figure 2. Patent Growth

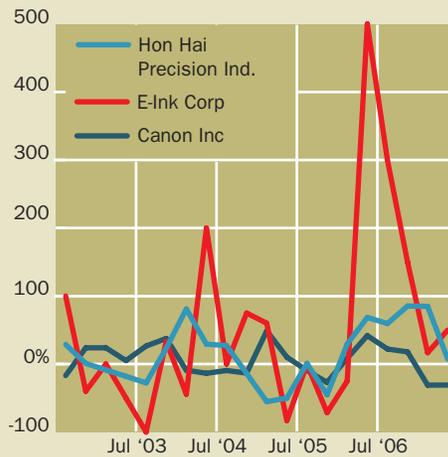


Figure 1. Both Hon-Hai and Canon have industry average influence of their patents. E-Ink however has maintained stellar II since its inception and in the most recent year has topped the charts with one of the highest IIs across any industry.

Figure 2. Hon Hai and Canon follow a similar patenting trend that parallel the industry as a whole, while E-Ink shows significantly higher growth on a smaller patent base. Hon Hai has the most issued patents for the industry and while Canon ranks 3rd for patent count, it has holdings in four other scorecard industries.

Ranking & Movement	Technology Strength™	Company / Concern	Patent Count	Science Strength™	Industry Impact™	Research Intensity™
Sept 2007	Sept 2006	Sept 2007	Sept 2007	0 300 600 900 1200	0.5 1 1.5	0 0.5 1 1.5
1 ▲ 2	644.1	Hon Hai Precision Industries	531	3802.0	17.74	5.33
2 ▲ 4	601.6	E-Ink Corp	29	1573.-	9.14	5.51
3 ▼ 1	441.6	Canon Inc	386			
4 ▲ 6	427.2	Seiko Epson Corp	356			
5 ▲ 8	399.2	Samsung Group	370			
6 ▼ 5	371.7	Hitachi Ltd	277			
7 ■ 7	370.4	LG Philips LCD Co Ltd	418			
8 ▼ 3	330.8	Agilent Technologies Inc	350			
9 ■ 9	265.6	Fujitsu Ltd	277			
10 ▲ 11	254.6	Honeywell Inc	242			

Compiled with data through September 1, 2007

■ 1 Year Value ■ 5 Year Average Industry Impact & Research Intensity industry average is 1.

E-Ink

E-Ink, a leader in the electronic paper display industry, has steadily climbed The Patent Board's ranking from its inception in 1999 to perch now at number 2 in the Electronics & Instruments industry

E-Ink is a spin out from MIT Media Lab in the emerging market space of electronic paper display. Within 7 years of its founding in 1997, E-Ink won the Gold Display Component from SID (Society for Information Display) "for its substantial innovation in the science and technology". Sony and Motorola both license their technology and Motorola just won their own award from SID for their product that uses E-Ink's technology. Now many of the top 10 are entering this emerging market space and cite E-Ink's patents. E-Ink is highlighted due to its meteoric climb in the Patent Board's rankings.

E-Ink currently has 121 granted USPTO Utility patents and another 77 published applications. While E-Ink was only granted 29 patents in the last 12 months compared to Hon Hai Precision's 531 granted patents, the degree of citations on E-Ink's patents overwhelms the remainder of the industry.

Multiple research projects over the last 20 years show that high quality patents also receive a relatively high number of citations. E-Ink received over 17 times the industry average number of citations over the last 12 months, up from almost 10 times the industry average. While 70-80% of these citations are self citations, this is not an unusual pattern for new technologies. E-Ink is influencing the formation of this industry and staking a ongoing claim on its development. Many important companies are citing E-Ink patents – including; SiPix Imaging, Inc., Hewlett-Packard, SAIC Inc., Brother Industries, Philips, Xerox, and Seiko Epson. This shows that others are working to build on E-Ink's art.

As with most breakthrough technologies, the citation pattern includes many non patent scientific literature references. This pattern is reflected in the Research Intensity Index. Here again E-Ink posts extremely high numbers – over 5 times the industry average. Patents that emerge from basic research and support breakthroughs in basic technology become substantiated through scientific literature references in the patenting process. The significant Research Intensity scores combined with the significant Industry Impact scores suggest a strong position for E-Ink in this technology long into the future.

On the horizon

The company's success is now dependent on its commercialization prowess and the development of the Electronic Paper Display market. Today the technology is imbedded in portable electronic devices such as mobile telephones and electronic books. Tomorrow, as the price point declines, these devices will find their way into retail smart shelves and point of purchase displays. As this potential billion dollar industry emerges, it will fuel the development of another successful MIT spin off company.

Scorecard rankings

Electronics & Instruments Industry	2
Patent Board 500	19

Figure 1. E-Ink has a highly focused patent set with 72% of its activity in Electronics & Instruments. 18% of their patents are related to methods to drive the displays. A small amount of activity is related to semiconductor technology, which is closely aligned with the electronics industry.

Figure 2. A steady stream of activity has occurred since 1998 with their first patents being issued in 2000. A strategic focus has led to continuous filings for related applications. Overall their applications are outpacing their issued patents and while full year data is not yet available for 2006, their count is already at 28 and will likely continue to rise.

Figure 1. E-Ink Portfolio Distribution

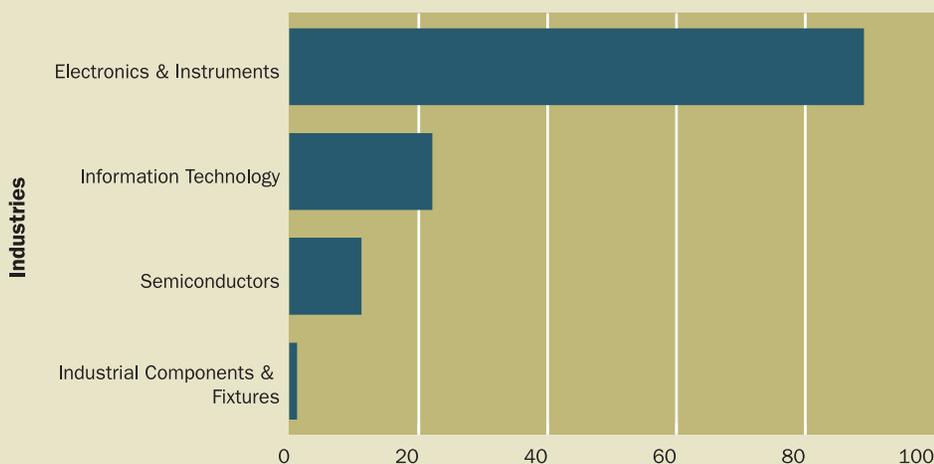


Figure 2. Historical US Patenting Activity

