Global and China OLED Industry Report, 2009

Compared with TFT-LCD, cost on raw materials of OLED is at least 70% lower; because OLED needs not polarizing plate, backlight module or color filter. However, OLED is still in a dilemma. In 2009, Active Matrix OLED emerged, and OLED TV also made its debut. The growth of OLED speeds up, but bottleneck still exists.

OLED has very weak anti-oxidation ability, which restricts its development. Moreover, OLED equipment has to be driven by high electric current; therefore LTPS-TFT substrate is a must for it.

LTPS keeps cost of OLED at a high level. At present, OLED suffers losses in business. Most TFT-LCD manufactures have finished amortization of old production lines. LTPS TFT is controlled by a few large-sized TFT-LCD manufactures; therefore their attitude towards OLED is a key for development of OLED. Unless they have a full command of OLED production techniques, they will not involve in OLED production. In consequence, OLED is currently controlled by few giants such as Samsung; which is unfavorable for OELD industry.

OLED must break away from LTPS TFT substrate, and also improve resolution for competing with traditional TFT-LCD. With the same size, resolution of OLED is much weaker than that of TFT-LCD. Therefore, OLED fits for large-sized screen (above 3 inches), yet, the bigger size is, the more cost will be.

SMD monopolizes the small-sized OLED market; therefore other producers try to develop large-sized OLED market, but LTPS technology is not suitably employed to large-sized OLED. Even LTPS technology gets improved even high up to sixth generation or seventh generation, it is still rather poor in cost efficiency.

SMD controls most resources, so OLED display market is also dominated by Samsung. Small-sized AM OLED will not see greater development in the future. As a mobile phone producer Samsung doesn’t possess upstream resources of AM OLED. Due to higher cost of OLED, it is forecasted that mobile phone with OLED display will just account for 5% market share.

Sony 11-inch and LG 15-inch OLED TV have been commercialized, but their prices are extremely high due to their low rate of finished products (below 30%); while rate of TFT-LCD finished products can reach above 99%. Just a few TFT-LCD giants can produce OLED TV sets. However, they will not be completely involved in OLED TV production until they take back all investment.

At present, only TOKKI and ULVAC produce OLED equipments. TOKKI is an important one, its largest glass substrate size is 370mm*470mm. DuPont, BASF and IDEMITSU KOSAN are the key producers of luminescent materials, but these chemical giants are not interested in this market, just 1% of TFT-LCD market.

75% cost of TFT-LCD originates from raw materials, while cost of OLED on raw materials just accounts for less than 25%. TFT-LCD has had no means to reduce cost efficiently today; once the rate of finished OLED products improves to 70%, there will be no room for TFT-LCD in the future. Therefore, OLED industry has a bright future.

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