

# Research Report on Global and China's LED Industry, 2011-2012

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## Abstracts

LED, a kind of semiconductor diode, can transfer electrical energy to optical energy, and emit yellow, green, blue and other visible light as well as infrared and ultraviolet invisible light. Compared with small incandescent bulbs and neon lamps, LED is characterized by low working voltage and current, high reliability, long service time, easy adjustment of brightness, etc.

The entry threshold has been lowered gradually from upstream industry to downstream industry of the LED industry chain. The upstream industry is single chip and its epitaxy, the midstream industry is LED chip processing, and the downstream industry is package test and application, among which upstream and midstream industries are the fields with most fierce international competition, highest business risks, rich technology content and huge capital investment. In LED industry chain, the profit of LED epitaxial chips and chips accounts for about 70% of the industry, that of LED package accounts for about 10%-20%, and that of LED application also accounts for about 10%-20%.

Under the circumstances of global energy crisis and increasing requirement of environmental protection, energy-saving, safe, micro and environmentally-friendly semiconductor LED lighting with long service time and rich colors has been universally recognized as the principal way for energy saving. Semiconductor lamps adopt LED as a new light source, whose consumption is only 1/10 electricity of that of general incandescent lamps and service time prolongs 100 times under the same brightness. In 2010, the scale of global LED market exceeded USD 10 billion. It is predicted that the annual compound growth rate of global LED market will be over 20% in 2011-2015.

Global LED industry mainly concentrates in Japan, Taiwan, Europe and America, South Korea and Mainland China, among which Japan occupies 50% shares and is the

world's largest producing country of the LED industry.

After 30-year development, the LED industry in China has initially formed a relatively complete industry chain, covering all the links of LED substrate, epitaxial chips, chip package and application. By the end of 2010, there have been over 1,000 LED relevant enterprises in China. These enterprises mainly concentrate in the downstream package and application fields, whose development of extension and chip links relatively lags behind.

Viewed from industry chain, the midstream and the upstream of the LED industry are capital-intensive, namely in great demand of capitals. Though many enterprises declared to invest in LED projects in 2010, many enterprises only had the investment intention without real actions. In China, upstream enterprises often have small scales, whose chip products are in short supply, and the phenomenon of accumulation of package customers' orders generally exists in these enterprises. Hence, in the short term, the relation between production capability and market demand is that supply exceeds demand in upstream epitaxial chip link rather than overheating investment.

In midstream package link, influenced by high technology and investment threshold at the present stage, degree of self-sufficiency of middle and high-end packaged products (e.g. large-power device and surface mount device) in China is low, while low-end packaged products (e.g. in-line device) can basically meet the demand in domestic application fields without overheating investment. In downstream application link, different application fields show different characteristics, and overheating investment phenomenon temporarily exists in some fields. There are many enterprises producing application products in the downstream industry of China's LED industry, which always face the problem of excess competition with constant capital investment. It is predicted that vicious competition will occur in 2011-2012.

Though the overall LED industry in China does not possess advanced technology and scale advantage of international manufacturers, it owns the local service advantage. Huge LED application demand in China, including airport, expressway construction and various governmental projects, will bring LED enterprises especially midstream and downstream enterprises great opportunities for development.

With the enhancement of luminous efficiency and application technology, the LED applications have been transferred from the original indicator lamp application to other fields with more development potential such as display screen, landscape lighting, backlight, automotive lamp, traffic lamp and lighting. LED application is showing a

diversified development trend.

This report gives an analysis on global and China's LED industry from several angles such as concept, patent, application and upstream and downstream LED manufacturers.

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